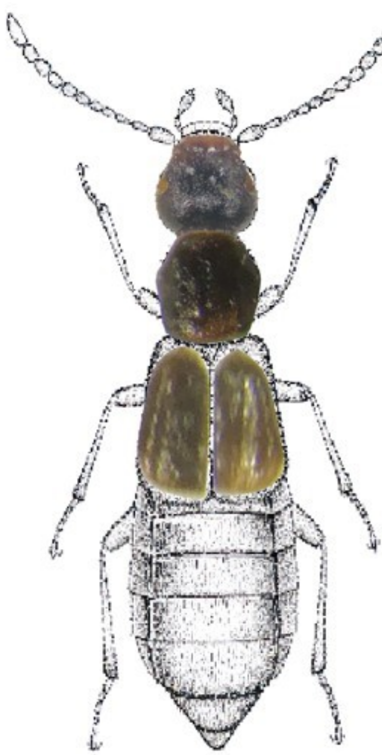
Provincial Archaeology Office Annual Review



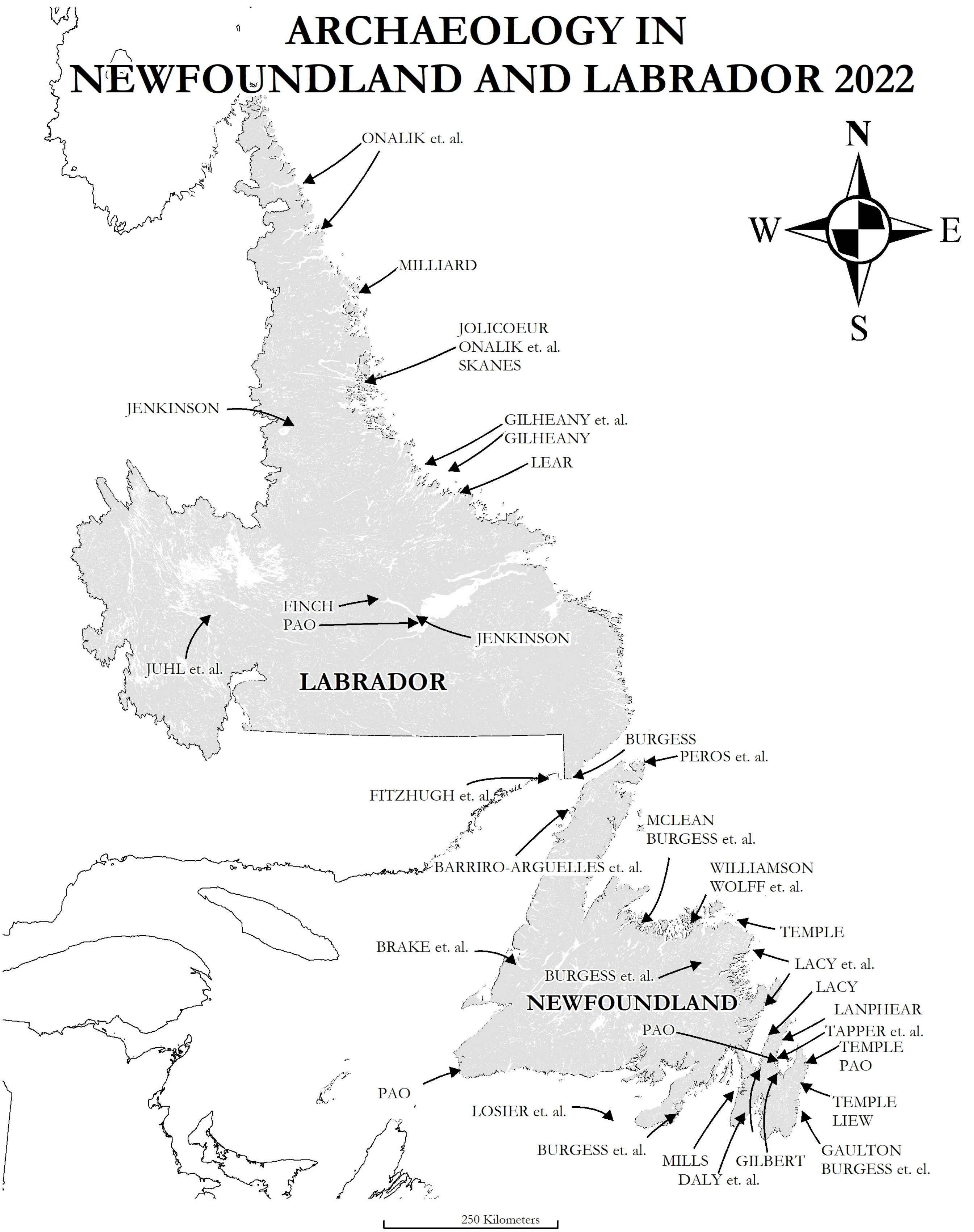
0.5 cm

2022

Provincial Archaeology Office
Department of Tourism, Culture, Arts and Recreation
Government of Newfoundland and Labrador
April 2023 Volume 21

Cover: New insect locality records for Labrador, see Pier-Ann Milliard submission, this volume

Stephen Hull
Delphina Mercer
Editors



Stephen Hull
Provincial Archaeology Office

INSIDE THIS ISSUE

CONTINUED

On the Question of the Tent Rings, Caribou, and Inuit in Northwest Newfoundland

Sarai Barreiro-Argüelles[1], William Fitzhugh[2], Brad Loewen[3], Ben Fitzhugh[4] & Dongya Yang[5]
1. Université de Montréal, Département d'anthropologie, Montréal
2. Smithsonian Institution, Arctic Studies Center, Washington DC.
3. Université de Montréal, Département d'anthropologie, Montréal
4. University of Washington, Seattle
5. Simon Fraser University, Vancouver

In the last 15 years, archaeology on the Québec Lower North Shore (QLNS), just northwest of Newfoundland, has revealed an extensive complex of Inuit winter houses associated with Basque sites and material culture. The Basque association of Inuit presence in the 17th and 18th centuries remains to be fully understood, as does the apparent absence of Inuit summer habitat on the QLNS. As well, associated faunal remains show reliance on caribou in the Inuit diet, which is striking in this region where *Rangifer* populations are historically much smaller than in Newfoundland. An in-progress ancient DNA study undertaken by the University of Montreal, the Smithsonian Institution and Simon Fraser University has found that the DNA of some caribou remains match the Newfoundland subspecies, and not the Labrador-Québec herd as we presumed at the time of excavation. Indeed, a local QLNS source seemed logical because caribou were available on this coast until the middle of the 20th century. Hunters in Rivière-Saint-Paul report regularly seeing caribou into the 1970s, but not subsequently. Today QLNS hunters hunt caribou in central and northern Labrador-Québec when a hunt is even permitted. These interrelated questions led us to ask whether Inuit traveling in Basque *chalupas* may have spent part of their summer in northwest Newfoundland, and carried caribou carcasses with them to consume as they settled in for the winter on the QLNS.

This text provides a brief overview of the archaeological survey conducted during 16–29 July 2022 in northwestern Newfoundland, from Port Saunders to St. Barbe. Our first goal was to collect shed antlers to enrich our DNA database of Newfoundland caribou. Our second purpose was to search for historic Inuit sites that might have been involved in the acquisition of caribou whose remains occur on 17th-century Inuit sites on the QLNS.

In addition to their relative abundance, Newfoundland caribou as an aggregate herd has been isolated from the Quebec-Labrador herd following the retreat of glacial ice and submergence of the Strait of Belle Isle (about 8,000 years). All caribou in Newfoundland share more biological ancestry with other Newfoundland animals than with their Québec-Labrador cousins. So, although caribou may occasionally have crossed the Strait on the ice or swimming, there has not been enough genetic contact to blur the geographic boundary (Wilkerson et al. 2018). Based on this genetic distinction, we hypothesized two alternative scenarios to explain the presence of Newfoundland caribou at 17th century Inuit sites on the Lower North Shore: 1) direct provisioning by Inuit hunting animals in northern Newfoundland, and 2) exchange of skins, hides, baleen and feathers from Labrador and Quebec for Newfoundland caribou and other products with Europeans or Indigenous people present along the west coast of Newfoundland.

Objectives

Our fieldwork in 2022 was directed at the coastal region from Port Saunders to St. Barbe (Figure 1), with two main objectives: 1) surface-collecting caribou samples, and 2) investigating tent rings reported on Old Ferolle Island by Callum Thomson in 1993 and 1995.

The first objective of surface-collecting caribou remains was in support of the QLNS caribou ancient DNA research project, which aims to determine the genetic identity, geographic stock and sex of archaeological samples to better understand Inuit hunting strategies and seasonality. We organized a survey to find recent caribou tissue such as shed antlers, excrement and hair. Informal conversations with

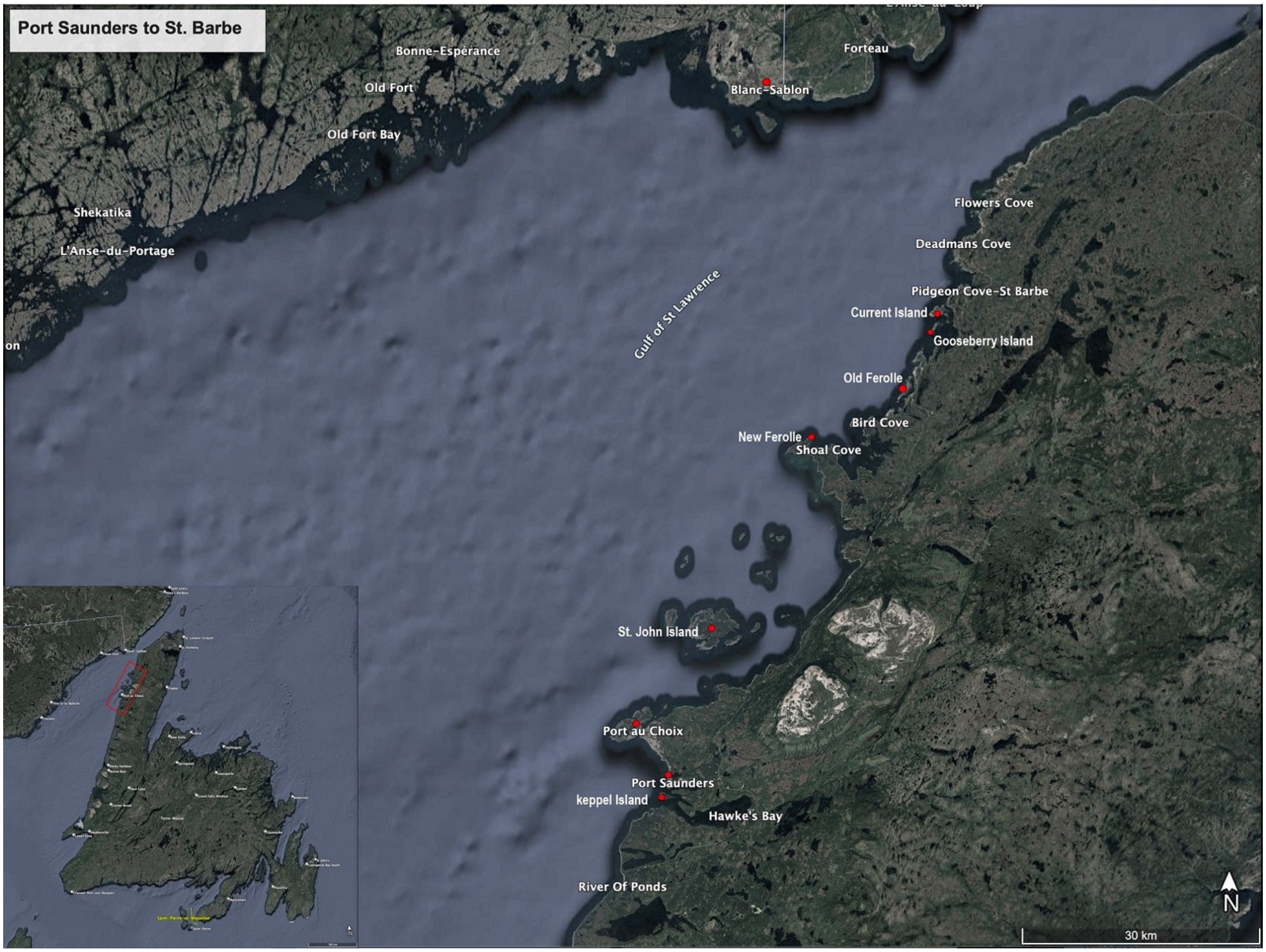


Figure 1: Map of the coastal region from Port Saunders to St. Barbe with the sites mentioned in this report (Google Earth Pro image edited by Saraí Barreiro Argüelles).

local people who fished, trapped, and hunted were key to gaining insights into caribou behavior that residents have built over generations. We visited locations frequented by caribou during the summer season, which coincides with Indigenous and European occupation.

Our second objective was to record and assess tent ring features reported in 1993 and 1995 by Callum Thomson on Old Ferolle Island, which have not been subsequently investigated. Our purpose was to ascertain whether these structures were occupied by Inuit as suggested by Callum Thomson, by other Indigenous groups, or by Europeans. Old Ferolle was chosen for its ease of access and its proximity to Port au Choix, Pigeon Cove, New Ferolle and Current Island where caribou are present during the summer. We had also planned to investigate the tent rings reported by John Kilmarx (1987) on St. John Island, but weather and logistics thwarted this plan. Kilmarx reported "few associated artifacts" at the two sites, but felt that these objects were "probably Dorset" in cultural affiliation. Similar reasons prevented us from investigating tent rings reported on Keppel Island (Fitzhugh 1982). The tent rings at Old Ferolle, St. John Island and Keppel Island are the only ones currently known in Northwest Newfoundland (Stephen Hull, pers. comm., November 2020). Notably, Latonia Hartery did not report any Inuit-style rings during her research in the Bird Cove-Plum Point region (Hartery 2004).

Methods

We carried out pedestrian surveys in Eddies Cove, Old Ferolle North (EgBf-4), Current Island, Pigeon Cove, and New Ferolle to obtain contempo-

Figure 2: Bella Ferrin collecting Sample #8 at Current Island (photo: Saraí Barreiro Argüelles).

rary caribou DNA samples and look for signs of historic Inuit camps or hunting. All these sites are strategic areas known for their hunting resources and European presence. Transects spaced at 5 to 10 meters between surveyors along the coastal zone allowed us to record a range of historic and possible prehistoric structures.

We located the tent rings at Old Ferolle South (EgBf-5) with the help of a topographic map produced by Callum Thomson (1995). All the reported tent ring features are still visible. We recorded them photographically on the ground and from the air using a digital camera and a DJI Mavic Pro drone. Measurements and other characteristics were noted with standard field instruments. We processed the photos to produce detailed drawings of each tent ring feature using Adobe Illustrator.

Surveys for Caribou DNA Samples and Unexpected Finds

We collected a total of nine antlers and bone samples at Point Riche Peninsula, Port Saunders, Eddies Cove, Dog Peninsula, Bird Cove, Old Ferolle (Plum Point) and Current Island. All samples were surface-collected except samples 2 and 3 that local residents donated. We removed fragments of 10 cm to 15 cm for DNA extraction and analysis and left the rest of the antlers in place (Figure 2).

We encountered several unexpected archaeological features during our surveys. At Current Island we recorded more than 85 stone features. Current Island, just south of St. Barbe, has an irregular shape about 2 kilometers long and half a kilometer wide. French seasonal fishermen fished these waters in the

Table 1: List of caribou samples collected during our survey in 2022.

Sample #	Date	Provenance	WP	Photo record	Comments
1	2022-07-17	Port au Choix	N50° 41' 42.6" W57° 24' 25.2"	6020	Caribou dung animals inhabiting Point Riche Peninsula
2	2022-07-07	Port Saunders	N49° 35' 27.0" W55° 42' 52.0"	6920	Gordon Lowe, shed antler found in the hills east of Port Saunders, NLFD. Collected probably 20 years ago
3	2022-07-18	Eddies Cove West	N50° 44' 56" W57°10' 17"	6922, 6923	Ken Offrey, Eddies Cove West (just north of Port aux Choix), caribou killed in the hill's northeast of Port aux Choix.
4	2022-07-18	Dog Peninsula	N51°03'14" W56°56'50"	6925, 6927	Caribou leg bone from archaeological excavation of old European farm site on Dog Peninsula
5	2022-08-04	Bird Cove	N51° 03' 24.9" W56° 57' 05.9"	6935, 6936	Shed antler from Bird Cove
6	2022-07-22	Old Ferolle	N51° 05' 34.0" W56° 52' 59.4"	6937, 6938	Leg bone from Old Ferolle
7	2022-07-24	Current Island	N51° 10' 42.5" W56° 50' 01.1"	6939, 6940	Shed antler from Current Island
8	2022-07-24	Current Island	N51° 10.512' W56° 50.261'	6941, 6945	Shed antler from Current Island
9	2022-07-31	Current Island	N51°10'20.1" W056-50'27.0"	6948, 6949	Shed antler from Current Island

Figure 3: Large boulder mound at Pigeon Cove (photo: Saraí Barreiro-Argüelles.)

Figure 4: Hunting blind on the shore north of New Ferolle near the town dump (photo: Ben Fitzhugh).

Figure 5: A dog cairn burial at Pigeon Cove (photo by Sarai Barreiro Argüelles).

Figure 6: Detail of a canine skull visible between the rocks, Pigeon Cove (photo: Sarai Barreiro Argüelles).

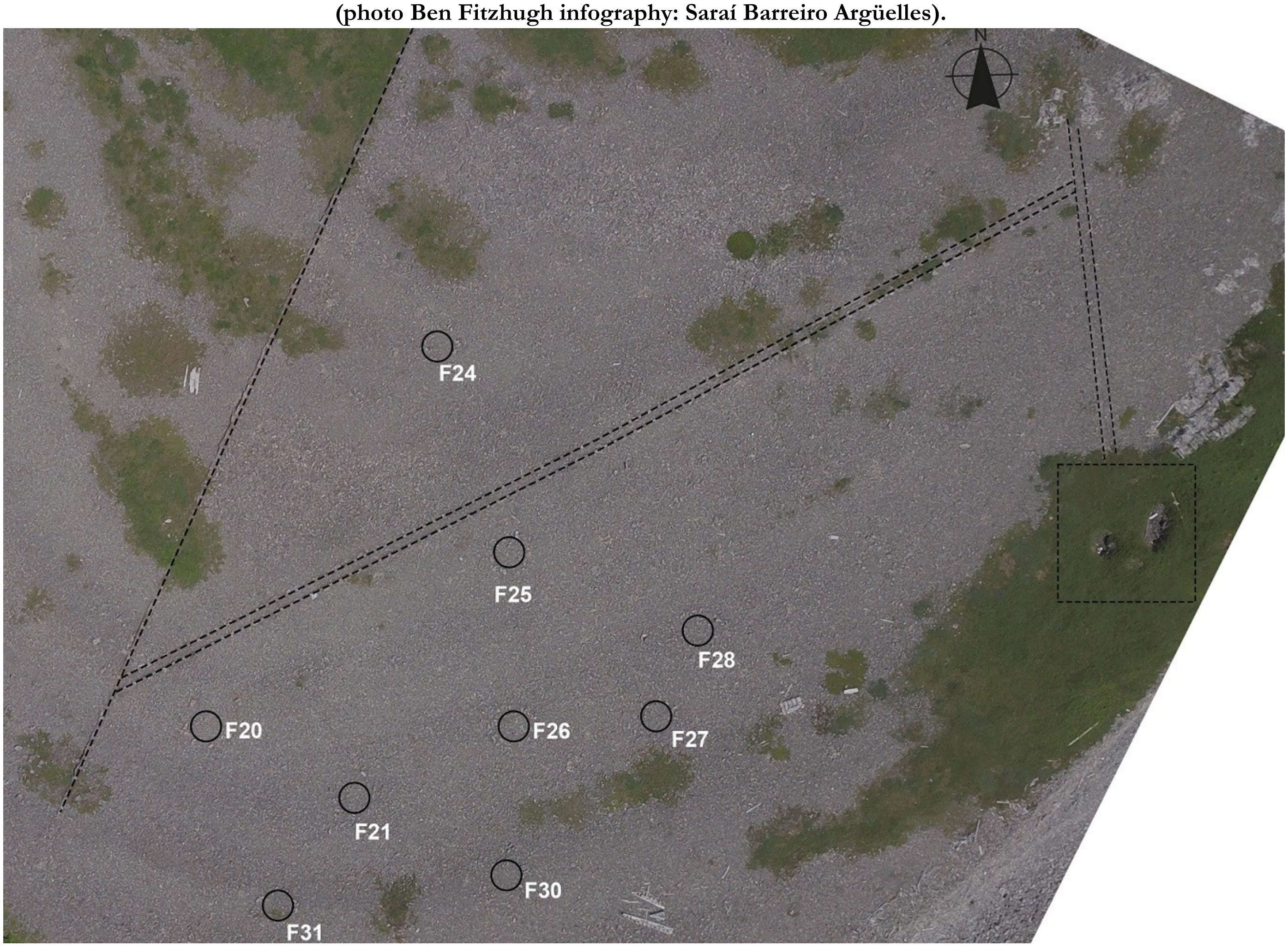
early 1800s; English settlers occupied Current Island around 1871 (Thornton 1979) when a burial ground was reported here (NHA 1872:652). On the east side of the island, we found several elongated stone mounds that could be part of this cemetery. Along the south and west shores are numerous small stone cairn markers that indicate an intensive phase of fishing or seal hunting activity. The markers are conical, vary in height from 40 to 60 cm, and have a vertical cavity at the top for inserting a wooden pole, some of which were still in place (Figure 3). Most of these markers are found in pairs, possibly for alignment purposes to position offshore locations or to guide approaching boats. Blinds for hunting birds, seals or caribou and caches for storing game are found in the same sector (Figure 4). Other less common structures include dog burial cairns (Figs. 5 & 6) as well as modern campfires and tent sites.

On the northwest shore of Pigeon Cove Point we found six features, two of which are dog graves and one large rock pile that might be a human grave mound. Another large mound was found associated with a boulder enclosure and caches just north of Jim Muse Cove, north of the New Ferolle light, as well as other markers, blinds, and caches. All these structures are at the shore, usually on the lowest beach ridges or wave-cut benches.

Investigation of Tent Rings at Old Ferolle Island

Work at EgBf-5 at the south end of Old Ferolle Island focused on investigating the tent rings reported by Thomson (1993, 1995). These tent rings are located on a natural marine-deposited surface of limestone slab rock bordered by three pavement lines, each about one meter wide, that Thomson interpreted as pathways for transporting fish, possibly by wheel- or hand-barrow, from the old wharf to suita-

Figure 7: South end of Old Ferolle Island (EgBf-5) and the location of the fish-drying flakes and the tent rings found on the flake surface. The linear features are paving stone pathways, possibly for wheel-barrows or carts (photo Ben Fitzhugh infography: Saraí Barreiro Argüelles).



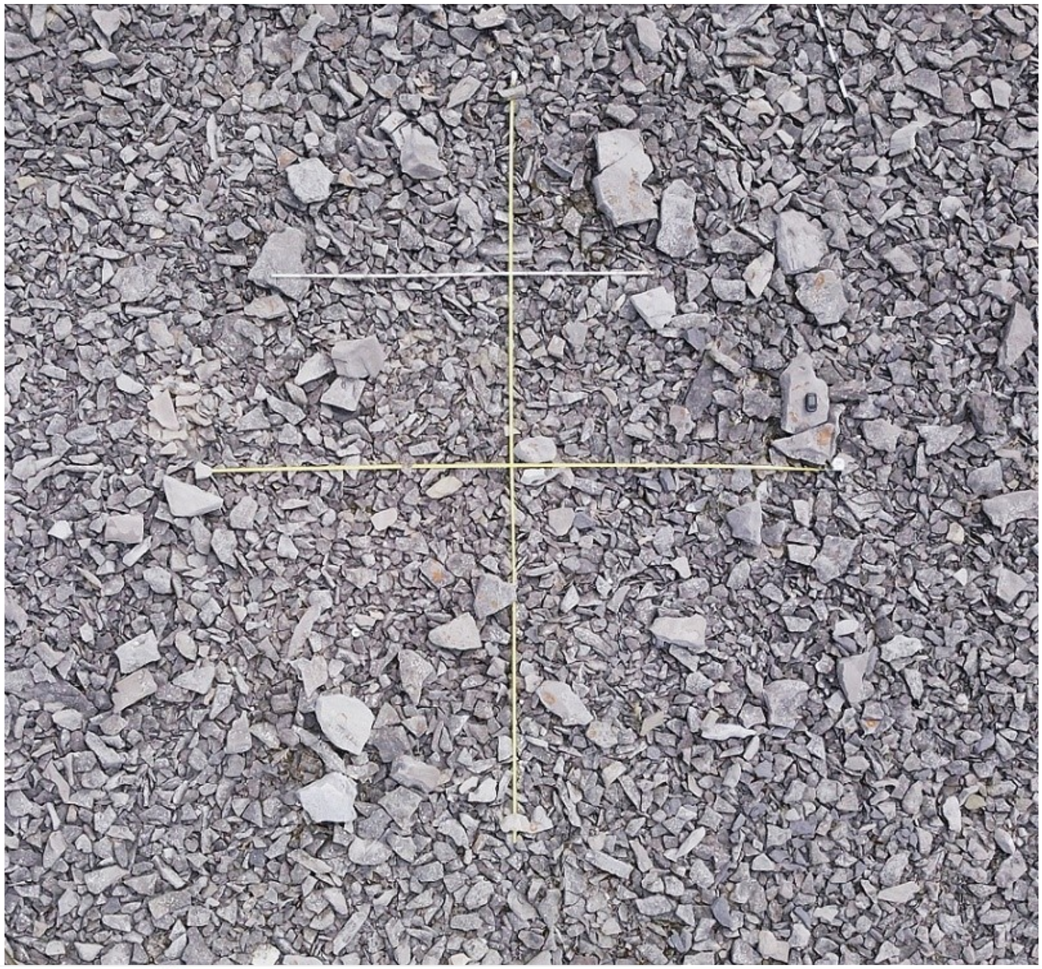


Figure 8: View of Feature 25 before excavation (photo: Ben Fitzhugh).

Figure 9: Quadrants excavated in Feature 25 with the location of the objects found.

Figure 10: View of Feature 27 during excavation (photo: Ben Fitzhugh).

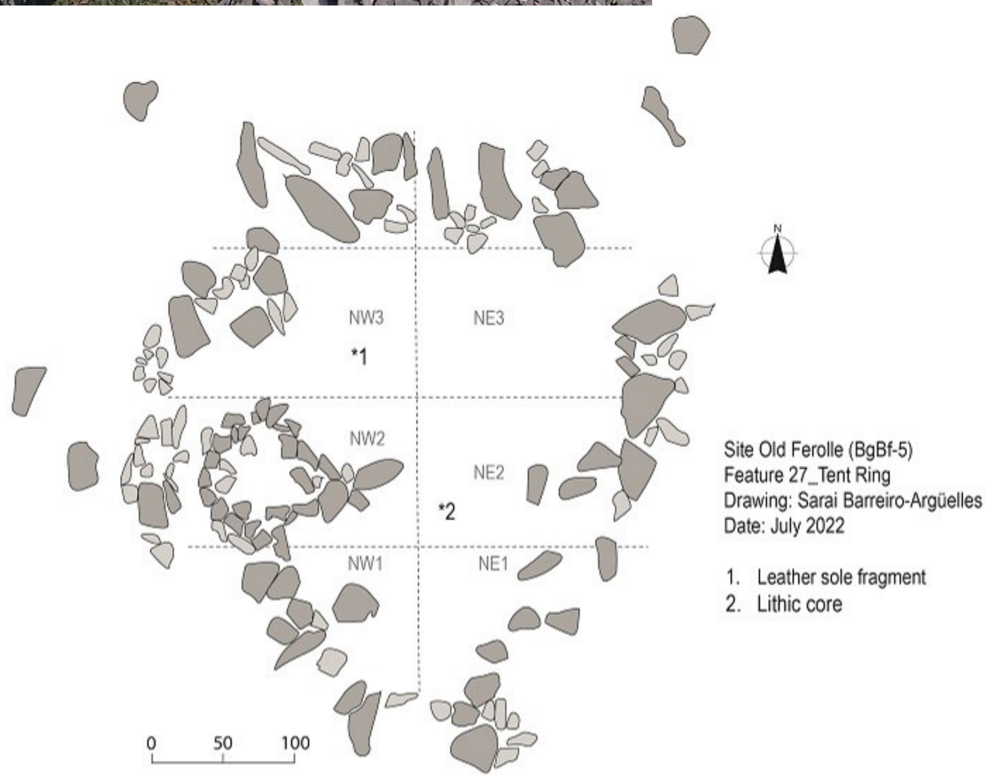


Figure 11: Quadrants excavated in Feature 27 with the location of objects found.

Figure 12: View of the ancient cemetery and oven of Old Ferolle site (EgBf-4) (photo: Sarai Barreiro-Argüelles).

ble areas for cutting stages or drying fish (1993 :13). We documented tent rings to identify their characteristics and possible cultural affiliation with European fishermen or to Inuit or other Indigenous groups (Figure 7). Our survey was facilitated by a topographic map created by D. Burt for Jacques Whitford Environment (Thomson 1995). After identifying the tent rings visible on the cobblestone flake surface, we divided into two teams. Team 1 followed the topographic map with the location of the circles and took GPS coordinates and measurements of each feature. Team 2 focused on photographic recordings of each tent ring and marked them with flagging tape after coordinates were taken. A drone obtained a plan view from which we were able to draw the rings. We identified nine tent rings; Thomson reported three rings during the preliminary survey in 1993 (F20, F21, F24), and six others in 1995 (F25, F26, F27, F28, F30 and F31).

Each tent ring feature consists of stones larger than the natural flake surface stones. The features can easily be identified as surface elements placed on the natural flakes and are not embedded amongst these. They stand out from the surface flakes that are evenly distributed and packed into place, whether naturally or from human activity. The rings typically measure four to five meters across, and the large flat stones that form the features are arranged in a roughly circular shape. However, their current layout is often irregular, and it is possible that some stones have been moved by their occupants or others at a later time, either purposefully or inadvertently. There are possible hearth features inside and outside the rings, but these have no regular structure and most consist of a cluster of a few rock slabs.

The tent rings are spaced at distances of 10 to 15 meters, with no overlapping rings and no sign that any stones were taken from one ring to create another. It is thus possible that all the tents existed at the same time. Only Feature 24 is offset from the main cluster of rings, on the opposite side of a pavestone pathway and at a higher elevation.

We excavated two tent rings, identified as Features 25 and 27. We only had time to excavate inside the rings. We divided each feature into six areas using measuring tapes and then turned over each surface stone looking for small artifacts, digging a few centimeters beneath the surface rocks before returning them to their original position (as well as possible). No deep or vertical excavations were made, and no stones were moved outside the structures. In Feature 25 (Figs. 8 & 9) we found small tube fragments of one white clay pipe, while on the surface of Feature 27 lay a piece of insole shoe leather with stitching holes, and two local chert unifacial core fragments (Figs. 10 & 11). At the conclusion of our Old Ferolle work, we spent a few hours clearing the encroaching vegetation from the French bakery site (EgBf-4) at the north end of the island.

Discussion

The stratigraphic position of the tent ring features is later than the packing of the natural surface flakes, indicating their emplacement in a specific area of lesser human traffic. Our limited understanding of the natural and/or human packing of the surface flakes, and of the fishing station's layout and traffic areas, makes it difficult to ascertain whether the tent rings are contemporaneous with the station or posterior to it. Some stones may have been moved a short distance from their original positions, without leaving the area of their tent ring.

Due to their irregular outline, the features do not readily conform to traditional tent rings associated with the Inuit (round or D-shape rings of tent-flap hold-down rocks with a door area opening downslope toward the shore and a line of rocks marking a rear sleeping area) or other Indigenous groups. While the outlines may represent an historical adaptation to a new tent shape, household organization, or other material culture, the lack of comparative examples makes any interpretation provisional. The tent rings recorded at four sites between St. Barbe and Port Saunders – Old Ferolle Island, Kepel Island, and two sites on St. John Island – are the only such features known in Northwest Newfoundland. The cluster of nine rings within the confines of the flake drying surface at the fishing station on Old Ferolle militates for an association between the unidentified tent occupants and the French or Basque fishing crews.

Our work at the Old Ferolle Island (EgBf-5) fishing station did not yield definitive answers to the question of the tent ring occupants' cultural affiliation but determined that they were occupied after the creation of the paved pathways and the gravel cobblestone fish-drying flakes on which the tent rings are found, and that the occupants had access to European materials. The few artifacts found in Features 25 and 27 are of European manufacture, except likely for the two fragments of weathered chert. None of these objects is diagnostic of a particular group or culture and none was found in a hearth or other feature ensuring their association with the ring, although this seems likely.

While preliminary in nature, our investigation showed that significant information on architectural tent ring variability can be obtained through vertical drone photography to record and produce maps of visible elements. The plan views reveal specific shape characteristics that might, in future study, enable the cultural identification of these occupants on an historical fishing station.

Conclusion

Consultation of previous archaeological reports and the help of the PAO has revealed four sites with tent ring components on the northwest coast of Newfoundland. None of these sites readily corresponds with traditional Inuit-style tent or artifacts, and even though we could not visit St. John Island to investigate its rings, we recall that Kilmarx reported associated Dorset artefacts. The tent rings at Old Ferolle contain information to suggest that further excavation may identify their builders, who seem likely to have been Indigenous people attracted to this large fishing station, rather than European. The seasonality of the summer tent rings complements that of the Inuit winter houses found on the Québec Lower North Shore (QLNS), while the Newfoundland origin of some caribou consumed on the QLNS also suggests a cross-gulf dynamic for 17th-century Inuit. The results of our caribou sampling will help advance knowledge of Inuit hunting strategies and the locations where Inuit obtained the caribou found in their Lower North Shore middens. More investigation is needed into the tent ring features of northwest Newfoundland, to shed light on Indigenous relations with Basque or French seasonal fishing crews operating on this coast in the 17th and 18th centuries.

Acknowledgements

Our project was supported by several people. Special thanks go to the Colburn family who hosted us at Lushes Bight at the beginning and end of fieldwork. In Port Saunders Bill and Ilene Lowe graciously hosted us and taught us local history and caribou lore. Ben Fitzhugh shared field skills, mapping, and drone expertise. Smithsonian interns Bella R. Ferrin and Whitney Hadley-Salay provided invaluable survey assistance. The PAO provided permits, encouragement, and funding.

References

Fitzhugh, William W. 1982 Archaeological Surveys in the Strait of Belle Isle. In Jane Sproull Thomson and Callum Thomson (eds.), *Archaeology in Newfoundland and Labrador 1982*, Historic Resources Division, Department of Culture and Recreation & Youth, St. John's.

Hartery, Latonia. 2004. Bird Cove-Plum Point Archaeology Project--2004. Report by LJH Associates to Provincial Archaeology Office. St. John's.

Jacques Whitford Environment. 1995. Archaeological Mapping Survey of Old Ferolle Island Beach Site (EgBf-05 Old Ferolle Island, St. Barbe District, Newfoundland. 10146. St. John's Newfoundland: [JWE], St. Barbe Development Association, Plum Point, Newfoundland.

Kilmarx, John. 1987. Archaeological reconnaissance St John Island, Northwestern Newfoundland. Interim field report 1987. *Archaeology in Newfoundland and Labrador, 1987*, pp. 146-174. Provincial Archaeology Office. St. Johns, Newfoundland.

Newfoundland House of Assembly [NHA]. 1872. *Journal of the House of Assembly of Newfoundland 1872*. Printed at the "Morning Chronicle" Office, St. John's.

Smallwood, Joseph R, et Robert D.W. Pitt (eds.). 1981. *Encyclopedia of Newfoundland and Labrador Volume I*. Vol. 1. Newfoundland Book Publishers [1967] Ltd., St. John's.

Thomson, Callum. 1993. Preliminary Archaeological Survey of Old Ferolle Island, St. Barbe District, Newfoundland. Thomson Heritage Consultants Dartmouth and St. Barbe Development Association, Plum Point.

Thornton, Patricia A. 1979. Dynamic equilibrium: settlement, population and ecology in the Strait of Belle Isle, Newfoundland, 1840-1940. PhD dissertation, Aberdeen University, Aberdeen.

Wilkerson, C. D., S. P. Mahoney & S. M. Carr. 2018. Post-glacial recolonization of insular Newfoundland across the Strait of Belle Isle gave rise to an endemic subspecies of woodland caribou, *Rangifer tarandus terranovae* (Bangs, 1896) : Evidence from mtDNA haplotypes. *Genome*, *61*(8), 575-585.

Brake Family Archaeology in the Bay of Islands

Jamie Brake & Allan Brake

Figure 1: Map showing the location of Meadows in the Bay of Islands.

Some holiday time was spent conducting a brief survey in Meadows, in the Bay of Islands, in early August of 2022 during a Brake family reunion (Figure 1). Weldon Brake, proprietor of the Brake Family Museum in that community, organized the reunion and was interested in having an archaeology related scavenger hunt on the agenda. After considering that possibility, it was suggested that a family archaeological survey might be more interesting. Similar work had previously been done with the Saunders side of the family in Gander Bay and Change Islands a few years earlier (Brake & Brake 2015; 2016; 2017).

While archaeological surveys had previously been conducted in the Bay of Islands (Reader 1996; Schwarz 1994), fieldwork does not appear to have previously occurred in Meadows itself. Archaeological activity in 2022 was largely limited to the former homestead of Stanley and Jessie Brake, which was previously owned by Cornelius Brake (1862-1929) and Eliza (1867-1958[1]), and prior to that to earlier generations of Brakes. The house that Cornelius, Eliza, Stanley and Jessie lived in is the house that Jamie's father Allan grew up in with his 12 siblings, including Weldon who now owns the property. The house now has had several extensions and has been converted into a museum with exhibits on various aspects of history in the Bay of Islands, but with a particular focus on the Brake family.

Jamie and Allan conducted a brief archaeological survey of the property on August 6th and 7th in the company of some of the younger members of the family. This involved a walkover and visual inspection as well as shovel testing at promising looking locations. Our main area of interest was east of the museum in the southeastern portion of a lawn overlooking the bay where an earlier house belonging to the family had once stood (Figure 2). Unfortunately, the areas tested showed significant

1. Allan was with Eliza when she died on October 6th of 1958 at 90 years of age.

Figure 2: Jessie and Stanley Brake homestead with the family museum in the background. The red circle on the right shows what was initially our main area of interest and the circle on the left shows the location of a collapsed concrete root cellar that was used by the family.

levels of disturbance, likely by heavy equipment. No stratigraphy was encountered in the areas tested, and holes along the edge of the currently maintained lawn contained deeply buried garbage and metal debris associated with significant earth moving activity, demonstrating a high level of disturbance.

One heavily damaged structure was recorded part way down the bank on the southeast side of the property towards the ocean (Figure 3). This was the remains of a concrete root cellar that was constructed approximately 65 years ago according to Allan (DeBm-02). He had helped replace the older wooden walls of the structure with concrete when he was a teenager, and the family used the cellar when he was growing up. A distinctive arched concrete lintel that had been broken away from the ocean-facing entrance gave the younger family members a sense of what the root cellar would have looked like when it was intact. The damage to the concrete walls could have been the result of heavy equipment use, or alternatively Allan and Weldon both referred to a landslide on this bank that might have broken the walls.

Figure 3: Remains of the concrete root cellar.

Figure 4: Looking east across Meadows Point
with the remains of a wharf and historical debris visible on the active beach.

gravesite, and the site of a general store operated by Jane Blanchard. Clearly, there are excellent possibilities for interesting future family or community archaeology in the area.

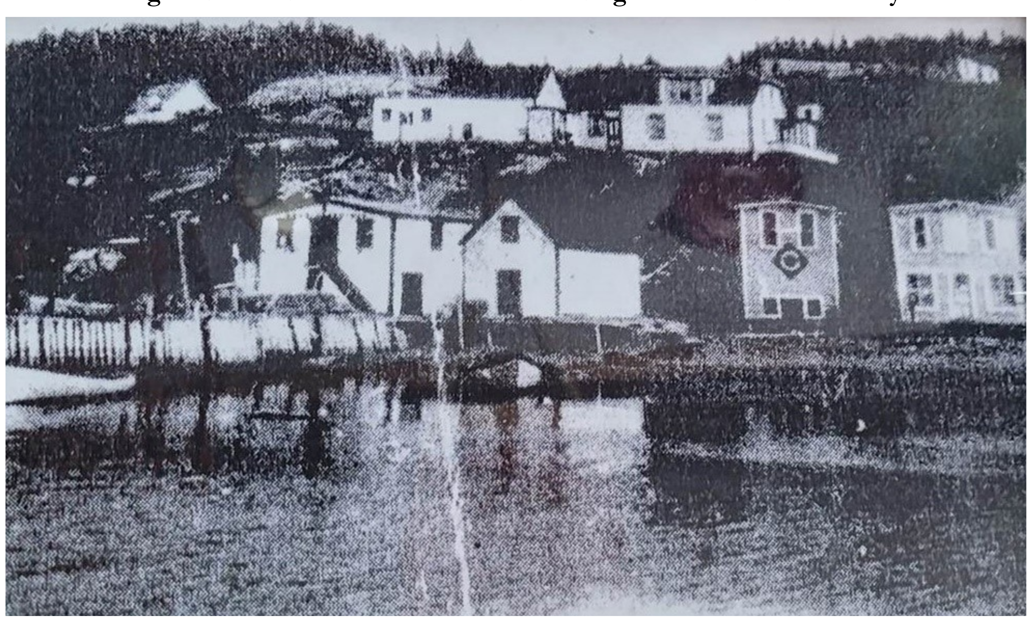
Meadow's Point and the cove immediately east of it were also visited on the morning of the 6th. On the point, we observed the remains of a wharf, an iron winch and other interesting historical debris (Figure 4, DeBm-03). Much of this is related to an early twentieth century commercial premises operated by Albert Brake, the great uncle of Allan. Edward Brake, who was Albert's father, was the first family member to live in Meadows, and had settled on the same point a generation earlier. Edward's Grandfather Ralph (1759-1842) was the first Brake to settle in the Bay of Islands.

Notes provided by Weldon Brake contain some very useful information on the Meadow's Point

While the main areas of interest have been heavily disturbed, forested portions of land along the edges of the property and at the bottom of the bank towards the ocean may still have some potential. The active museum also contains a wealth of information on the history of the property and the surrounding area. There are also a number of sites nearby that were formerly occupied by members of the family that have considerable archaeological potential.

On the morning of the 6th Allan and Jamie did some exploring between Gillams and Summerside and noted interpretive panels installed by the municipalities at several locations of historical significance. These included Hayward Brake's homestead, an early 19th century Blanchard family

Figure 5: Meadows Point wharf and buildings in the mid-20th century.



premises. For example, they state, "The general store was the center of the Bay of Islands. In the store was also the post office and bakery. In war times the bakery and slaughterhouse supplied the [war ships]… also on the property was a fish plant" (The Old Brake House Museum, Meadows Point Research Notes, provided in January of 2023). According to the same notes a machine shop, which supplied early engines for boats in the area, a barbershop and a telegraph office were all on the point adjacent to the earlier structures subsequently built. Weldon also supplied a mid-20th century photo of the site showing the wharf and buildings (Figure 5).

Allan's grandfather Joseph, the brother of Albert, also had a commercial operation in the cove just east of Meadows Point where new wharves and a gazebo are now located. Joseph's buildings and wharf in this area were destroyed by fire in the 1950s. Weldon provided a historic photo of this site as well, taken just a few years before the structures burned. Allan can remember the impacts of the fire having been taken by boat to the hospital in Corner Brook from the wharf at this site in 1953. He explains:

> The entire storefront burnt in Meadows when I was around 12 years old. It was around 1953. It happened in the fall when all the fruit was really ripe. I ate so much of the fruit after a storm blew a lot off the bushes/branches that I must have bloated myself. I ended up with excruciating pain and Dad and Uncle Cyril took me to the hospital in Corner Brook in our motor boat. They had to get back as soon as they could so they took me to the hospital, checked me in and went home. After doing a battery of tests on me they decided I had appendicitis and they had to take [it] out. However, they could not do the surgery without my parent's consent.
>
> A huge fall windstorm started just after my father got back home. It lasted for several days. Sometime during that storm, one of the many stores on the Meadows waterfront caught fire and the fire kept spreading until all the stores were completely destroyed. About ten days after I left to go to the hospital I came back home. All the beautiful stores and many wharfs were destroyed. But I still have my appendix (Allan Brake, personal communication 2023).

While our investigations in Meadows were limited in time and scope, they did provide us with an introduction to the archaeology of the Brake family in one of the many places they occupied in the Bay of Islands since the late 18th century. We plan to do additional testing in some of the potentially undisturbed portions of the museum property, and to visit other sites in the area, like the three Brake's Coves, that are important in relation to the family's history.

References

Brake, Jamie & Joyceanne Brake

2018 Saunders Family Archaeology in Change Islands, Newfoundland. In *Provincial Archaeology Office 2017 Review*, 16:8-17.

2017 Family Archaeology in Gander Bay, Newfoundland. In *Provincial Archaeology Office 2016 Review,* 15:8-19.

2016 Family Archaeology in Gander Bay, Newfoundland. *Provincial Archaeology Office 2015 Archaeology Review*, 14:7-20.

Reader, David

1996 Archaeological Investigations Along the North Shore of the Bay of Islands, Newfoundland, 1995. Unpublished report on file at the Provincial Archaeology Office, Department of Tourism, Culture, Arts & Recreation, St. John's.

Schwarz, Fred

1994 Archaeological Investigations in the Bay of Islands, Western Newfoundland September-October 1994. Unpublished report on file at the Provincial Archaeology Office, Department of Tourism, Culture, Arts & Recreation, St. John's.

History and Highlights of Archaeological Resource Management in Newfoundland and Labrador

Jamie Brake, John Erwin, Stephen Hull & Delphina Mercer
Provincial Archaeology Office

The Provincial Archaeology Office had the pleasure of making a presentation on the history of cultural resource management at the Newfoundland and Labrador Archaeological Society's 2022 Annual General Meeting this past December. This is a summary of that presentation, which looked at archaeological practice through the lens of historic resource management in two parts: 1) pre-Confederation heritage management that began in the late 1800s; and 2) post-confederation management that was formally recognized with the passing of *The Public Records Act* in 1951.

Part 1: Pre-Confederation Heritage Management[1]

Prior to Confederation, the management of historic resources was primarily limited to the collection of objects and historical documents. During the early nineteenth century, there are records of private clubs and societies that were said to maintain collections of objects and relics. However, it was not until 1840 the Newfoundland Literary and Scientific Institution identified as one of its goals, the formation of a museum, which is the earliest known reference to a "museum" in Newfoundland.

In 1849 the St. John's Mechanics' Institute was formed and assembled a collection, and by 1852 it had collected over 700 specimens including: "a stuffed giraffe, a Beothuk skull, two pairs of five-toed chicken's feet, and a piece of lava from Mount Vesuvius". In 1853-54, Newfoundland participated in a World's Fair in New York –to promote it resources and manufacturing potential. The success of this exhibition apparently led to others and marked an appreciation for the practical value of exhibitions.

In 1861, the St. John's Young Men's Literary and Scientific Institute, the St. John's Library and Reading Room, and the aforementioned Mechanics' Institute merged to form a single institution called the St. John's Athenaeum (Figure 1). Until its destruction in the Great Fire of 1892, the Athenaeum was an important cultural and community hub that included a library, auditorium, and a museum.

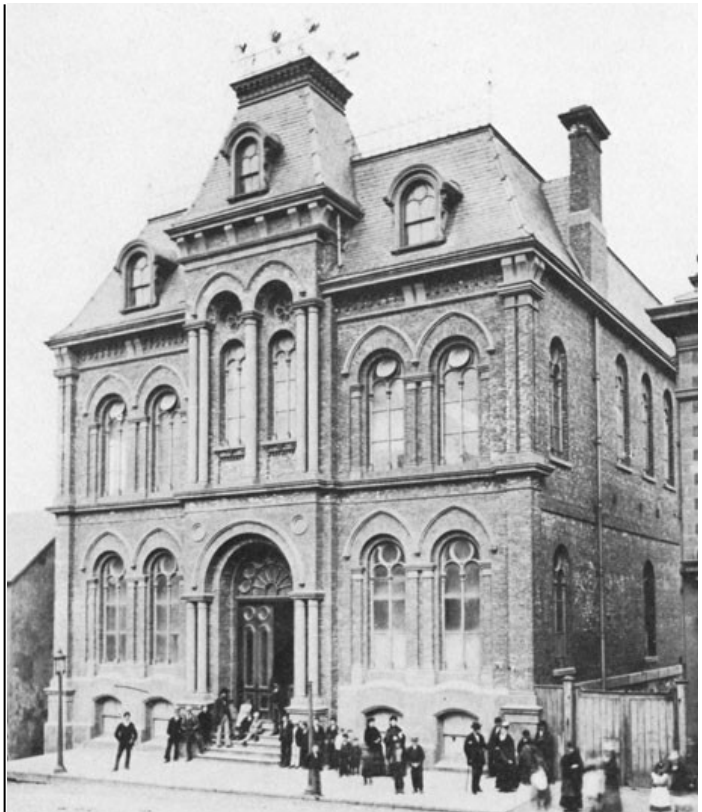


Figure 1: St. John's Athenaeum.

In 1863, the Athenaeum dismantled the museum. However, it agreed to keep specimens of value should a dedicated museum be constructed. In 1870, government purchased the collection, presumably for such a purpose. It is uncertain, however, whether the collection ever found its way into the Newfoundland Museum.

The beginnings of the Newfoundland Museum can be traced back to geologist Alexander Murray, who headed-up the newly formed Newfoundland Geological Survey in 1864. In 1867, Murray provided

1 Much of the Pre-Confederation section is based on Maunder 1991. See: https://www.therooms.ca/the-newfoundland-museum-origin-and-development

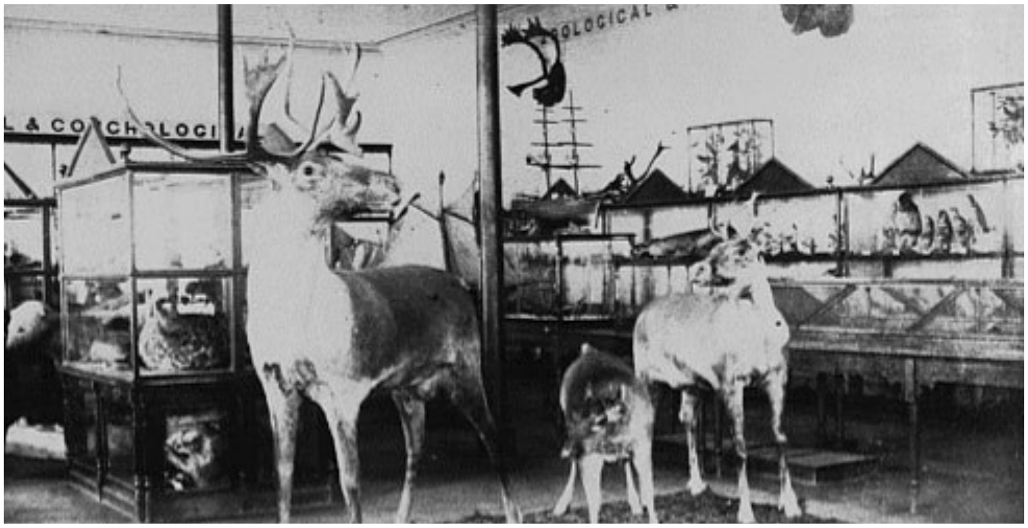


Figure 2: Apparently, the inside of Howley's Museum on the second floor of the Post Office building, St. John's, ca. 1889 (Public Archives of Canada PA-165473).

geological specimens for an exhibition in Paris, which apparently was exhibited "to great acclaim" for one day at the Colonial Building. In 1868, Murray petitioned government for an apartment to hold his geological collections, which was granted to him in 1871, which became known as the "Engineer's House".

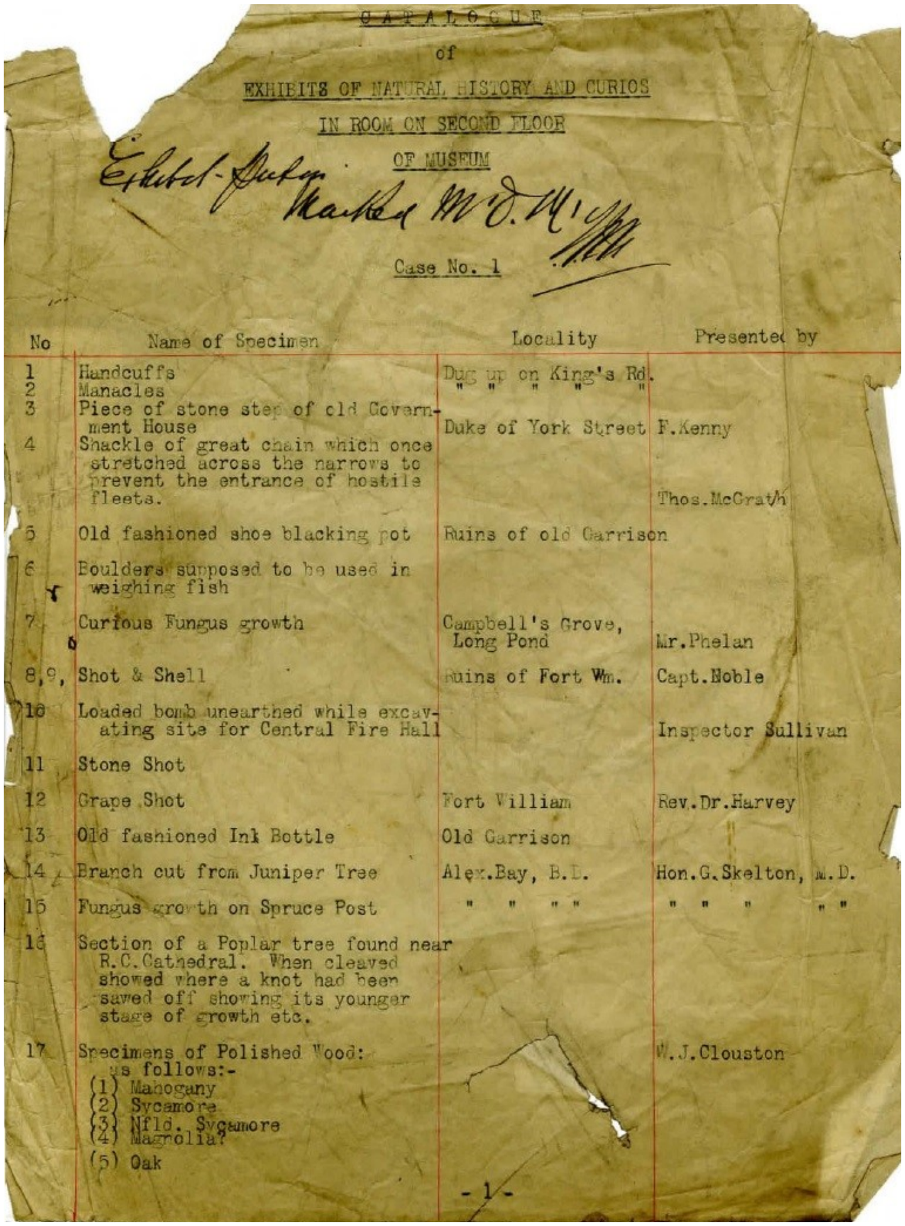
James P. Howley, who would eventually become head of the Geological Survey upon Murray's retirement continued to collect geological specimens and those more broadly across natural history. Howley's additional interest in Beothuk history and the collection of cultural specimens ultimately paved the way for the creation of the Newfoundland Museum.

As the museum's first curator, Howley is more widely known for his 1915 book on the Beothuk. While his interest in the Beothuk was largely historical, he made a collection of artifacts that eventually made their way into the museum. Prior to the construction of the Newfoundland Museum on Duckworth Street, Howley's collection was on display on the second floor of the Post Office on Water Street from 1887 onward (Figure 2).

With the opening of the Newfoundland Museum in 1911 (Figure 3), the collection was reorganized and expanded by Howley. Many of the objects included in Howley's collection are now recognized as belonging to a number of Indigenous cultures that date back some 5500 years. Many of these objects can be identified by their old catalogue numbers (which predate the current use of the Borden System), and themselves have added historical value as the original objects of the old museum.

A contemporary to Murray and Howley was T.G.B. Lloyd who is credited with the earliest published reference to archaeology (during the mid-1870s) in Newfoundland. Also working as a geologist, Lloyd spent three summers here and described archaeological sites and relics in both Labrador and Newfoundland. Lloyd's collection made its way to the

Figure 3: Former Newfoundland Museum on Duckworth Street.


CATALOGUE
of
EXHIBITS OF NATURAL HISTORY AND CURIOS
IN ROOM ON SECOND FLOOR
OF MUSEUM

Case No. 1

No	Name of Specimen	Locality	Presented by
1	Handcuffs	Dug up on King's Rd.	
2	Manacles	" " " "	
3	Piece of stone step of old Government House	Duke of York Street	F.Kenny
4	Shackle of great chain which once stretched across the narrows to prevent the entrance of hostile fleets.		Thos.McGrath
5	Old fashioned shoe blacking pot	Ruins of old Garrison	
6	Boulders supposed to be used in weighing fish		
7	Curious Fungus growth	Campbell's Grove, Long Pond	Mr.Phelan
8,9,	Shot & Shell	Ruins of Fort Wm.	Capt.Noble
10	Loaded bomb unearthed while excavating site for Central Fire Hall		Inspector Sullivan
11	Stone Shot		
12	Grape Shot	Fort William	Rev.Dr.Harvey
13	Old fashioned Ink Bottle	Old Garrison	
14	Branch cut from Juniper Tree	Alex.Bay, B.L.	Hon.G.Skelton, M.D.
15	Fungus growth on Spruce Post	" " " "	" " " " "
16	Section of a Poplar tree found near R.C.Cathedral. When cleaved showed where a knot had been sawed off showing its younger stage of growth etc.		
17	Specimens of Polished Wood: as follows:- (1) Mahogany (2) Sycamore (3) Nfld. Sycamore (4) Magnolia? (5) Oak		W.J.Clouston

- 1 -

Figure 4: Part of an original artifact inventory list from 1934.

British Museum, where it remains curated to this day. Prior to any government regulation, it was common during the late 19thC to see individuals and museums from around the world make collections such as these.

In 1927, Canadian anthropologist Diamond Jenness conducted fieldwork in Newfoundland in an attempt to locate Beothuk sites and to look for connections to the pre-Inuit culture that he named Cape Dorset. In 1929, W.J. Wintemberg, also with the National Museum of Canada followed up on Jenness's work and unequivocally identified the Dorset culture. These studies were conducted under Canadian authority, and as such, their collections remain in federal care at the Canadian Museum of History.

In 1927 and 1928, William Duncan Strong conducted two seasons of archaeological research in Labrador between Hopedale and Nain, and suggested the presence of an earlier "Stone Age Culture" that predated the Inuit and contemporary First Nations peoples. While he was essentially correct, his techniques and observations were preliminary and too coarse grained to recognize that he was looking at a number of earlier cultures that spanned thousands of years. Interestingly, Strong's personal records, now part of the Smithsonian Anthropological archives, indicate that he had been granted a license "allowing him to enter the area", presumably from government officials of the day. A copy of the "Rules and Regulations of the Field Museum of Natural History" is also contained in the archive, which states that objects collected are the "exclusive property" of the Museum.

The year 1934 marked a dark period for the care and management of historic resources for the Government of Newfoundland. With the dissolution of Dominion Government, the Museum on Duckworth Street closed and the collections were transferred to various holding centers. An unknown number of objects, documentation and provenience were lost during this period. Efforts to reconstitute the Museum's collections were made in the 1940s and throughout the 1950s from original artifact inventories (Figure 4). Eventually, with the support of the post-Confederation government and by way of newly adopted legislation, the Museum re-opened its doors in 1957. However, between 1934 and 1957 a handful

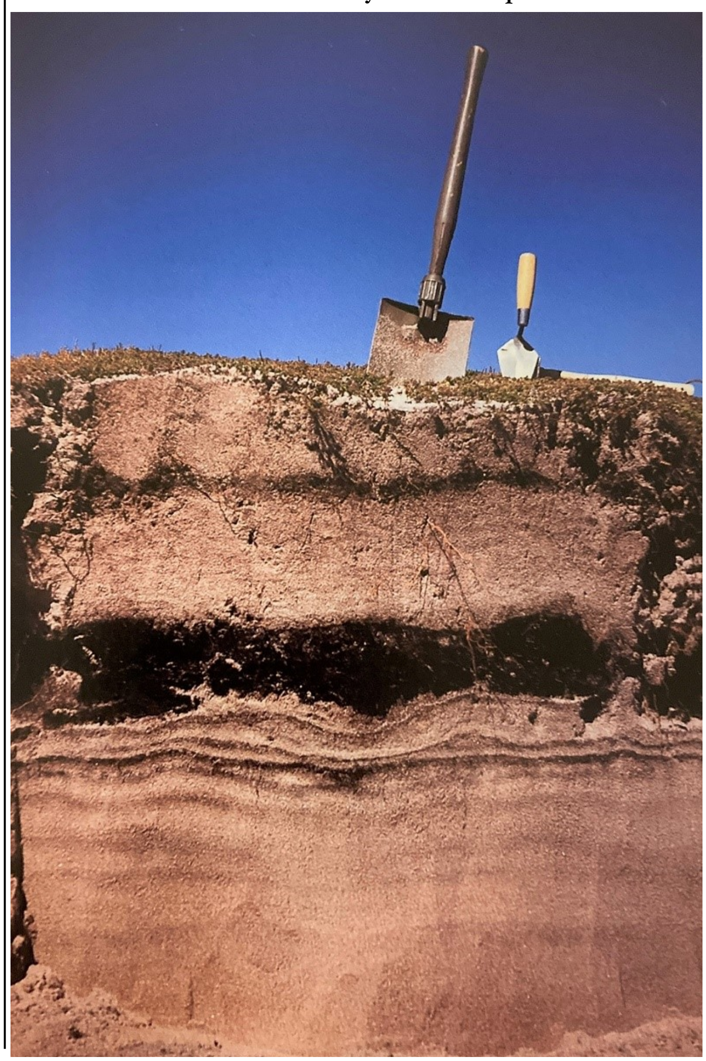
Figure 5: Excavation of an Inuit house by Junius Bird.

of archaeological investigations were undertaken, including some of the first work in Ferryland.

Of all the archaeological investigations conducted during this period, perhaps the most significant was the work conducted by Junius Bird in Hopedale. Bird was an American archaeologist working out of the American Museum of Natural History. During the summer of 1934 Bird, his newly wed bride and Heinrich Ursakn, an Inuit assistant, surveyed and excavated a number of areas around Hopedale. From this work, he discovered 44 house pits and excavated 22 of them (Figure 5). Many of the finer details were lost during Bird's excavations. Nevertheless, this represents one of the earliest archaeological investigations in Labrador. The resulting collections remain curated by the American Museum of Natural History. Bird's 1945 report on this work indicates that he also sought and received permissions to undertake his research from both the Government of Newfoundland and the Moravian Missionary Society.

Another American archaeologist who began his investigations during the late pre-legislative period was Elmer Harp Jr. out of Dartmouth College. Harp began his work in Newfoundland in 1949 with survey work in the Strait of Belle Isle (Figure 6), and documented some of the province's earliest sites. During this expedition, Harp also visited the large Dorset site of Phillips Garden, which eventually became a National Historic Site. In 1950, Harp returned and discovered its well-preserved dwellings containing chert, bone, and ivory tools. These excavations formed the core of his Harvard PhD dissertation, in which he identified Newfoundland Dorset and linked its origins to the Central Canadian Arctic and beyond. Harp's continuing investigations at Phillip's Garden is arguably the first full-scale "modern" archaeological dig in the province. His work was also foundational to the establishment of the National Historic Park,

Figure 6: Stratigraphy of a L'anse Amour site excavated by Elmer Harp.



and paved the way for Priscilla Renouf's 30+ years of work in Port au Choix.

Part 2 - Post-Confederation Heritage Management[2]

The management of provincial heritage was initially established with *The Public Records Act* (1951). By definition, Public Records were defined quite broadly, and included: "things of historic, artistic, scientific, or traditional interest".

Following this initial legislation, *The Historic Objects Preservation Act*, was passed in 1955 and provided two significant definitions: (1) "historic object" and (2) "object of an archaeological nature". This was the first explicit legislative reference to archaeological resources in the Province. This legislation also stated that No person shall acquire ownership of any historic object: 1) by reason of its discovery; 2) by discovery on private land; 3) or by its transfer to an individual by another person; and that no person shall remove from Newfoundland any object of an archaeological nature. These provisions marked the beginning of archaeological resource management in the province. They have also remained remarkably consistent, and are the basis for protection of historic resources today.

The passing of *The Museum Act* in 1956 established the legislative basis for the re-opening of the Newfoundland Museum, and set out its roles and responsibilities. As such, it was stated that the governing board MAY procure objects of "historical value and importance". Notably, there was no reference to archaeological materials or any requirement to take such materials at this time. In fact it was not until recent amendments to The Rooms Act, that the "museum" or in this case, The Rooms became the official repository – although it had long served that role.

The passing of the *Historic Objects, Sites and Records Act* in 1959 brought together Historic Sites, the Newfoundland Museum and the Provincial Archives, and was a big step forward for the management of archaeological resources. More specifically, this Act required that "Any person who discovers an historic object…in or forming part of the soil shall report the discovery…to the board stating the nature of the object, the location…and the date of discovery". This represents the beginning of archaeological regulation and the genesis of what we refer to as a Site Record Form –which all archaeologists are required to complete when they find or revisit an archaeological site.

A major turning point in archaeology in the province was the establishment of the Archaeology Unit by Memorial University in 1967 –which began with the hiring of its first archaeologist, James Tuck. Tuck was instrumental in establishing much of the pre-contact Indigenous history of the province and then went on to excavate the Basque whaling station in Red Bay, and established the Archaeology project in Ferryland.

With the establishment of the Archaeology program, Jim would also train the first generation of homegrown archaeologists –a number of which would become consulting archaeologists in the province. Tuck was also among the first archaeologists in North America to recognize the benefits of community-based archaeology, which he brought to Red Bay and Ferryland.

Tuck's work began in Port au Choix, which put Newfoundland on the world stage following his investigation of the late Archaic Period cemetery. His analysis of the burials, which were accidently discovered during the excavations for a local theatre, formed the basis to what we now know as the Maritime Archaic Tradition. The stoppage of this work and the subsequent excavation was arguably the first large scale cultural resource project in the province and one that confirmed the need for government review of development projects.

Lesser known is Tuck's working relationship with government which coincided with the establishment of the Historic Resources Division within Provincial Government. Glimpses of this relationship in our records indicate Jim's contributions to the development of policy and regulations. For example, a 1969 Report on Salvage Archaeology indicated his participation in "The Council for Canadian Archaeology", which raised concerns nationally about the loss of archaeological sites, and measures that need to be taken.

In another report entitled: "Salvage Archaeology", Tuck stated that he was working with Memorial University Administration, the Department of Provin-

2 Much of this section re: the Acts was based upon Erwin 2009 *Best Practices in Heritage Resource Management*.

cial Affairs, Provincial Parks, Mines and Natural Resources, and the RCMP to remedy the situation. He suggested hiring someone to coordinate a salvage program that would require the review of government land use plans prior to construction. From these examples, there is little doubt that Jim's efforts contributed directly to historic resource management in the province and ultimately the development of the Provincial Archaeology Office.

The formation of the Historic Resources Division in 1968 under the direction of David Webber marked an important shift in the management and a major overhaul of the existing legislation. This realignment brought together the Newfoundland Museum, Provincial Historic Sites and Archaeology with the passing of the *Historic Objects, Sites and Records Act* in 1970. This new Act established archaeology permitting requirements, and provided requirements for conducting archaeological work in the province.

The Newfoundland Marine Archaeology Society (NMAS) was formed in 1972 and would go on to survey and excavate a number of underwater sites in conjunction with the Historic Resources Division over the next decade.

The 1973 Act, among other things, transferred authority over the Act from a "Board of Trustees" to the "Minister of Tourism" –a responsibility that remains theirs today. That same year, a new federal government program began providing financial assistance to Canada's provincial museums. With that, the Newfoundland Museum adopted more modern approaches to its exhibits.

The late 1960s also saw the beginning of the Smithsonian's contributions to archaeology in the province with William Fitzhugh's investigations in Labrador and the publication in 1972 of "Environmental Archaeology and Cultural systems in Hamilton Inlet, Labrador" –A document, which today, is still widely consulted for its contributions to culture history from 3000 B.C. to the present. Pioneering work by Fitzhugh and his colleagues contributed to Labrador Inuit self-government through scholarly contributions to Carol Brice-Bennett's edited volume "Our Footprints are everywhere" –which employed historical, ethnographic and archaeological evidence supporting Labrador Inuit occupancy.

Smithsonian work continued for another 20 years and included the 1977-78 Torngat Archaeological Project and facilitated a number of notable careers in archaeology, including Stephen Cox, Susan Kaplan, and Stephen Loring, to name a few. Smithsonian investigations resulted in the discovery of about 350 archaeological sites and laid much of the foundation for Labrador's archaeological history. One of the more notable sites discovered in this survey was Avayalik Island 1. Located in the Torngat Mountains (now under Nunatsiavut / Parks Canada joint management) about 25 km south of the northern tip of Labrador, this site was a nearly perfectly preserved Middle and Late Dorset occupation that contained a semi-subterranean rectangular house structure (Figure 7). Richard Jordan, who led the investigation of this frozen site, found the first well-preserved wood and bone artifacts recovered from a Dorset site in Labrador. These included bone and ivory charms, wooden bowls, boxes, and maskettes. Recent visits to this remarkable site indicate that melting permafrost and erosion threaten the site's preservation, and that excavation is required.

Figure 7: Smithsonian led excavation of site of Avayalik Island 1.

In 1980 to 1985, Jane Sproull-Thomson was the curator of Archaeology and Ethnology, who also doubled as a part-time Provincial Archaeologist. Callum Thomson served these roles from 1985 to 1988. Although the Thomsons might best be remembered for the "Archaeology in Newfoundland and Labrador" series of publications during their years, their efforts to advance cultural resource management are considerable and have had a lasting impact on archaeology in the province.

The year 1980 marked an important year with the passing of Environmental Assessment legislation that required archaeological assessment for government projects. In addition to EA assessments, Jane reported that by 1983, the Historic Resources Division had reviewed almost 200 government land use referrals, and that there was growing need for archaeological consulting in the province to undertake the assessment work. The Thomson's crowning achievement, however, is overseeing and ushering in the *Historic Resources Act* in 1985. The Act:

- Established the means to call for Historic Resource Impact Assessments
- Provides the Minister power to require municipal authorities to suspend authorizations for activities that threaten historic resources
- Provides for temporary stop work orders where resources are actively being destroyed
- Introduced penalties for contravening the Act.

While amended many times, the provisions of the Historic Resources Act relating to archaeology remain intact and are still among the best in Canada.

Up until that time of the establishment of a dedicated office of archaeology in 1988, the majority of the work had been undertaken by the part-time or temporary Provincial Archaeologist (when there was one), by Memorial University professors (when they had time); and by students (between classes and thesis writing). The first full-time Provincial Archaeologist was Linda Jefferson (who served in that role from 1988-1992). As an assistant to Jefferson, Martha Drake would take over the position as Provincial Archaeologist in 1993 for nearly 30 years, until her retirement in 2019.

As the Provincial Archaeologist, Martha oversaw the organization of the office and the modernization of cultural resource management practices. This work was possible by the growth of NL-based archaeological consulting, including Gerry Penney (who in 1978 undertook a survey of the Upper Salmon Hydro development as the province's first independent archaeological consultant). This first generation of consultants included Roy Skanes, Laurie McLean, Marianne Stopp, Bill Gilbert and Fred Schwarz.

In 1995, John Erwin was contracted by government to help update archaeological records, and to create a digital file of the site record inventory. That initial work eventually became the basis for the current GIS database that Stephen Hull created and continues to manage for the past 25 years. Today, the database is the official repository of the province's archaeological records and contains information for over 6000 archaeological sites. The database is a key development in the province's management of archaeological resources. As a research tool, it allows us to display all of the sites or query and display selected site data. With this technology, we can quickly and accurately assess archaeological potential, and make calls for impact assessments.

Under Martha, the function of the office also took on much greater significance and expanded in size as a result of the increasing numbers of land use applications (such as Crown Lands, mineral exploration, quarry permits and forestry). In this regard, Martha made a concerted effort to fully implement the powers of the *Historic Resources Act* by re-establishing and developing working relationships with other government departments to have all provincial land use applications forwarded to our office for review.

In 1999, the office started keeping a complete inventory of the number of reviewed applications. In that year, the office reviewed 319 applications. Under Martha, the number of referrals reviewed by the PAO grew tenfold over the years (see table of assessments pg. 56). This increased focus of land use resulted in the hiring of new staff, including Marianne Stopp, Mary Scott, Delphina Mercer and Ken Reynolds and Stephen Hull. In total, an estimated 1000 archaeological sites can be directly attributed to the assessment process under the PAO. By 2008, the PAO was not the only office in charge of managing archaeological resources. The passing of the Labrador Inuit Land Claims Agreement facilitates that.

Signed in 2005, the Labrador Inuit Land Claims Agreement is the first of its kind in the province and contains a chapter on the management of historic resources recognizing that the Labrador Inuit have an interest in, and a role to play, in their management of historic Resources. This chapter lays out in detail the means by which archaeological resources are to be managed and protected. Among many other things, the Agreement defines roles and responsibilities for the management of archaeological sites. For example, there is joint management of resources in the broader settlement area with the Provincial Government. The establishment of an Office of Archaeology by the Nunatsiavut Government (NG) was the first step in this process. Jamie Brake, the current Provincial Archaeologist for Newfoundland and Labrador, recently made recommendations toward the development of Labrador Inuit heritage legislation in his doctoral thesis.

Contributions of Cultural Resource Management – A Case Study

While academic research has played a vital role in the discovery and investigation of archaeological resources in the province, the contributions of cultural resource management are less well known. Over the last 30 years, the PAO has overseen many CRM projects, not the least of which was Voisey's Bay Mine, which set the standard for large-scale archaeological investigations in the province.

However, the largest and perhaps the most significant is the Churchill River / Muskrat falls Project. The archaeology conducted in association with the Lower Churchill is remarkable in scope and significance. The management of cultural resources in this project included Indigenous consultation and participation. In fact, since the late 1990s, the PAO has facilitated Indigenous engagement on this project. In 2012, GNL introduced Indigenous consultation guidelines for government departments and agencies specifically for the Project. Archaeological investigations were undertaken in a limited partnership by Stassinu Services Inc. and Stantec Consulting Ltd. from 2012-2019. Going forward, the eventual approval of Innu Nation Land Claims Agreement in Principal will form the legislative basis for the management of cultural resources by the Innu on their own lands.

The role of the PAO effectively began at the Environmental Assessment Stage, where we required that investigations identify both existing and potential archaeological sites that would be impacted by development. In overseeing the project from a regulatory point of view, the PAO provided all related records to the consulting archaeologists to facilitate the development of an archaeological program that would satisfy the requirements of the *Historic Resources Act*. The PAO's involvement from there included**:** the review and approval of project plans and methods; review and approve permit applications; review and approval of all interim and final reports; and review all artifact and cataloguing submissions.

In the first three years of the project, more than 32,000 test pits were excavated at nearly 1000 locations yielding over 250 archaeological and ethnographic sites. In subsequent years, another 10,000+ test pits were excavated across a further 170 locations (Figures 8 & 9). Over the length of the project, approximately 300 archaeological sites were discovered and approximately 80 ethnographic sites. As a requirement of the assessment, 47 sites required full mitigation. This work resulted in the excavation of nearly 4000 one-metre units. Site excavations were conducted during the final six seasons of the project. All major sites impacted by the project were subject to full excavation, which has resulted in a wealth of information and at a high level of detail and accuracy. All of this work was documented in over 1100 pages of final reports. Here are some excerpts illustrating some of the excavation results (Figures 10-12). The wealth and quality of information, site data, and the numbers of artifacts recovered from this work will facilitate decades of future research, particularly as it relates to the Archaic, Intermediate and late Intermediate First Nations occupation of the Labrador Interior.

One of the most intriguing discoveries to come out of this work has already been published. Hutchings' and Schwarz's (2021) chapter in the *Mercury Series Far Northeast)* provides evidence for the recognition of a ceramic tradition. Until recently, precontact First Nations ceramics were relatively scarce in the Provincial archaeological record. With the exception of the Gould site in Port au Choix, excavated by Teal in the late 1990s, there were no archaeological sites with sizeable collections of Indigenous ceramic sites in the province. On its own, the Gould site was an anomaly prior to the Lower Churchill discoveries. In fact, the First Nations culture history of the province, as originally conceived by folks like Tuck and Fitzhugh was notable for its lack of ceramics, and consequently tacitly accepted that there was no Ceramic period in Newfoundland and Labrador. This changed between 2012 and 2017 with the discovery

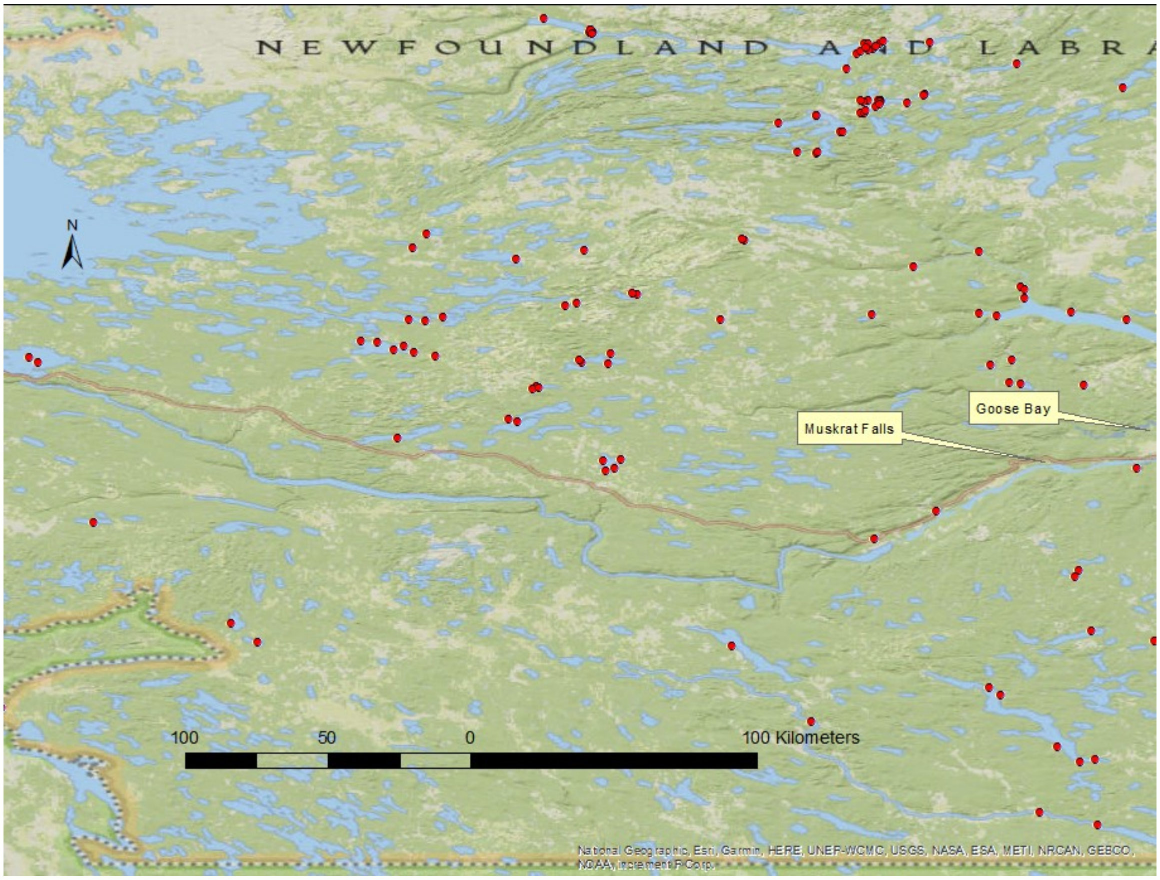


Figure 8: Archaeological sites (red dots) around the Churchill River prior to the Churchill River/ Muskrat falls Project.

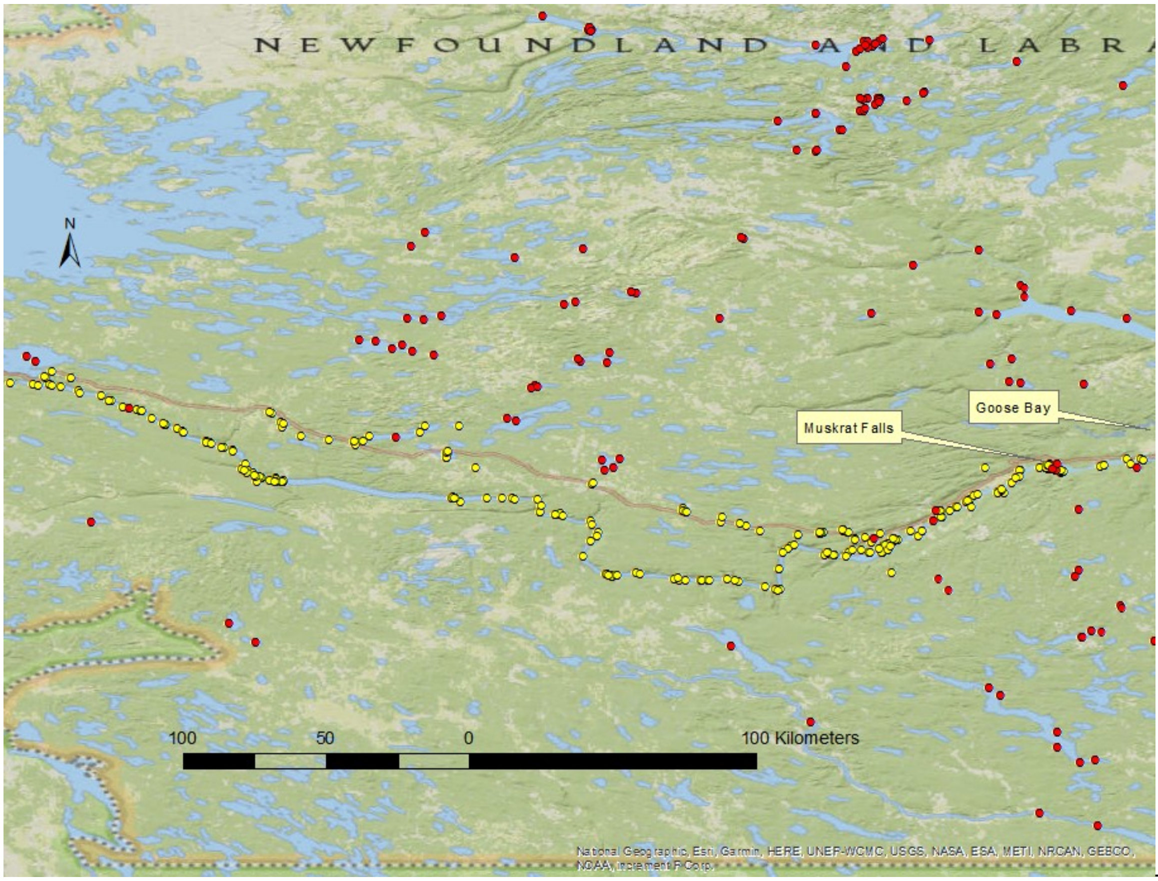
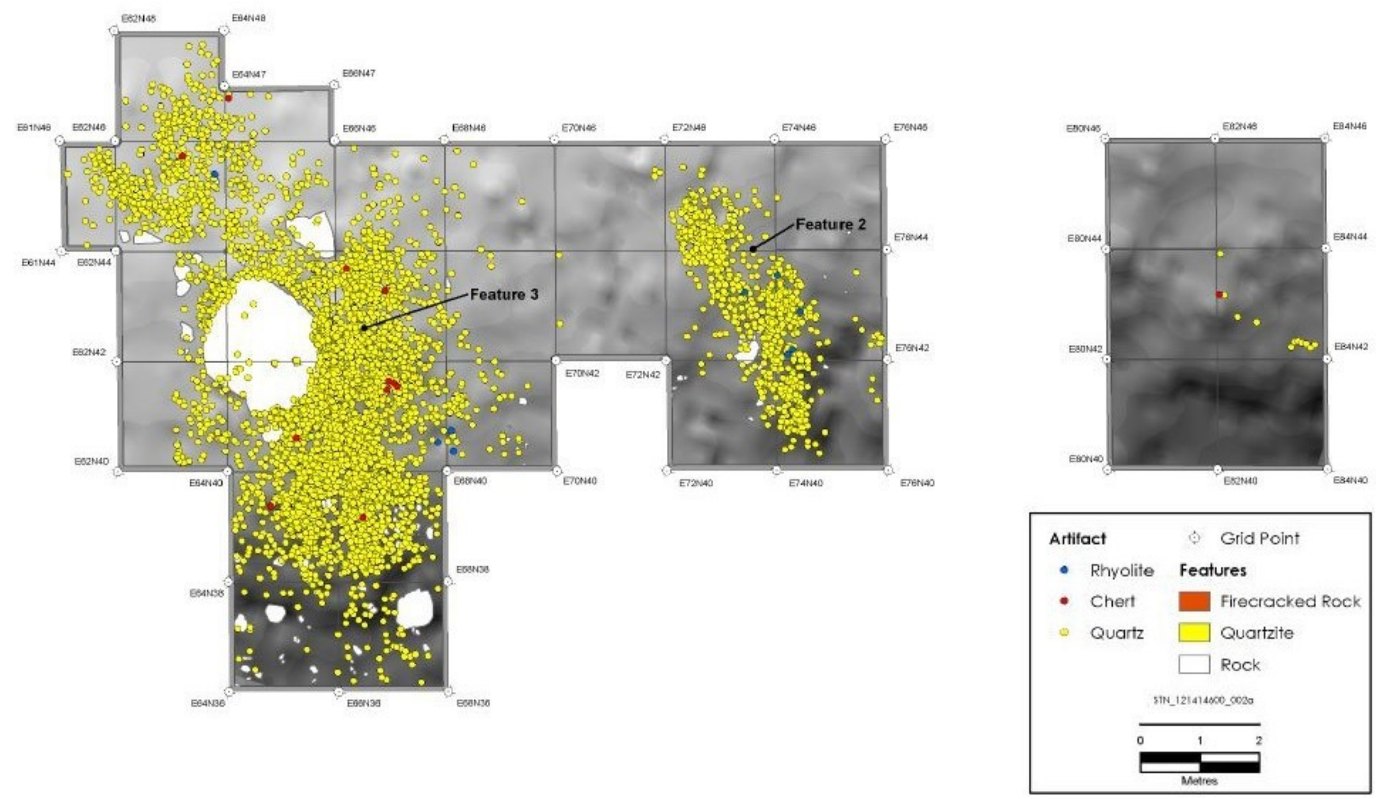


Figure 9: Archaeological sites (yellow dots) around the Churchill River found as a result of the Environmental Assessment required for the Churchill River/ Muskrat falls Project.

Figure 10: Drone photography of the excavation of FgCh-03.

Figure 11: Artifact and flake scatter LIDAR plots of the excavation of FgCh-03.



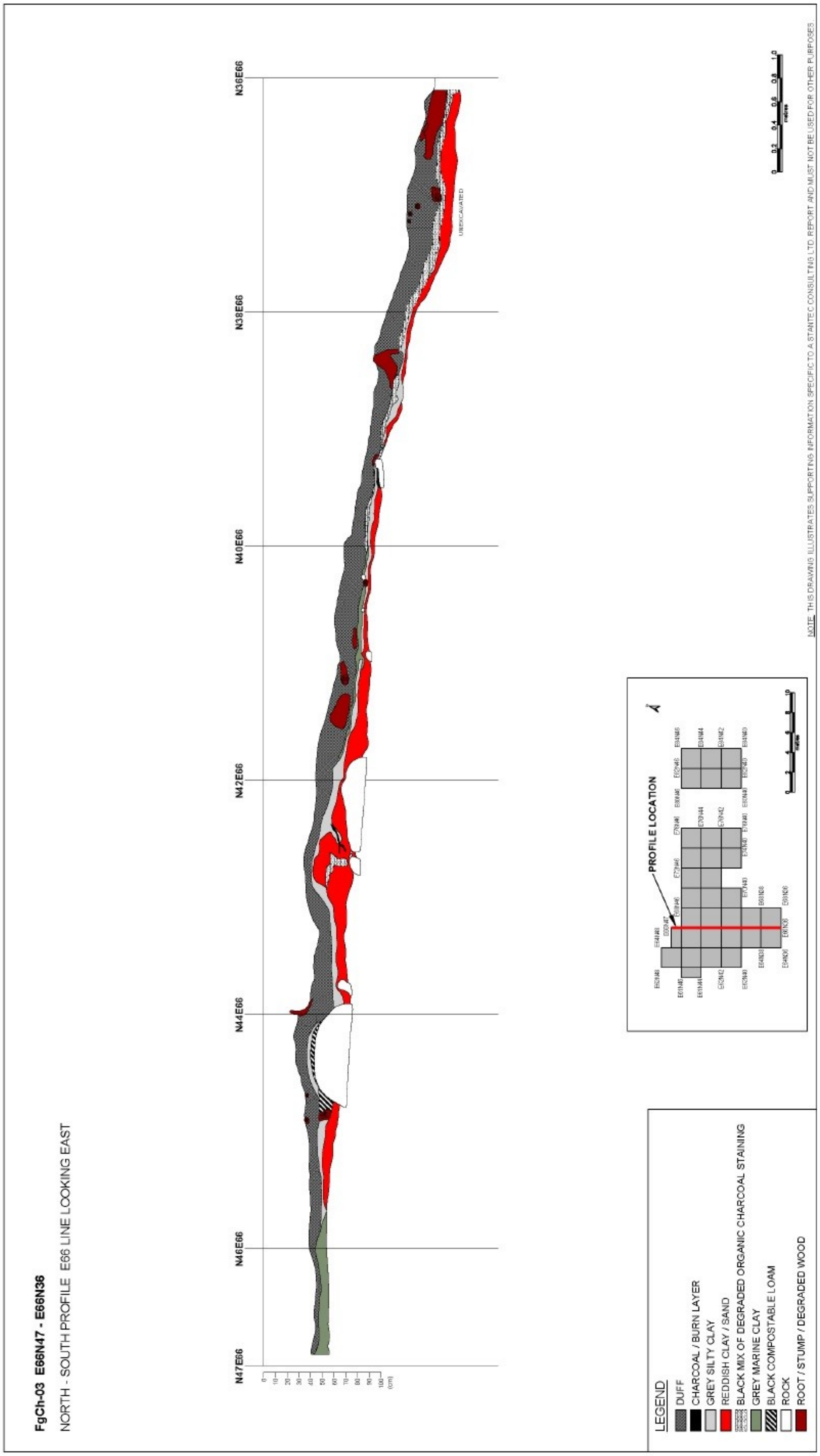


Figure 12: Detailed profile of the excavation of FgCh-03.

Figure 13: Feature 1, FhCe-21
interpreted as a potential ceramic firing pit (Hutchings & Schwarz 2021).

of 10 archaeological sites located along the Lower Churchill River, which contained pre-Contact Indigenous ceramics. Most of these appear to pertain to the North West River Phase in central Labrador that dates from 2000 to about 1500 years ago. In summary, three areas that yielded sizeable ceramic collections, and in all, 20% of the excavated sites along the Lower Churchill contained pre-Contact ceramic sherds. Moreover, if this were not enough, two of these sites yielded evidence for the local production of ceramics (Figures 13 & 14).

This research demonstrates that ceramics may actually have been a more common artifact class in central Labrador than previously believed and that pre-contact Indigenous ceramics are a key component of certain First Nations toolkits. In this regard, Hutchings and Schwarz have concluded that these ceramic assemblages, as well as the Gould site, appear to show Middle Woodland attributes and are datable to the same period. While they are not saying that these are Middle Woodland sites, they do demonstrate a degree of interaction with the greater Northeast, and perhaps with the north shore of the St. Lawrence, or even with the Maritimes.

In conclusion, there is tremendous value in historic resource management. The broad scale and the diverse nature of the work undertaken by government archaeologists may not always be apparent to many. As a continuous process, cultural resource management may not have the prestige of academic research, but it does form the largest part of archaeological investigations in the province and, indeed, across Canada and the world. As such, it can be said that heritage legislation has contributed to the creation of a global archaeological record.

Postscript:
We Also Manage Fossils

The PAO also is in charge of fossil regulations. In 2001, the *Historic Resources Act* was amended to include Palaeontological resources. While fossils have

Figure 14: Detail of decoration and residue of selected sherds from FfCh-02 (Hutchings & Schwarz 2021).

long been recognized in the Act as a "Historic Resource", our office is also tasked with the permitting process. Luckily, we have colleagues at The Rooms and in the Department of Natural resources who review the technical aspects of the permits and we take care of the paperwork. Despite our limited role in the process, our office played a small part in one of the province's most important fossil finds. In 2009, *Haootia quadriformis* was discovered in the Port Union area. A 560-million year-old fossil interpreted as the oldest known complex muscled animal in the world. "*Quadriformis*" (for its four-radial symmetry) and "*Haootia*", the Beothuk word for devil or evil spirit, which reflects the specimens' squished bat-like imprint. While the province generally does not allow the removal of fossils from their beds (as a best practice), this specimen was in danger of being lost to the elements. In this regard, we were tasked with a site visit to confirm the state of the fossil and recommended its removal (Figure 15).

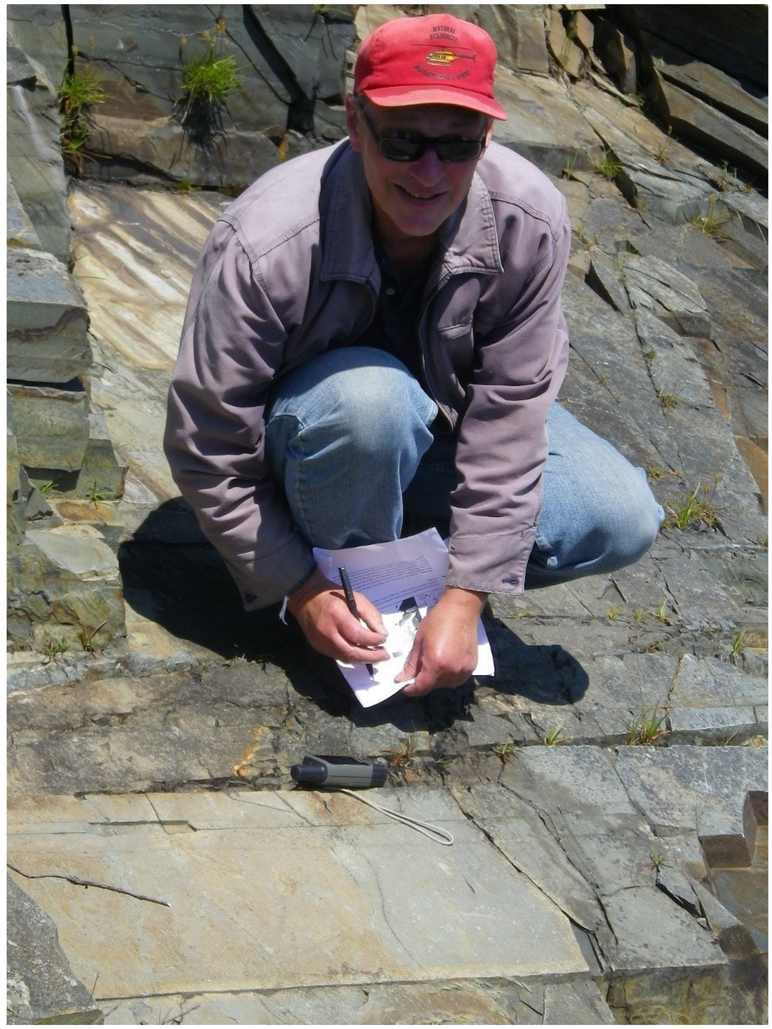


Figure 15: Provincial Archaeology Office colleague Ken Reynolds checking on the condition of the *Haootia quadriformis* fossil.

~~~~~

PAO Fieldwork

22.39 Conception Bay Survey Project

In the spring 2022, the PAO undertook a modelling exercise to determine areas of high archaeological potential for the whole of Conception Bay. The purpose of this was to examine the notable lack of Indigenous sites in this region. Select areas were field-tested in August. The following is the result of these investigations.

Of the 146 archaeological sites in Conception Bay, nearly all relate to the fishery and European settlement (Figure 1). In fact, there are only four Indigenous sites: 1) Cape St. Francis (CkAe-01) an undetermined pre-contact spot find, 2) Paradise Hill Chert Source (CjAf-16), a possible lithic quarry; 3) Upper Island Cove (CjAh-29), a petroglyph site tentatively identified as historic Mi'kmaq; and 4) Manuels Head Burial (CjAf-01) – a possible Beothuk internment. This lack of known archaeological sites is consistent with historic observations made by Richard Whitbourne in 1582, who suggested that "there is not the least sign or appearance that ever there was any habitation of the savages or that they ever came into these parts southward of Trinity Bay" (Howley 1915:20-21). While historic observations are not always reliable, the archaeological record suggests that Whitbourne's observations may not be far from the truth – considering that thirty percent of the 145 known sites in neighbouring Trinity Bay are Indigenous in origin.

In view of John Guy's reports of Beothuk encounters during his early years in Cupids, and the discovery of a Beothuk occupation in Ferryland, the seeming lack of Indigenous sites in Conception Bay does seem rather curious. It has been suggested that the paucity of Indigenous archaeological sites may be due to their destruction by more intensive historic European development (McLean 2014:5). It may also be that Indigenous land use was limited on the Avalon Peninsula for reasons that are not yet understood. In contrast, Conception Bay is home to some of the province's earliest European settlements. In fact, by
~~~~~

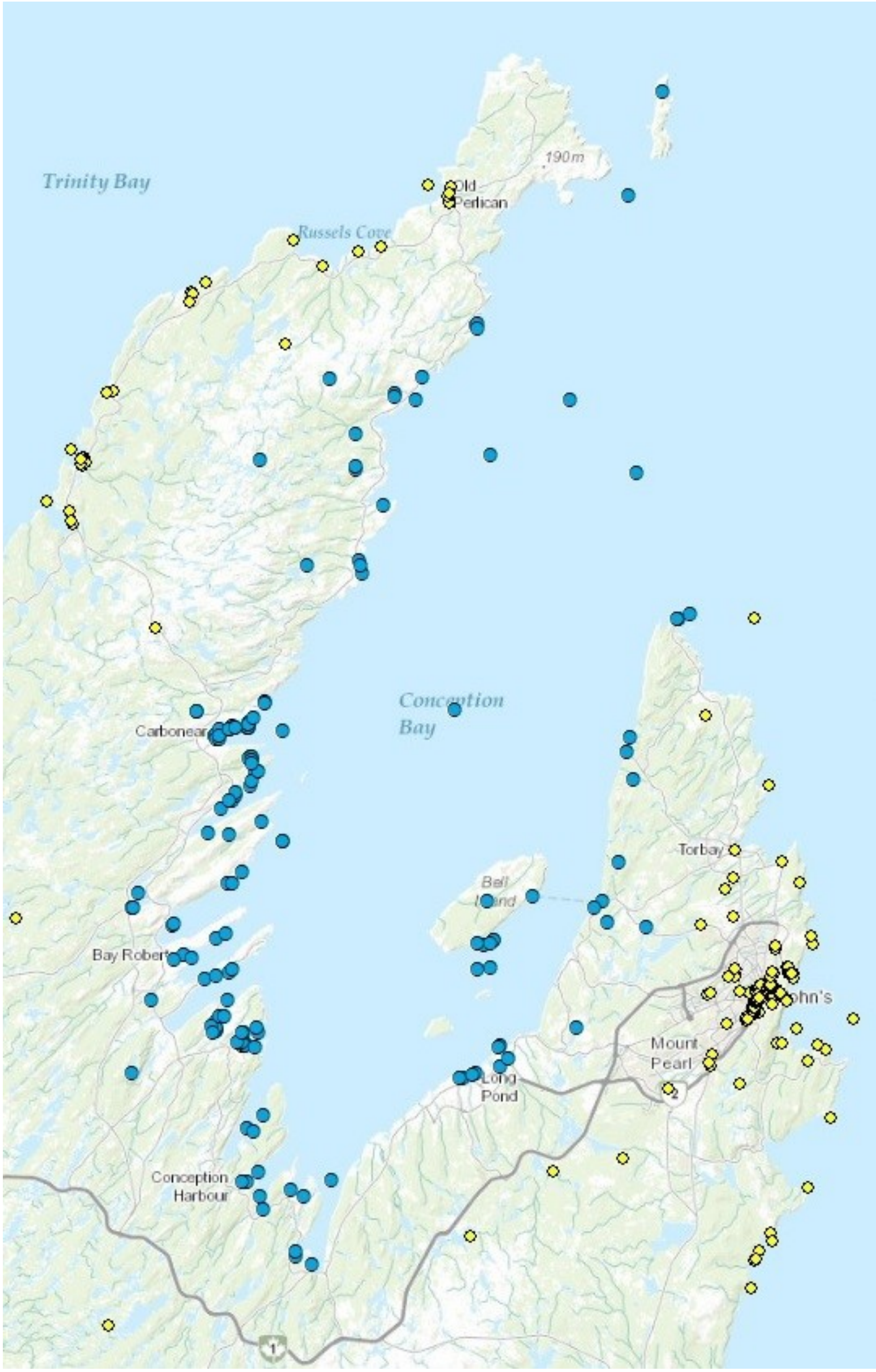


Figure 1: The 146 known archaeological sites in Conception Bay.

the time that Guy settled Cupids Cove in 1610, Conception Bay had a well-established migratory fishery. Known historically for its marine resources as early as the 16th century, the head of Conception Bay appears on Portuguese maps as "Baia de Conceiocao" while Baccalieu Island bears its Portuguese name (Penney 1989:2). By 1675, Carbonear was well established along with much of the shore to as far as Holyrood. See McLean (2014:5-7) for a brief overview of the European history of Conception Bay.

The history of archaeological research in Conception Bay has largely been recent and dominated by CRM-related work (e.g. Brown 1988; Erwin 2004; McLean 2014; Penney 1989; Skanes 2015; Tuck 1978, 1984). Notwithstanding the significant multi-year archaeological investigations by Gilbert at Cupids, there have been only a handful of multi-year academic projects, which included, for example:

- NMAS (1988-89), and Keeping and Burgess underwater surveys (2014-2020);
- JWEL's 2004 and Skanes 2010-2014 investigations of Carbonear Island (Skanes 2019);
- Pope's 2011-2013 surveys of early European activities in Carbonear (Pope 2016);
- Vaughan Grimes's cemetery investigations at Foxtrap-2 (2017);
- Barry Gaulton's investigations of the petroglyph site at Upper Island Cove (Gaulton et al. 2019).
- Gerald Penney's study of Historic Resource potential of Carbonear Bay (Penney 2011).

While the full archaeological potential of the aforementioned projects remains to be fully explored, the majority are historic in nature. While the PAO has conducted a number of small surveys in the region, the majority of research is conducted on an ad-hoc basis per local request and/or land use referral.

Modelling Archaeological Potential

From time to time, the PAO has commissioned desktop surveys on the archaeological potential of selected areas of the province. Two recent projects involved the study of archaeological potential on former Abitibi lands in the Exploits Valley and Beothuk Lake (see Rast and White 2018; Tapper 2019). These Directed Research Projects used a set of criteria developed and employed by Schwarz and Schwarz (see 2014a, 2014b) that analyzed site locations on 1:50,000 National Topographic Systems (NTS) map sheets that combined cartographic and air photo analysis, archaeological, historical, and ethnographic data combined with decades of field experience in Newfoundland and Labrador. The modelling for these areas relied heavily on the presence/absence and "order" (High/Low) of waterways, the presence of hydro obstacles (falls and rapids) and known archaeological sites. Other factors included slope (< or > 15°), bogs, water bodies and "nodal areas" described as confluences, where multiple waterways converge, or constrictions where points of land or small offshore islands are found (see Schwarz and Schwarz 2014: 10, 33-35).

Although these models were designed for and focused on interior locations for the Island of Newfoundland, it has been the intention of the PAO to modify certain variables for coastal and inner coastal modelling of historic resources. As such, the inclusion of coastal areas in historic resource modeling also requires the consideration of factors such as post-glacial palaeo-coastal environments. To this end, Tapper's (2019) modelling did address the possibility of raised and submerged coastal landforms that may have been attractive for habitation by precontact populations (Tapper 2019:18). As such, sea level changes can be employed to help predict ancient site locations. From Catto *et. al.* 2000, it is noted that: "Extrapolation from the data available for northeastern Placentia Bay and western Trinity Bay suggests that sea levels fell to between 10m and 25m below present during the early Holocene" and that after about 6000 years ago, the sea level has risen steadily to its present position".

In 2019, Hinterland Associates on behalf of the PAO conducted a desktop assessment for the Island of Newfoundland to predict and model the impacts of the effects of climate change for the island of Newfoundland's coastal resources for the next 10, 50 and 100 years. This work included assessments of coastal erosion, sea level change, and vulnerability of known archaeological sites. The mapping of coastal erosion for Conception Bay indicates a wide range of conditions (from "very low" to extremely high"). This data is useful insofar as it is understood in context with the type and elevation of the shoreline. For example, a rocky steep coastline may have little coastal erosion, but also have low or no archaeological potential because of a lack of accessibility to the water. As such, coastal sensitivity is an important fac-

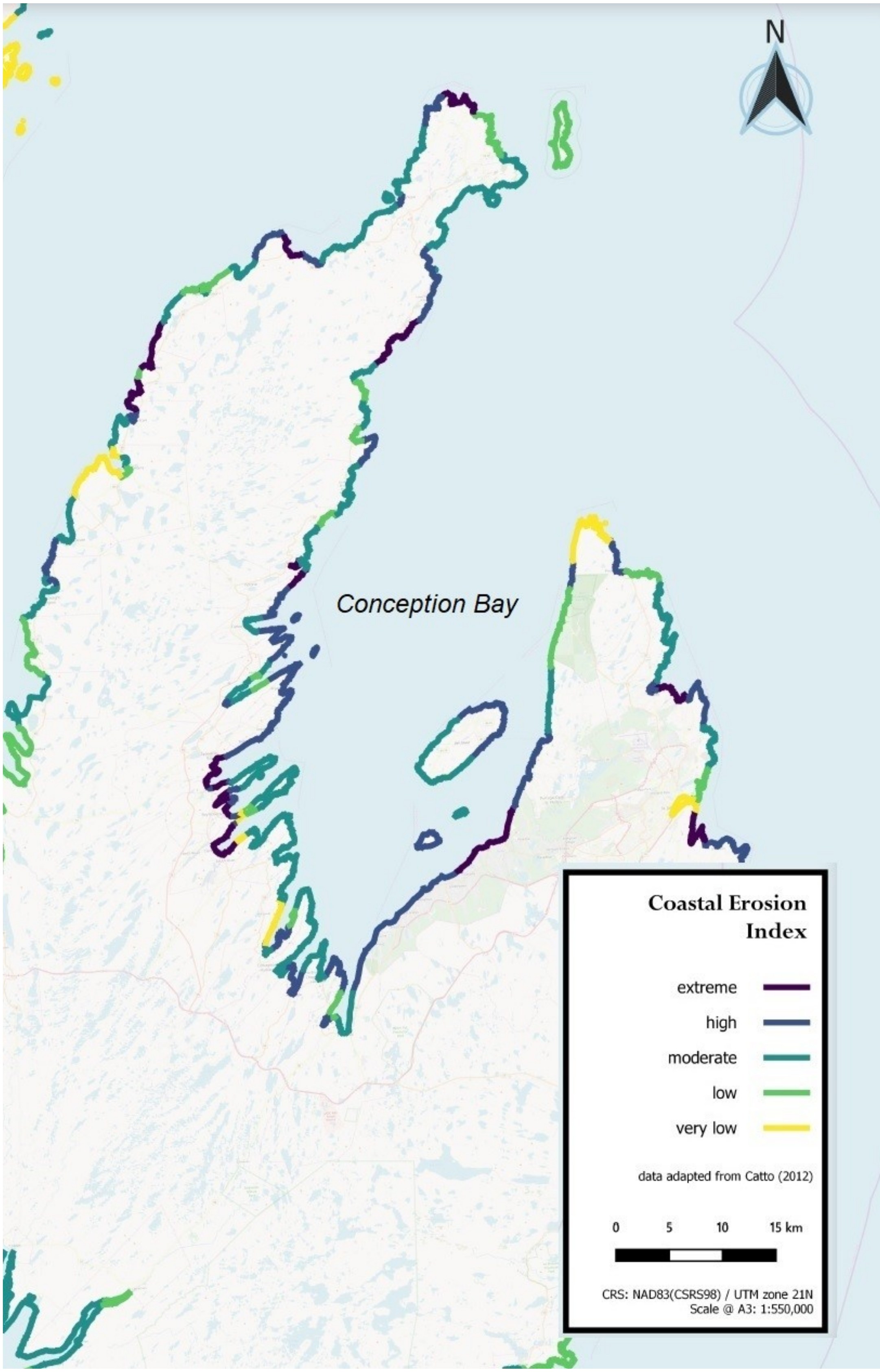


Figure 2: Coastal Erosion Index, from Hinterland Associates.

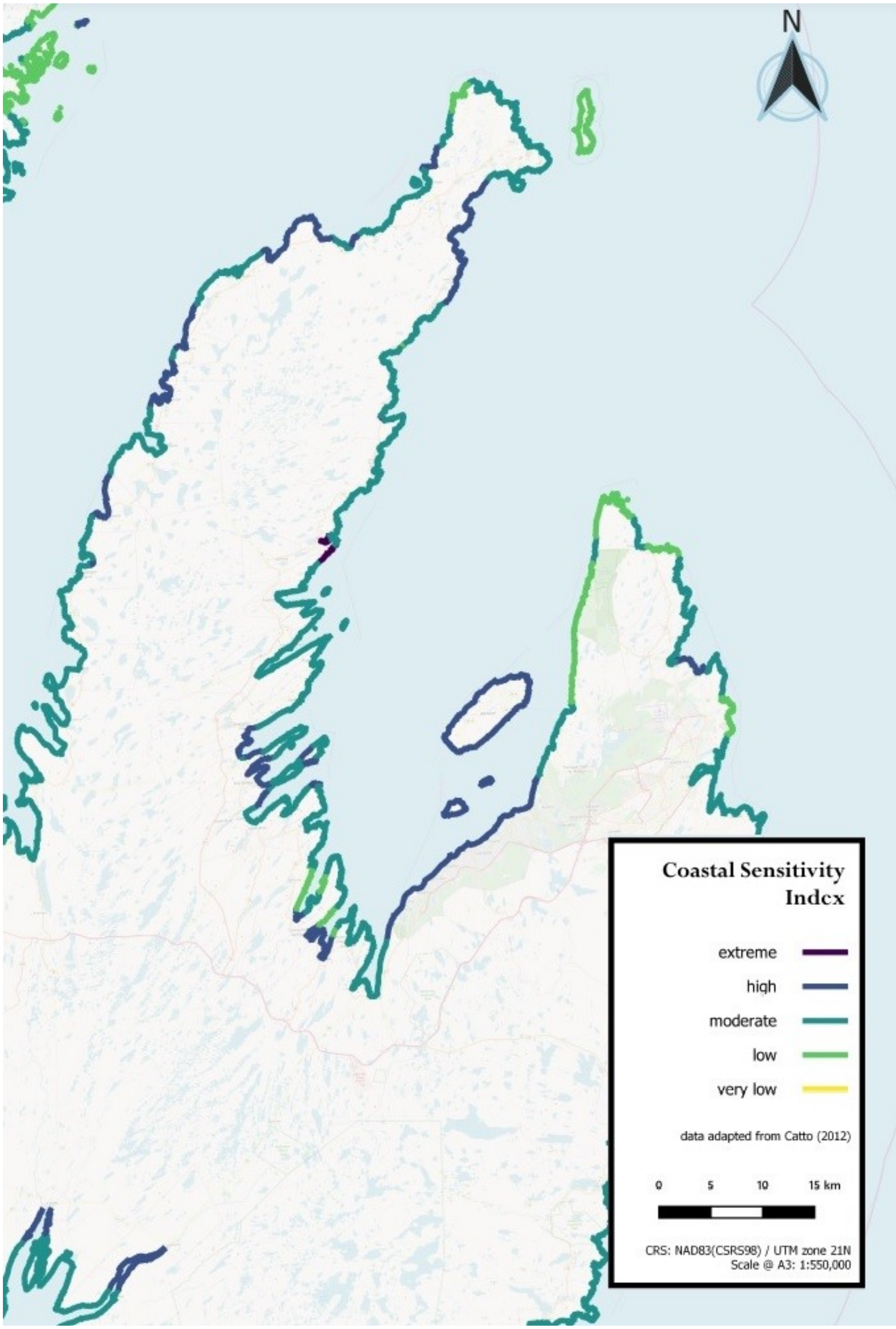


Figure 3: Coastal Sensitivity Index.

Community	Location (metres)	Erosion Index	Sensitivity Index	Justification	Survey Result Summary
Caplin Cove (north)	-5898194 6113246	High	High	Water source, accessible sandy flat beach	Ruins of former community wharf
Gull Island	-5904526 6099118	Extreme	Moderate	Water source, ocean access, flat low elevation	Not tested
Northern Bay Sands Provincial Park	-5908717 6096579	Moderate	Moderate	Water source, ocean access, flat low elevation, sandy beach	Not tested
Ochre Pit Cove	-5907457 6091919	Moderate	Moderate	Water source, ocean access, flat low elevation, place name	Steep cliff face with red ochre deposits eroding onto the beach
Western Bay I	-5909419 6088079	Low	High	Water source, ocean access, flat low elevation	Not tested
Western Bay II	-5908959 6087513	Low	High	Water source, ocean access, flat low elevation	Not tested
Broad Cove (north)	-5910849 6080331	Moderate	Moderate	Water source, ocean access, flat low elevation	Area is impacted by both coastal erosion and cultural modifications. Developed as a day park, there is ample evidence of camping and fires on the beach.
Salmon Cove	-5917574 6070831	Moderate	Moderate	Tombolo beach, ocean access, flat low elevation	Not tested
Clown's Cove	-5920450 6066632	High	Moderate	Water source, ocean access, flat low elevation	Not tested
Crocker's Cove	-5922048 6064203	High	Moderate	Ocean access, flat low elevation	Not tested
Mosquito Point	-5920235 6061982	High	Moderate	Exposed peninsula, nearest point to Carbonear Island	Not tested
Bristol's Hope	-5921850 6060273	High	Moderate	Tombolo beach, ocean access, flat low elevation	Not tested
Riverhead	-5928463 6052210	High	Moderate	On point of land inside harbor, near water source	Not tested
Rolling Cove	5918909 6056471	High	Moderate	Exposed peninsula, nearest point to Harbour Grace Islands	Not tested
Bryant's Cove	-5920971 6052964	High	Moderate	Tombolo beach, ocean access, flat low elevation	Stone lined historic gardens, root cellars
Upper Island Cove	-5922504 6048540	High	Moderate	Irregular low lying tombolo beach	Not Tested
Caplin Cove (south)	-5925709 6033732	Moderate	High	Deep Cove on the end of a long peninsula, level, low lying, proximity to Cupids	Historic remains of cellars, gardens and associated buildings
James Cove	-5920568 6022070	Low	Low	Protected harbor, former community, low lying with ocean access	Revisit of an existing archaeological site, no evidence was found for Indigenous occupation
Broad Cove (south)	-5921568 6013186	Moderate	Moderate	Wide, low lying accessible beach	Wide cobble beach with boggy area behind, little habitable area
Kelligrews T'railway	-5902819 6024222	High	High	Old railway deposits reported eroding from embankment	Active eroding beach, numerous signs of railway use, no iron debris as reported.
Lower Horse Cove	-5889139 6036292	High	Moderate	Wide, low lying accessible beach	Boat launch, signs of recent activities, including bon fires, camping.

Table 1: Areas of High Archaeological Potential to be Tested and Result Summary.

tor in reading coastal erosion mapping. Combined with elevation data, the combination of these factors can be an important predictive tool to model where sites may have already been lost, or are in future danger due to rising sea levels and storm events (Figure 2).

Mapping of the Sensitivity Index for Conception Bay illustrates that the majority of the coastline has moderate to high sensitivity – which suggests that much of the coastline may be prone to coastal erosion from sea level change, and threats related to increased storm severity and frequency. It is important to note that at such broad scales, this type of mapping may "partially conceal local problem areas" Catto 2021:50) and as such, there is no substitute for site visitation, which can be used to refine this modelling. In view of the continuing threat to many of the province's coastal archaeological resources, risk assessment will be guided by this mapping (Figure 3).

Notwithstanding the limitations posed by the scale of this initial study, these indices can provide valuable information for archaeological survey planning purposes. It is in this manner that these data were employed to help identify the archaeological potential of the areas in the communities listed in Table 1.

All of the potential site locations in this review were identified using standard factors such as coastal accessibility, slope, wetlands, and proximity to waterways, hydro obstacles, known archaeological sites, historic and ethnographic references and areas where there has been limited historic development. Based upon a desktop review of the coastline using the PAO's GIS mapping and archaeological database, 20 areas were identified high archaeological potential. An additional area (Kelligrews T'railway) was included after a report of possible historic materials eroding from an embankment. Compared to climate change mapping, most of these selected locations have a high Erosion Index. This is not surprising given the locational parameters for habitation sites that favour low-lying coastal areas and that could accommodate small watercraft. However, as sea levels in Conception Bay are not rising faster than the rate of isostatic rebound, this factor does not appear to be a key determinant for the potential loss of archaeological sites –as evidenced by the moderate and low sensitivity of the majority of these areas.

Survey Results

On August 1, 2 and 5, 2022 and in accordance with permit 22.39, we conducted foot surveys at nine of the 21 areas in Table 1. The nine areas selected for survey were selected largely upon ease of access. In summary, no new evidence for Indigenous land use in Conception Bay was discovered on the basis of physical survey. Notwithstanding this result, three historic sites were identified. These include: (1) a former wharf in Caplin Cove (north), (2) stone-lined historic gardens, root cellars in Bryant's Cove, and (3) root cellars, gardens and associated buildings in Caplin Cove (south). Additionally, the historic site in James Cove was revisited and previously known ochre deposits in the community of Ochre Pit Cove were documented. A description of each area follows below.

Caplin Cove (north)

Location: -5898194, 6113246
Erosion Index: High
Sensitivity Index: High
Justification: Water source, accessible sandy flat beach
Survey Result Summary: Ruins of former community wharf

Caplin Cove Wharf (DaAf-03)

Caplin Cove is a small community on the northwest side of Conception Bay situated between Low Point to the north and Lower Island Cove to the south. First settled in the 1700s, the community, according to 1836 census records, included 44 inhabitants and became home to a small boat in-shore fishery (Figure 4). By 1935, the population surpassed 200, and slowly declined after that (NL Encyclopedia Vol. 1, p.344). Today, little remains of the infrastructure that supported the inshore fishery in Caplin Cove.

A 1980 article from *Decks Awash* (Vol. 9 No.6, pp. 19) suggests that the haul up and landing block at Caplin Cove, that was refurbished in 1973-74, and the rock ballast partially completed in 1976, was in danger of imminent collapse. Further, the local informants also noted: "The rock ballast is all slippin' away, except on the far side where part of it is fixed in concrete". After a brief review of the MUN Digital Archives, no further documentary evidence was found relating to the infrastructure at Caplin Cove, but it appears that the infrastructure failed at some time after 1980 (Figure 5).

Now gone, all that remains of the fishery in-

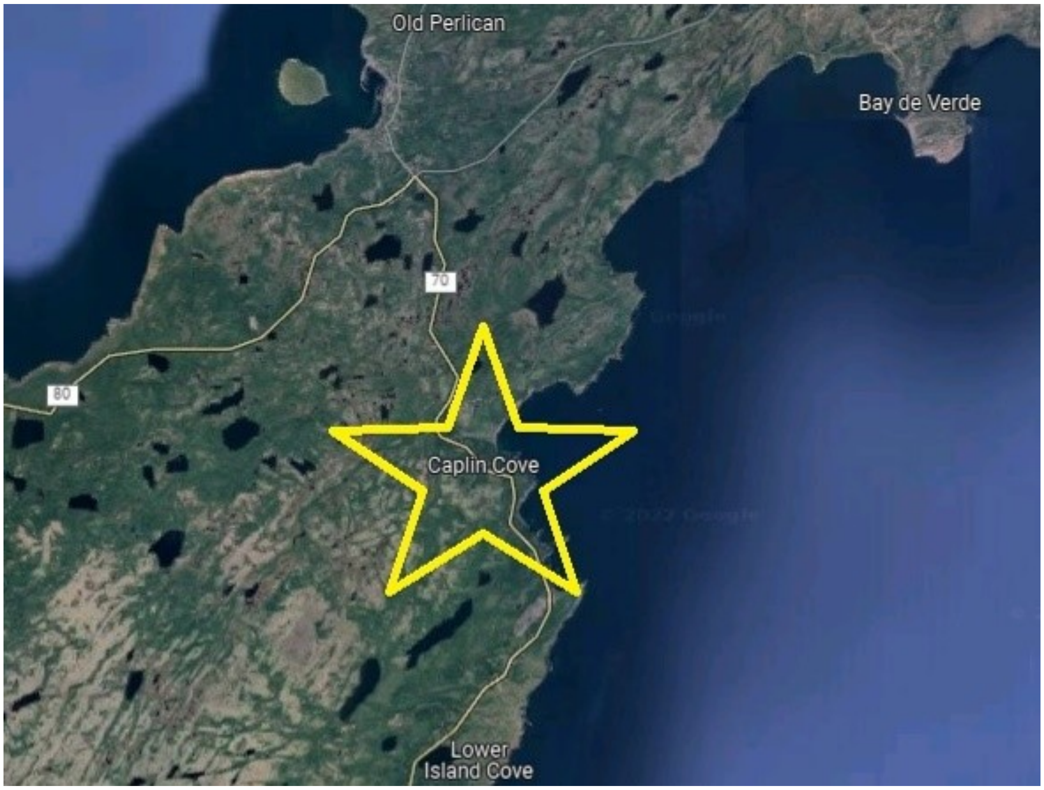


Figure 4: Location of Caplin Cove.

Figure 5: Fishing infrastructure at Caplin Cove.

Figure 6: Location of the Caplin Cove Wharf.

frastructure are steel and concrete ruins, including a rectangular concrete structure (see Figure 6 arrow for location) which presumably was a building related to the old wharf. On the basis of a preliminary foot survey, it is noted that the sandy beach is largely free of debris, save for a few metal poles found upright at a couple of locations, also likely remnants of wharf infrastructure. No subsurface testing was conducted in this area, nor were any significant artifacts noted. As for archaeological potential related to Indigenous use of the cove, the beach is highly susceptible to erosion, and the adjacent rock cliffs impede any access to much of the beach, save for locations at either end (Figure 7).

The area of highest archaeological potential is the area adjacent the stream, however, the combination of historic use and erosion has likely destroyed all evidence pre-dating the historic use of the site. Notwithstanding the relatively late destruction of the wharf, there is sufficient historic significance and potential for earlier deposits that merit designation as an archaeological site.

Ochre Pit Cove

Location: -5907457, 6091919

Erosion Index: Moderate

Sensitivity Index: Moderate

Justification: Water source, ocean access, flat low elevation, place name

Survey Result Summary: Cliff face with red ochre deposits eroding onto beach

Ochre Pit Cove Deposit (ClAg-15)

Ochre Pit Cove is a community located between Northern Bay to the north and Western Bay to the south where there is a well-known red ochre deposit (Figure 8). The earliest description may be found in the fourth book of *The English Pilot* (Marshall 1996:274) which notes "From Bay Verd's Head to Green Bay, is SW, about 4 leagues and a halt. This bay is above a league over…and a place in the bottom of the bay, where the Indians come every year to dig oaker to colour themfelves" (1775:9). In relation to the use of red ochre, James Howley described the Beothuk use, noting "Whatever may have been the real object, it was invariably indulged in, and several places around the coast are still pointed out where the In-

Figure 7: Remains of the Caplin Cove Wharf.

Figure 8: Ochre Pit Cove and the area surveyed (red line).

dians procured the red material. One of those in Conception Bay, is known as Ochre Pit Cove, another in the Bay of Exploits as Ochre Island" (1915:262). "The tradition of the Indians procuring red ochre at the place since called Ochre-Pit Cove, about six miles below Carbonear on the north shore of Conception Bay, has long been current" (Howley 1915:266). One of these stories, relayed second hand by Claudius Watts of Harbour Grace was that of Thomas Pike of Carbonear, who "remembered seeing an encampment of Red Indians on Carbonear Beach, with whom he traded, exchanging iron and other articles for furs &c. He said the Indians were camped there for several days, and during that time some of them went down the shore to a place called Ochre-Pit Cove to procure red ochre, so much prized by them" (Howley 1915:265).

Howley also noted "Mr C. Watts distinctly remembers many of the old people some 80 years ago, speaking of this tradition, which had been handed down from one generation to another. According to his story, the first settlers on the north shore of Conception Bay, below Carbonear, had frequently seen the Indians come to Ochre- Pit Cove and take away red ochre therefrom, and there was a place in the cliff called Red Man's Gulch, from the circumstance. A very old man named Parsons, who lived in this cove, and was the grandson of another man of the same name who was one of the very first settlers on the shore, used to state, when his grandfather came there an old Englishman who preceded him often spoke of the Indians whom he saw taking ochre from the cliffs. Sometimes they came overland from Trinity Bay, but more frequently in their canoes from up the shore somewhere. The settlers did not molest them in any way at that time, and the old Englishman in particular was on quite friendly terms with them" (Howley 1915:266).

Still visible today, the presumed ochre "pit" is located at the bottom of the harbor, approximately 40 metres west of Ochre Pit Brook. The bright red deposit consists of an eroding embankment that has been stabilized along one side by a dry laid stonewall. A brief walking survey along the base and the top of the deposit found no cultural materials. A small sample of ochre was taken from the eroding surface near the base of the deposit, but no test excavations were undertaken. Examination of the area suggests that use and erosion of the face of the deposit have greatly altered the original deposit and any evidence of its early use has long since been destroyed. Despite the lack of any physical evidence for Beothuk use, there is every reason to believe that this was the likely area mentioned in the Pilot records and those of Howley's local informant. On this basis, the location was submitted as an archaeological site (see Figures 9 & 10).

Broad Cove (north)

Location: -5910849, 6080331

Erosion Index: Moderate

Sensitivity Index: Moderate

Justification: Water source, ocean access, flat low elevation

Survey Result Summary: The beach area is impacted by both coastal erosion and cultural modification. Developed as a day park, there is ample evidence of camping and fires on the beach.

Broad Cove is located within the amalgamated community of Small Point-Adam's Cove- Blackhead-Broad Cove. Situated between Blackhead to the north and Small Point to the south, Broad Cove has mapped evidence of two fishing stages in Broad Cove by 1774. These stages may have belonged to Dennis Dunn and the five children of John LeGrow, resident there in 1776 (NL Encyclopedia Vol. 5, pp.206) (Figure 11).

Figure 9: The presumed ochre "pit" at the bottom of the harbor.

Figure 10: The dry laid stonewall used to stabilize the eroding embankment.

Figure 11: Broad Cove and the area surveyed.

A visual survey was conducted along the eroding edge of the dark grey sandy and cobbled beach. The beach is disturbed by local day use, including fires and various other related beach activities. The eroding shoreline appears to be prone to storm events and possible ice rafting. The Broad Cove Brook, which empties into the north side of the harbor, was heavily modified by road construction, and as such has lost any potential for historic resources. On this basis, subsurface testing was not conducted, and no sites were recorded (Figure 12).

Bryant's Cove

Location: -5920971, 6052964

Erosion Index: High

Sensitivity Index: Moderate

Justification: Tombolo beach, ocean access, flat low elevation

Survey Result Summary: Stone lined historic gardens, root cellars

Bryant's Cove – Spare Point 1 (CkAh-01)

Bryant's Cove is a fishing and farming community situated Between Harbour Grace to the north and Upper Island Cove to the south. Settled in 1675 by Thomas Hibbs and his family, "Bryants' Cove" is one of the oldest communities in Conception Bay (NL Encyclopedia Vol 1, pp.281). Examination of aerial imagery of the tip of the southern point clearly shows past agricultural use as evidenced by linear arrangements of piled stones separating plots of arable land. A walking survey (see Figure 13) confirmed these and other related stone structures tentatively identified as root cellars. Broadly defined, this area was designated as Spare Point 1 (CkAh-01) and contains numerous unmapped features relating to agricultural use of this area.

Much of this area looks to have been used for agricultural purposes, and as such, there is likely low potential for in-situ archaeological remains outside of the visible stone constructions. Notwithstanding this conclusion, recent residential development in this area poses a threat to these known historic resources. As such, future development should not only avoid the obvious stone structures, but should be wary of any historic residential and related uses (such as family burials) that could be located in this area. Further to the significance of the early historic occupation of this area, a desktop survey of this area and the surrounding communities

Figure 12: Broad Cove beach looking over the area surveyed.

Figure 13: Walking survey of Bryant's Cove (pink line).

would benefit the PAO's land use reviews related to future development. Such work could be shared with local community councils who have oversight on local development through building permit processes outside of Crown Lands (Figure 14 & 15).

Caplin Cove (south)

Location: -5925709, 6033732

Erosion Index: Moderate

Sensitivity Index: High

Justification: Deep Cove on the end of a long peninsula, level, low lying, proximity to Cupids

Survey Result Summary: Historic remains of cellars, gardens and associated buildings

Caplin Cove (south) – Caplin Cove 2 (CjAh-41)

Caplin Cove is a small harbor situated at the head of Salmon Cove Ridge, between Salmon Cove Point and Caplin Cove Point, about a kilometer northwest of Cupids. Current land use in the general vicinity includes pastured animals. Situated between two steep hillsides, the remains of an abandoned community consisting of at least three stone structures was located. It appears that more recent use has been limited to animal pasturing. In its description of the community of South River, the Newfoundland Encyclopedia briefly mentions Caplin Cove as a "tiny abandoned community" (NL encyclopedia Vol. 5, p.238). House of Assembly (4th Session) records indicate the number of inhabitants in Caplin Cove was 30 persons in 1858. Caplin Cove also appears to have been connected by road to South River from the west to Cupids eastward. The cove also contains a wide cobble beach and shallow waters making small boat landing feasible (Figure 17).

Feature Locations in Caplin Cove

Three large stone features were found during a surface survey of this cove. Feature 1 (Figure 18) appears to be a collapsed structure measuring approximately 2 to 3 meters across with a remnant dry laid wall feature about 30cm in height. Feature 2 (Figure 19) is more haphazard in nature and linear in shape. It also contains huge flagstones on the surface. Without some excavation, it is difficult to determine the extent to which these features may have been dug out, or whether the remnant stone piles are largely surficial and representative of above ground buildings. However, the lack of any

Figure 14: Probable building foundation at Bryant's Cove.

identifiable structural elements suggests that Feature 2 might simply be a pile of stone cleared from the fields. Apart from some rusted unidentified iron noted in association with Feature 1, there were no cultural remains to suggest a date for either of these features.

Figure 15: Bryant's Cove field stone wall.

Feature 3 is a flat rectilinear stone pavement measuring approximately 3m X 6m in area. As with the other features, there were few remnants of rusted iron, but nothing datable. Its rectilinear shape is relatively well defined but disturbed by a more recent path that leads down to the beach area. Its shape and location on one of the few relatively flat areas of land in the cove supports the idea that this was a floor of perhaps a substantial building (Figure 20).

If this feature was the pavement of such a structure, the lack of any evidence for structural materials such as timbers or nails is curious. It is possible that they had been completely removed, largely intact and not subject to in-situ decay. In view of the records indicating that this was once the location of a tiny community, likely with no more than two or perhaps three families, there is surprisingly little evidence remaining of even such a small community. The linear arrangement of stones behind this feature is suggestive of a "property line" added to annually from the process of clearing lands for agricultural purposes.

Caplin Cove is also rumored to have functioned as a "Smuggler's Cove" during Prohibition, as a "perfect spot for an enterprising individual to offload some contraband". A collected story from Bill Ackerman in 1997, (https://cupidstrails.blogspot.com/2021/07/caplin-cove-smugglers-dream-cove.html) this is one of a number of small out of the way communities that have similar stories attached to them.

James Cove

Location: -5920568, 6022070

Erosion Index: Low

Sensitivity Index: Low

Justification: Protected harbor, former community, low lying with ocean access

Survey Result Summary: Revisit of an existing archaeological site, no evidence was found for Indigenous occupation

James Cove 2 (CiAh-06)

Originally visited in 2005, James Cove is the site of a former community of the same name reported by Ken Reynolds and Stephen Hull. Dating to the late 18th-early 19th century, the remains of several stone foundations and a cemetery, containing a single marked grave were noted. Situated within the municipal boundaries of the Town of Colliers, this former

Figure 16: View of Caplin Cove.
Photo source: https://cupidstrails.blogspot.com/2021/07/caplin-cove-smugglers-dream-cove.html

Figure 17: Area surveyed in Caplin Cove (south) (pink line).

Figure 18: Feature 1 in Caplin Cove (south).

Figure 19: Feature 2 in Caplin Cove (south).

Figure 20: Feature 3 in Caplin Cove (south).

Figure 21: Walking survey in James Cove.

community is located on the east shore of Colliers Bay in a southward facing cove (Figures 21 & 22).

An undeveloped trail continues along the easterly side of the cove and a long finger-like treed headland protects the western side of the cove. A relatively well-protected low-lying beachfront is bisected by a small stream that contributes to the boggy conditions in the central portion of the cove.

The single headstone identifies the remains of "James Cole Colliers" who died in 1833. Closer inspection of the area around the headstone revealed the presence of numerous small stones protruding through the grass. These stones are likely markers for additional burials, similar to the ones noted by the PAO in other small, historic era graveyards (Figure 23).

Artifact finds near some of the stone foundations included ceramic creamware shards, suggesting the possibility of an 18th century occupation, though the presence of this material could simply be evidence for the continued use of older vessels. The archaeological remains in James Cove provides a brief glimpse into the otherwise little known historic occupation of this area. The grave marker is an indicator of the Cove's importance to its former residents and merits further research. James Cove is the only area identified in this study with both low erosion and sensitivity indices. In view of this visit, there is good potential for organic preservation and in-situ archaeological remains across much of the site.

Archival record dating to 1814 indicates that a Michael Cullen was sued by Owen Sullivan "for hindering him in building a house at James Cove Collier [s]" – while the complaint was dismissed as groundless; there was interest in fishing out of Colliers in the early 19th century. Rutherford (2009:17) noted that according to her older informants, "the early inhabitants of Colliers first settled in James Cove, then Burkes Cove, then Colliers proper". As late as 1942, the US Secretary of the Navy publication "Sailing Conditions for Newfoundland" noted that James

Figure 22: Looking over the beach in James Cove, the single headstone is to the right of the photo.

Figure 23: The single headstone (left) identifying the grave of James Cole Colliers who died in 1833.

Cove, about 1 ½ miles southward of Colliers Point, is sheltered by a small projection…A few houses border the shingle beach at the head of this cove".

While no further testing was conducted at James Cove, there is ample archival and archaeological evidence for historic resources. As a former community which contains a graveyard, there is much more to be learned. Any future proposals in proximity to this site should be subject to archaeological testing.

Broad Cove (south)

Location: -5921568, 6013186
Erosion Index: Moderate
Sensitivity Index: Moderate
Justification: Wide, low lying accessible beach
Survey Result Summary: Wide cobble beach with boggy area behind, little habitable area

Broad Cove (south) is located east of Middle Arm approximately 2 km north of the community of Avondale. The cove is largely undeveloped (with only a single house located on the west side of the cove). The area consists of a wide active raised cobble beach and a large low-lying bog situated behind. Climate modelling indices identify this area as having moderate erosion and sensitivity. Based on our cursory observations it appears that apart from the active nature of the cobble beach, that the surrounding lands do not appear to have been subject to much alteration from erosional processes. In this regard, the cobble beach (which is changeable due to tides, storm surges and ice rafting), has been pushed up onto the open low-lying boggy area which also seems to be regularly impacted by flooding during storm events and high wave action (Figure 24).

In view of the low-lying nature of most of the lands in this cove, the archaeological potential across much of the centre of the cove appears to be low. The slightly elevated areas on either side of the cove are most likely to have in-situ deposits. While the lands containing the dwelling were not examined, we undertook a brief foot survey that followed an overgrown trail at the eastern end of the beach. Walking up from the beach, the trail led to a small clearing which looked to have been cut some time ago, as stumps were heavily decayed. Apart from the cutting, there was no apparent signs of use or occupation. No testing subsurface was conducted (Figure 25).

Figure 24: The area surveyed in Broad Cove (south).

Despite the good accessibility that this cove offers small watercraft, this wide shallow cove is prone to flooding. While the margins of the cove offer some potential for historic uses, the lack of a fresh water source further reduces the potential for historic resources. No further work is required.

Kelligrews T'railway

Location: -5902819, 6024222

Figure 25: The beach in Broad Cove (south).

Erosion Index: High
Sensitivity Index: High
Justification: Old railway deposits reported eroding from embankment
Survey Result Summary: Active eroding beach, numerous signs of railway use, no iron debris as reported.

In October 2021, a local resident reported finding metal objects eroding from the bank adjacent the T'railway in Kelligrews (just west of Cronin's Head) (Figure 26). Described as "some badly corroded machine parts…encased in what appeared to be black porous rock", the materials included threaded rod, a bronze bushing and a short bronze bar. While such objects were not positively identified as being associated with the railway, it seems likely that they were, owing to their association with deposits along the old rail line. Photographs of the badly corroded objects suggested that these were common objects associated with the old railway, and that the lack of in-situ provenance was sufficient reason not to collect the objects .

Figure 26: The area surveyed along the Kelligrews T'railway.

In view of this report, the PAO agreed to conduct a site visit to assess the nature and extent of the cultural deposits. To this end, we conducted a 1.5km walking survey of the embankment from the water treatment facility to the bridge. While there was a considerable amount of recent historic debris littering the shoreline (including old rail ties and associate materials), neither the "cache" of objects was found, nor were any similar objects actively found eroding from the embankment. In view of the lack of any similar materials, it appears that the small collection of objects was not part of a larger eroding deposit.

Aside from monitoring the embankment from time to time, no further work is required in this location, the PAO acknowledges the importance of the old railway to Newfoundland history and that there may well be associated archaeological deposits worthy of future study, this area does not appear to be one of them.

Lower Horse Cove

Lower Horse Cove is a well-used local boat launch accessed from Route 50 west of St. Thomas. The natural area is characterized by steep hills along the east side of a cobble beach and a fast running stream that empties along the south side of the area. Modifications to the area include a levelled gravel parking area that can accommodate multiple cars and an undulating cleared grassy area north of the gravel access road adjacent the beach containing evidence of ruined 20th century historic structures (marked by a star in Figure 27)). As evidenced by the arrival of a

Figure 27: The area surveyed in Lower Horse Cove.

kayaker while we were there, the flat low cobble beach provides easy access to the water, making this a good landing spot for small watercraft travelling in the area. A walking survey was conducted in the immediate areas north and south of the parking area with specific attention given to areas of erosion, including tree falls, all of which proved negative.

This area was identified as having a High Erosion Index, with Moderate Sensitivity. Local observations are generally consistent with the modelling, however, within this area there is both a rocky stable shoreline that is highly resistant to erosion and an active cobble beach that is highly sensitive to change and prone to the impacts of tides, ice rafting and storm surges that would have long removed any traces of historic resources.

Conclusions

Despite the success in finding sites at four of the nine locations surveyed, only Ochre Pit Cove can be linked to Indigenous use/occupation, and this site was known through historical records. While completion of this survey in 2023 would likely yield additional historic European sites, Indigenous sites in Conception Bay remain elusive. In view of the likelihood that Beothuk did use Ochre Pit Cove ochre deposits, a more focused research plan for 2023 will be developed to investigate possible locations based on seasonal settlement patterns and likely travel routes.

References

Brown, S.
1988 *An Historic Resources Overview Assessment of the proposed Conception Bay South By-Pass from Manuels – Seal Cove.* Unpublished report on file at the PAO, St. John’s.
Catto, N.
2012 Coastal Erosion in Newfoundland. In Atlantic Climate Adaptation Solutions Association
Solutions d'adaptation aux changements climatiques pour l'Atlantique.
Catto, N., H. Griffiths, S. Jones and H. Porter
2000 Late Holocene Sea-Level Changes, Eastern Newfoundland. In *Current Research (2000) Newfoundland Department of Mines and Energy, Geological Survey, Report 2000-1*, pp. 49-59.
Erwin, J.
2004 *Final Report for the Wester Point, Portugal Cove HRIA, Permit #04.45*. Unpublished report on file at the PAO, St. John’s.
Fisher, William and John Thornton
1775 The English Pilot. The Fourth Book. Printed for J. Mount, T. Page, and W. Mount, on Tower Hill: London.
Gaulton, B.C., Tapper, B., Williams, D., and D. Teasdale
2019 The Upper Island Cove Petroglyphs: An Algonquian Enigma. In Canadian Journal of Archaeology 43:123–161.
Grimes, V.

Figure 28: Lower Horse Cove (NE View).

Figure 29: Lower Horse Cove (SE View).

2017 Preliminary report on the survey and excavation of the historical cemetery at Foxtrap-2, Foxtrap, Newfoundland. Unpublished Report on file at the PAO.

Howley, J.P.

1915 The Beothucks or Red Indians. The Aboriginal Inhabitants of Newfoundland. Cambridge University Press.

Hughes, D.

1968 Human Remains From Near Manuels River, Conception Bay, Newfoundland: A Methodological Approach to the Question of Their Probable Affinities. Paper No. 4. *In National Museums of Canada, Bulletin 224 Contributions to Anthropology VI: Archaeology*, Ottawa.

Hutchings, Corey & Fred Schwarz

2021 Chapter 3 Pre-Contact Ceramic Assemblages from the Churchill River, Central Labrador. In The Far Northeast: 3000 BP to Contact.

JWEL

2004. *Carbonear Island Archival Research Project (JWEL document). Report prepared for Facilities Design Group Inc*. Unpublished report on file at the PAO, St. John's.

Marshall, I.

1996 *A History and Ethnography of the Beothuk*. McGill-Queen's University Press Montreal.

McLean, L.

2014 *A Historic Resources Impact Assessment of a Proposed Subdivision for Tilton, Conception Bay, Newfoundland*. Unpublished report on file at the PAO, St. John's.

Penney, G.

1989 *Historic Resources Overview assessment Conception Bay North Bypass Road*. Unpublished report on file at the PAO, St. John's.

2011 *Carbonear Bay: Historic Resources Potential*. Unpublished report on file at the PAO, St. John's.

Pope, P.

2016 *The Archaeology of Historic Carbonear, 2011-2013, Final Report*. Unpublished report on file at the PAO, St. John's.

Rast, T, and L. White

2018 *Abitibi South Archaeological Potential Mapping Project*. Unpublished report on file at the PAO. St. John's.

Rutherford, C.

2009 *The Place of the Labrador fishery in the Folklife of a Newfoundland Community*. Unpublished M.A. Thesis, Memorial University of Newfoundland.

Schwarz, F. and L. Schwarz

2014a *Baie Verte Historic Resources Overview Assessment*. Unpublished Report on file at the PAO, St. John's.

2014b *The Interior Lake Systems Between Gander Bay And Notre Dame Bay Historic Resources Overview Assessment*. Unpublished Report on file at the PAO, St. John's.

Skanes, R.

2015 *Final Report Stage 1 Historic Resources Assessment Tilton, Conception Bay North Newfoundland and Labrador*. Unpublished report on file at the PAO, St. John's.

2019 *Final Report Carbonear Island Research Project Carbonear, Conception Bay Newfoundland and Labrador*. Unpublished report on file at the PAO, St. John's.

Tapper, B.

2019 *Archaeological potential mapping of former Abitibi lands (North): Technical report*. Unpublished report on file at the PAO, St. John's.

Tuck, J.

1978 Unpublished report on file at the PAO, St. John's.

1984 *Archaeological Resources in the Proposed Outer Ring Road, St. John's Area*. Unpublished report on file at the PAO, St. John's.

~~~~~

The PAO has reviewed nearly 40,000 Land Use Referrals over the last 15 years. In 2022, we reviewed 2587 Land Use Referrals (See table below). Keeping on par with last year, we issued 58 archaeological permits but only five paleontological permits in 2022. We also awarded eight Archaeology Research Grants.

Type of Land Use Applications	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Crown Land	2178	1818	1774	1466	2542	1813	1579	1217	1749	1748
Environmental Assessment	51	40	54	48	73	48	67	51	68	50
Mineral Exploration	213	301	285	339	355	354	371	380	725	226
Notification of Work (MLD) (new for 2022)	0	0	0	0	0	0	0	0	0	399
Quarry	217	306	455	618	207	150	120	131	53	93
Aquaculture	10	7	8	1	1	23	4	10	8	5
ILUC	39	38	45	71	51	33	30	44	31	33
TCII Proposals (ACOA, etc)	3	2	5	3	1	0	2	1	0	3
Engineering Consultants	21	35	13	9	36	29	16	21	14	11
Other Projects	15	10	10	8	7	2	0	4	0	1
Protected Road Zoning Regulations	0	0	0	0	0	0	0	4	0	
Atlantic Canada Certified Sites Programs	0	0	0	0	0	0	0	2	2	
NL Hydro	0	0	0	0	0	0	0	2	9	5
NL Towns	0	0	0	0	0	0	0	0	11	13
Total	2817	2626	2711	2613	3333	2509	2239	1865	2670	2587

~~~~~

22.15 Torbay public performance stage and picnic area

In April 2022, the PAO received a land-use application from the Town of Torbay stating they intended to install a public performance stage and picnic area on the northeast side of Torbay beach in a grassy field at the end of Lower Street (Figure 1). Peter Pope and the MUN Archaeology field school crew surveyed much of this beach area in 1998. They recovered an assortment of early modern materials dating about 1775-1850 but were unable to determine the focus of these early occupations. Pope recorded these finds as CjAe-34 Torbay Waterfront. Therefore, we had to make sure the area performance stage and picnic area were not going to affect negatively CjAe-34. Two members of the PAO spent most of May 11 in this grassy field digging six test pits and searching the beach and several exposures for *in situ* material or features.

The area we tested measures approximately 20 m x 30 m and ranges from ~3.5 masl nearest the water to just over five masl near the parking lot. On the north end of the field nearest the water there was an exposed eroding bank that was several metres wide, we saw no *in situ* material or definite features along this bank.

We dug six test pits. Typically, the stratigraphy consisted of an overlying grass/root mat with a mix of soils that seemed to range from brown or tan to orange in colour. The test pits closest to the water each had a layer of water worn pebbles at various depths. All test pits were 20 to 40 cm deep (Figure 2).

The artifacts all dated to the late 19th and early 20th century, with the exception of a piece or two of refined earthenware blue transfer print. These fragments could be as old as the late 18th century. The test pits closest to the white shed in figure 1 seemed to be the most recent including concrete fragments, several cast iron stove parts, soft drink bottle and window glass, fragments of washboard glass, a complete blue Noxzema bottle and lots of mason jar fragments. We might have been digging in a small midden or the inside of a shed but it was definitely not

Figure 1: The grassy field looking south. You can easily make out the slope of the land and just see the parking lot at the end of Lower Street to the right of the photo.

Figure 2: Drone shot of the grassy field showing the six open test pits.

Figure 3: Test pit closest to the white shed contained fragments of washboard glass, cast iron stove parts, a complete blue Noxzema bottle and many Mason jar fragments.

Figure 4: The depression we recorded south of the bridge is to the right of the person in the photo. The grassy field we tested earlier in the day is behind the white shed that is to the right of the red house on the left side of the photo.

Figure 1: The red circle marks the area of where the sign is installed in front of the Colonial Building.

clear. Artifacts from other test pits included very small fragments of brick, nondescript clear glass fragments, and small pieces of charcoal and white ware fragments.

22.31 Colonial Building, St. John's

In July, the PAO learned about a 'Come Home Year' sign that was to be installed on the Basilica side of the front lawn of the Colonial Building on Military Road. The PAO has been periodically monitoring construction activities outside the building since 2007, and in that time, we have located at least six different stone drains that took water away from the bog on which the building was constructed. Each of those drains are on the Basilica side of behind the building; this sign installation gave us our first opportunity to see the front grounds of the building. After a morning of digging, we were comfortable in saying that the installation did not affect any drains and no artifacts or intact features were found. We also concluded that the soil in front of the building seems to be disturbed or more likely contains a lot of fill, at least in the red-circled area in the photo where the sign is installed.

22.33 Blackhead

The investigation of the former stone church foundation at Blackhead began in 2020 and monitoring or full scale archaeological work has occurred there each year since then. In July and September of 2022, we revisited the site to monitor the installation of water and sewer facilities, to monitor the installation of weeping tile around the One Room School next door and to monitor the installation of a wheelchair accessible entrance/ramp at the One Room School.

The first visit in July was an easy and quick one. A trench dug from the back of the building to the area behind the school for sewer installation was monitored. Once the trench was opened up and the tractor moved away from the school there was very little danger to the church foundation. We continued monitoring for a little while as the septic filed was dug but it quickly became apparent there was little risk to historic resources in the area. While the monitoring was quick and easy we did learn something very interesting about the land, the low points were saturated with water. In fact, there is a good possibility that the freezing and thawing of this water likely played a role in the relatively short lifespan of the old stone church foundation.

We returned twice in September. Our biggest concern with the proposed weeping tile installation work was the depth of excavation necessary on the northeast side of the building and the potential to affect the church foundation. Regardless the weeping tile still had to be installed to protect the One Room School building. Essentially, we were trying to protect two sets of historic resources but in this instance, the building still standing took precedence. Fortunately, the contractor was very patient and understanding of what we were doing and in the end, we only had to move a few of the stones at the church corners to allow the installation (Figure 1).

In late September, we returned to Blackhead for the installation of the wheelchair accessible entrance/ramp, the last monitoring job of the year at this site. The earlier weeping tile installation had uncovered a jumble of stones that looked suspicious to us.

In 1904, an 18-year-old resident of Blackhead named Mr. John Shortall wrote a 10-page poem about a sailor at Christmas time. The poem has several illustrations in it, one of which may be the Blackhead stone church. In the drawing, an annex can be clearly seen jutting off the back of the church. We

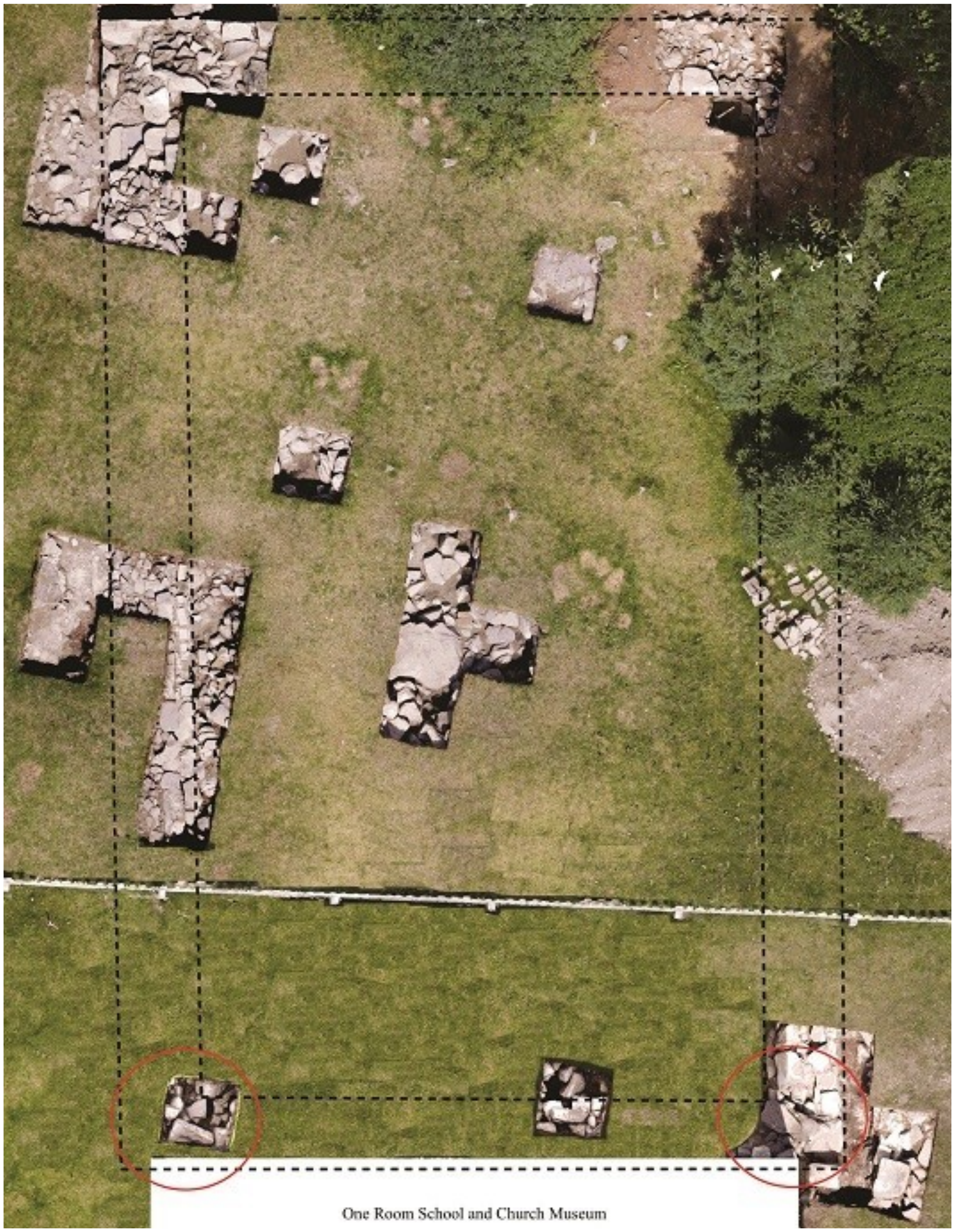


Figure 1: Areas where stones were removed with PAO monitoring to allow weeping tile installation (based on Losier 2022).

suspected the jumble of stones uncovered early in September might be related to the foundation of this annex, if this drawing depicts the Blackhead church (Figure 2) .

Shortly after starting the digging it became clear that, as is all too often the case in Blackhead, the jumble of stones was just that. They were clearly not related to any structure. We spent the rest of the day monitoring the digging and occasionally stopping the tractor. However, in the end we did not find any *in situ* stones used as a foundation. We did however note a layer of very fine beige sand that appeared in the excavation at about 30cm to 40cm deep. While in the field, we speculated that this sand might be related to church building material. Interestingly Dr. Losier and crew also found a layer of fine sand outside the boundaries of the church foundation, which she speculated might have been a stockpile of material needed to make the mortar, which was used extensively in the construction of the church (Figure 3 & 4).

22.53
Merrymeeting Road

Late on a Thursday afternoon, the PAO received a rather frantic call from an individual with a private company doing borehole work on private property. The contractor explained who he was and what they were doing on the property and said, during their digging, they found a bone that they suspected was human. After confirming details of where the work was being done, we asked if any photos were taken of the bone and could they be shared with us. With previous experience in dealing with phone calls like this, we were thinking that if we could see the bone we might be able to determine from photos if it was indeed human. We also asked the contractor to stop any digging and they happily agreed, just in case. Later that

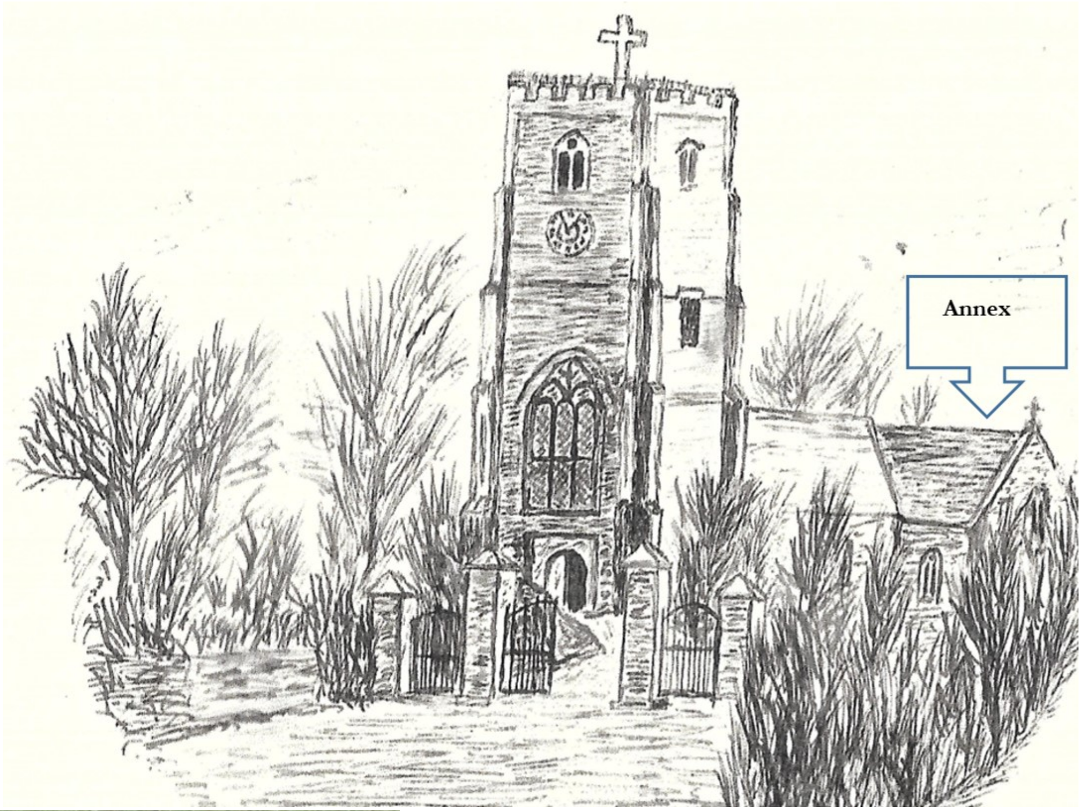


Figure 2: Drawing by John Shortall (ca. 1904) which appears in "Afloat at Christmastide" copy of unpublished poem from Shortall Family, Blackhead One Room School and Church Museum. The possible annex can be seen at the rear of the church.

Figure 3: Sand layer in unit 109N114E as recorded by Losier in 2021 (2022).

Figure 4: Excavating some of the fine beige sand uncovered during the PAO monitoring.

evening the photos were sent to the PAO and they did not help clarify the matter (Figure 1). Unfortunately, the bone was very dirty and proximal end was broken and based on the photo the bone looked like the distal end of a human femur. The PAO arranged with the contractor to meet on-site in the morning. We forwarded the photos to the physical anthropologist at MUN who was also puzzled by the rather ambiguous photos and agreed to meet with us on site in the morning.

When we arrived onsite, the next morning it started to rain, probably some of the heaviest rain St. John's saw that fall. A PAO member and the MUN physical anthropologist met with the contractor and a colleague and they pointed out the borehole in which the bone was found. We asked to see the bone and they said 'We reburied it'. Apparently, they thought the safest place to keep the bone was in the ground, which was fine. In hindsight, perhaps we should have asked them to hold on to the bone. Regardless, we asked where it was buried and they pointed to an exact spot and said it is about 6-8 inches deep. Fortunately, we had a few round top shovels and thought we could dig this up quickly, we were very wrong. We spent the next 90 minutes or more searching for this bone, in the pouring rain, slowly getting more wet and dirty by the minute. We dug close to a metre in depth in search of the bone (Figure 2).

We did manage to find an assortment of typical St. John's artifacts such as a clay sewer pipe fragment, iron fragments and broken pieces of ceramic and glass. We even managed to find other bone fragments that were obviously from an animal such as a sheep or cow. All of this did make us think we were probably in an area previously disturbed or perhaps in a midden. However, we could not find the original bone.

Finally, the contractor said he would call their tractor to come to the site and dig up the bone. In the meantime, we kept digging. Shortly thereafter, as we could hear the tractor coming and as it was literally rounding the corner of the building we found the bone. As soon as it was pulled from the ground, we could tell that it was not human. Once it was cleaned off and confirmed as being not human, we told the contractor they could continue with their work (Figure 3).

Figure 1: Original photo from the contractor.

Figure 2: Searching for the bone in the pouring rain.

Figure 3: Where we found the bone, trowel for scale.

References
Losier, Catherine
2022 Interim Report Blackhead Roman Catholic Stone Church (CjAd-02) Permit 21.27

~~~~~

22.51 Post-Tropical Storm Fiona and Historic Resources on the Southwest coast

In late September of 2022, the Atlantic Provinces were struck by post-tropical storm Fiona which caused an enormous amount of damage in a number of Newfoundland communities, but especially on the southwestern portion of the island. The impacts around Port aux Basques and the surrounding area were particularly devastating where a person was killed and nearly 100 homes were destroyed. The level of destruction was immense and according to media reports, it caused the most insurance claim related property damage on record in this part of the country by a considerable margin. Port aux Basques declared a state of emergency and some parts of the town were subject to evacuation orders.

In the weeks that followed local people began to make contact with the PAO regarding impacts on historic resources. A site that had been exposed by wave action in Grand Bay West was of concern because of both local interest and because of a possible early contact period component. A visit was arranged which also provided an opportunity to check the status of the Cape Ray Light Site, a highly important Dorset site where excavations occurred in the 1960s (Linnamae 1975) and in the 1990s (Fogt 1996; 1997). The site is extensive and contains significant and dense cultural deposits, as well as architectural remains. It is also one of the few Dorset sites that have produced braided muskox hair cordage (see Fitzhugh et al. 2006).

Grand Bay West

The site at Grand Bay west was visited by Brake on October 6th and 7th. He was brought there by Rene Roy of Wreckhouse Press, as well as Greg Sheaves and Shane Lomond who originally found the site while working to recover portions of a boardwalk in the area that had been destroyed by the storm. According to Sheaves and Lomond, some sections of the boardwalk had been thrown more than one thousand feet back from the shore by waves and wind. The same elements peeled vegetated soil back along parts of the shore at least 5-7 meters exposing cultural deposits resting on sand at the southern end of a long beach. An area of the site perpendicular to the shore about 30 meters long was completely exposed and partially destroyed. The partial remains of a flagstone floor were recorded on the southern end of the exposure, and the base of a hearth or chimney feature constructed out of firebricks was recorded near the middle (Figure 1). Ceramics and a few kaolin pipe fragments were scattered throughout the exposure, most of which can be attributed to a 19th century oc-

Figure 1: Looking north at Grand Bay West. The larger red circle roughly outlines flagstones, and the smaller circle shows the location of a fireplace base. The concrete footings with center spikes were part of the boardwalk that was destroyed by Fiona.


~~~~~

Figure 2: Artifacts collected from the Grand Bay West by the people who found it. Quarter in the lower left corner for scale.

cupation. Mr. Sheaves and Mr. Lomond had previously collected some iron artifacts and potsherds, which were photographed. A small representative sample of artifacts was obtained from these two men, and from the site itself.

The site, now designated (CjBt-18) and named (Grand Bay West 1), appears to be a habitation site associated with 19th century English settlement at Grand Bay West, which is known to date back to at least the 1830s (Janes et al. 1988:682-683). Some of the artifacts from the site, a boat ring for a small vessel in particular (Figure 2), as well as the site location, attest to a maritime economy, consistent with historical records for the area which make unsurprising reference to inshore fishing, as well as to agriculture (1988:682-683).

This area should be subjected to more intensive archaeological survey, as previously recommended by Gerald Penney Associates (2014:22-23), especially considering the impacts of post-tropical storm Fiona. It is highly likely that other previously undocumented archaeological sites have been exposed along this coast, and that other known sites have been damaged.

Cape Ray

The Cape Ray Light Site (CjBt-01) was also visited on October 6th and significant damage since the last visit by archaeologists in 2015 was noted. Large chunks of land at the site have been swept away, and in some cases tuckamore, complex root systems, soil layers, including cultural layers, have been peeled back or obliterated by raging seas and winds (Figure 3).

The Cape Ray Light site first received professional archaeological attention in 1965 when Helen Devereaux visited after a concerned citizen wrote a letter to the provincial government regarding the accidental discovery of "a large deposit of artifacts" by a geologist (N.C Crewe to A.M. Fraser, letter, August 12, 1965, Provincial Archaeology Office, St. John's). The author of the letter thought the site might have been a former Beothuk village and argued that something needed to be done. Devereux visited later the same month, after being contacted by A.M. Fraser, curator of the Newfoundland Museum. At that time, she recorded damage from collecting in some of the most important parts of the site. She also realized that a major Dorset occupation was represented there, that it was highly important and vulnerable, that it had interpretive value and she recommended that it be subjected to additional archaeological activity (Devereaux 1966).

Urve Linnamae subsequently conducted excavations in 1967 and 1968 as part of her PhD program through the University of Calgary. Based on test excavations she divided the site into 7 areas, A to G, and found Areas C, E and F to be the most productive. Her main excavations took place at these three loci. Her thesis was published in 1975 by the Newfoundland Museum as the first in a series of technical papers. Quite a few archaeologists visited the Cape Ray Light site since that time, most of whom were there briefly to conduct assessments because of erosion and reports of unauthorized collection. Lisa Fogt was the next to undertake major excavations, focusing on

Figure 3: Disturbance near Area G at the Cape Ray Light site.
A yellow pencil pointing at a soapstone vessel fragment is within the red circle.

Area C in 1996 for her Master's research, and on a Dorset dwelling there in particular (Fogt 1998a). She also excavated at Area E the following year, reporting on that work in a standalone report (Fogt 1998b). The most recent archaeological activity there involved assessment and monitoring of land just east of the Cape Ray Light site. The significance and proximity of the site were major factors in the justification for those projects, and the archaeologists involved briefly visited CjBt-01 while they were in the area (Penney 2014; Boreas 2015).

Dramatic erosion was documented in 2022 right up to the edges of buried tarp at Linnamae's Area C where Lisa Fogt's excavations had also taken place three decades later (Linnamae 1975; Fogt 1998a). Major soil loss was also documented here and all along the southern edges of the site. The portion of area E that had been previously excavated, and the areas north of it remain intact, as do most of the previously excavated portions of Area C. The 1997 Area E excavation was clearly visible as the vegetation there is still recovering and stands out from that surrounding it. Area F was not obvious however, which is not surprising since it has had more than 50 years to re-vegetate. The land north of Areas C and E is still in good condition, and the impacts were most severe to the south and west of Area C and near Area G. A few artifacts were collected from impacted portions of Area C, and from Linnamae's Area G, which was the area furthest to the west with cultural deposits that she mapped.

In 2022, a large fragment of a soapstone pot was collected west of Area G sitting on top of the exposed dark cultural level that Linnamae designated Layer III (Linnamae 1975). The peat in this area had all been completely stripped away. Testing in the 1960s suggested that Area G contained little cultural material and had no cultural levels (1975:31), however, the 2022 visit demonstrates that there is (or was) a cultural layer west of Area G, which was previously thought to be essentially the western limit of the site (1975:29). It should be noted that it is much easier to see cultural layers when all of the upper levels have been torn away by nature, compared with trying to

Figure 4: Preserved wood (centre) in profile of eroding edge of Cape Ray Light site near Area G.

detect them by test pitting through dense tuckamore and roots. Of particular concern are deposits of well-preserved ancient wood in thick, dark stratigraphic levels that have been exposed by wave action in this area (Figure 4). This portion of the site is currently considered a priority.

22.54 Northwest River

In his 1972 monograph on the archaeology of Hamilton Inlet William Fitzhugh identified a former saltwater channel that would have closed approximately 3100 BP as a result of isostatic rebound (Fitzhugh 1972:32; Figure 5). The area is located about 2 kilometers from the community of North West River where a dense concentration of archaeological sites was used by Fitzhugh, along with other sites in Groswater Bay, to understand and outline the complex human history of the area for the first time (Fitzhugh 1972). The ancient channel just mentioned has high archaeological potential, particularly for sites dating to the early Intermediate and Archaic periods. It is a particularly interesting place considering its natural strategic advantages for hunting and gathering, its similarities in the past to North West River, where a very large number of archaeological sites have been documented, and considering the fact that it is in an area that has not been subjected to major development. Undisturbed sites in that area would be of great interest since many of the North West River sites that Fitzhugh wrote about more than 50 years ago had already been heavily impacted by both community development and collecting at that time, and many of them no longer exist today. The accidental discovery of the intermediate period Wapeneu Mikue Site along a snowmobile trail that runs through the area, and the subsequent work there by Schwarz, demonstrates land use by precontact groups in the distant past (JWEL/IELP 1999; Schwarz & Schwarz 1999).

Because of the potential importance of the ancient channel, the PAO is considering issuing a request for proposals through its Directed Research Program to have the area thoroughly surveyed. Prior to doing this, we hoped to have an opportunity to visit the area briefly to confirm its potential. An opportunity presented itself in October of 2022 when Jamie Brake and Colleen Soulliere (Director of Arts and Heritage) travelled to Goose Bay and Sheshatshiu for meetings about housing development and archaeology in Sheshatshiu.

Brief survey work was undertaken by Brake and Soulliere along portions of the ancient channel on October 17th and 18th. Both loci of FjCa-47 were re-visited and other nearby terraces on the north side of the former channel were inspected and tested but no new sites were found there. A series of raised beach terraces along what would have been the northern mouth of the channel were also briefly explored and tested. One ethnographic site was recorded in this area consisting of two recent hearths and associated empty food tins (13F/09 Ethno 6). A number of small conical pits in the caribou moss covered sand (roughly 35-40 centimeters diameter) were encountered at several places in this area. Two were excavated and they produced no cultural material or levels. Some recent looking rectangular pits in the same general area resembled archaeological test pits. Otherwise, we observed few indications of previous

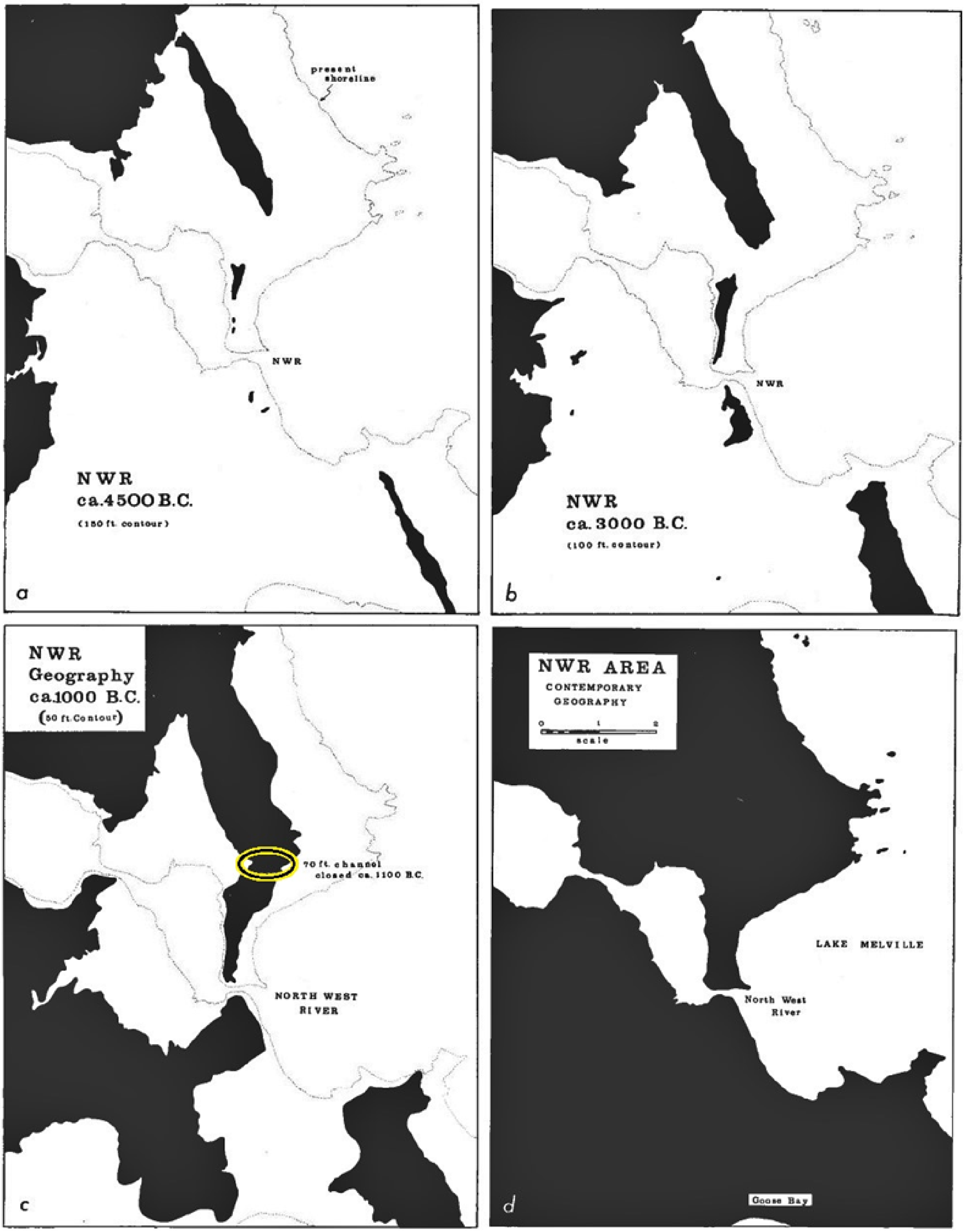


Figure 5: Maps showing paleo-shorelines in the vicinity of North West River, adapted from Fitzhugh 1972: 32.

Figure 6: Looking north at FjCa-81.

Figure 7: Positive test pit with dark level in profile with ochre-stained sand and cobble.

and a carpet of white caribou moss. While hastily moving across this terrace to reach the other area of interest cobblestones were encountered underfoot where there had otherwise been only sand along the selected route. A test pit there had immediate results and produced Ramah chert and grey chert flakes, fire cracked rock, heated sand, some small chunks of charcoal and a significant amount of red ochre (FjCa-81; Figures 6-8). This find further demonstrates that the channel does indeed have historic resource potential and it is particularly exciting because, based on its elevation (27 meters above sea level) and the presence of Ramah chert and red ochre, the site probably dates to the archaic period, which is poorly known in western Lake Melville. A charcoal sample from the test pit is expected to shed some light on the age of the occupation.

human land use, though it must be kept in mind that this is a large area that we only looked at a portion of it quite quickly.

On the way back to North West River on the 17th we had a brief look at a few areas along the relatively low elevations along the south side of the channel which resulted in the documentation of the remains of a mid-late 20th century dumping episode. The site consists of a discrete concentration of tin cans, lead-acid battery components and pieces of glass bottles, including at least one with a manufacturing date of 1959 on its base (FjCa-80).

The final chance to visit the ancient channel was on the morning of October 19th prior to the return flight at noon. That day Brake selected an area on the southwestern end of what would have been a small cove when Wapeneu Mikue was occupied. Limited testing in the few places at this location that appeared suitable for human habitation was not productive. While heading south from there to reach another high potential locality on the south side of the channel it was necessary to cross a high elevation terrace that would have been at sea level during the archaic period. The land there is sandy, well drained and relatively flat with sparsely treed park-like boreal forest

22.42 South Coast of Newfoundland

In early August, an individual contacted the PAO about finding what he believed to be a gold coin dating to the early historic period (Figure 9). He provided photos of the coin shortly thereafter which

Figure 8: Flakes and red ochre from FjCa-81.

Figure 9: Early fifteenth century gold coin in the hand of Edward Hynes who found it on the south coast of Newfoundland. For better photos of the coin see Lori Temple's article in this volume.

as well. They were able to point out the location of the find, which turned out to be in the active coastal zone at a known archaeological site that has both terrestrial and underwater deposits. The edge of the site where the coin was found is actively eroding with wave action undercutting the low bank and causing the sod there to slump down to the beach a couple of feet below. The site in question had been registered by Hull in 2007 and was known to have been extensively occupied during the 18th century (PAO Archaeological Sites Inventory). Historical records and artifacts scattered along the beach also indicate a Basque presence during the early historic period.

PAO staff shared with Dr. Barry Gaulton of Memorial University, and William Gilbert of the Baccalieu Trail Heritage Corporation, both of whom are particularly knowledgeable about early historic period archaeology in Newfoundland. Based on the photos they believed that the coin was authentic, and they suggested that we reach out to Paul Berry, a retired staff member of the National Currency Museum and the best person to authenticate the coin. When responding to our inquiries about the coin Berry wrote:

> I would agree with your colleagues' assessment that the coin appears to be a genuine quarter noble of Henry VI. It was minted in London during Henry's first reign (1422-1461) between 1422 and 1427. The obverse legend reads HENRIC.DI.GRA [TIA].REX.ANGL[LORVM] (Henry by the grace of God King of the English); the reverse EXALTABITVR IN GLORIA (He shall be exalted in glory). It should weigh about 1.7 g and measure 20 mm in diameter (Paul Berry, personal communication 2022).

A fieldtrip to the find location was arranged within a few days. Erwin travelled to the site from the PAO and Brake met him there on the way back from the west coast accompanied by his father Allan. The group met Edward and his partner Bailey at the site

It is important to stress the fact that the coin was found out of context, and because of this, it is impossible to say anything about how it ended up where it was found with any certainty whatsoever. That said, the fact that it was found in a disturbed part of a known archaeological site with an early historic period component makes the already intriguing site that it came from all the more interesting.

Not surprising, the coin generated quite a lot of interest and received intense international media coverage over a number of weeks. We have been deliberately vague about where the coin was found when discussing the site with the media and interested members of the public in an effort to keep the site and its contents safe. We have also encouraged serious academic interest in the site, as an active archaeology program as that there would be the best way to protect it.

For the PAO, perhaps the most important part of the story is the way that the discovery of the coin was handled by Edward Hynes. This was the first time that he had come across something that he thought might be historically significant and he initially reached out to a local museum who suggested that he contact the Rooms and the PAO about it, which he promptly did. He was also eager to provide the coin to the office so it could ultimately be perpetually cared for at the Rooms Provincial Museum. Reaching out to the PAO or the Rooms is exactly what we hope that members of the public will do when they accidentally encounter artifacts or features and Mr. Hynes deserves to be commended for his thoughtful actions.

References

Devereaux, Helen
1966 The Cape Ray Light Site: A Dorset Eskimo Site in South West Newfoundland. Department of Provincial Affairs, Newfoundland. Unpublished report on file at the Provincial Archaeology Office, Department of Tourism, Culture, Arts and Recreation, St. John's.

Fitzhugh, William W.
1972 Environmental Archeology and Cultural Systems in Hamilton Inlet, Labrador A survey of the Central Labrador Coast From 3000 B.C. to the Present. Smithsonian Contributions the Anthropology Number 16. Smithsonian Institution Press, Washington.

Fitzhugh, William W., Richard Jordan, James Adovasio, & Dosia Laeyendecker
2006 Cordage and Wood from the Avayalik Dorset Site in Northern Labrador. In *Dynamics Of Northern Societies Proceedings of the SILA/NABO Conference*, Copenhagen 2004.

Fogt, Lisa
1998a The Excavation and Analysis of a Dorset Palaeoeskimo Dwelling at Cape Ray, Newfoundland. Unpublished master's thesis, Memorial University.
1998b Report of the 1997 Archaeological Investigations at Cape Ray, Newfoundland. 97.16. Unpublished report on file at the Provincial Archaeology Office, Department of Tourism, Culture, Arts and Recreation, St. John's.

Janes, Diane P., Eugene P. Kennedy & Peter A. N. Gard
1988 Grand Bay West. Encyclopedia of Newfoundland and Labrador, 1988:682-683.

Jacques Whitford Environment Limited/IED Enterprises Inc.
1999 Archaeological Investigations at the Wapeneu Mikue Site (FjCa-47), Near North West River, Labrador, LHP 98-17. Unpublished report on file at the Provincial Archaeology Office, Department of Tourism, Culture, Arts and Recreation, St. John's.

Linnamae
1975 The Dorset Culture: A Comparative Study in Newfoundland and the Arctic. *Technical Papers of the Newfoundland Museum*, No.1.

Schwarz, Lynne and Fred Schwarz
1997 An Archaeological Survey of Grand Lake - North West River, Central Labrador, 1996. 96.14. Unpublished report on file at the Provincial Archaeology Office, Department of Tourism, Culture, Arts and Recreation, St. John's.

Photo Survey of the HMS *Raleigh* Shipwreck on the 100th Anniversary of Its Loss at the Point Amour Lighthouse Provincial Historic Site

Neil M. Burgess
Shipwreck Preservation Society of Newfoundland & Labrador Inc. (email: neil@shipwrecksnl.ca)

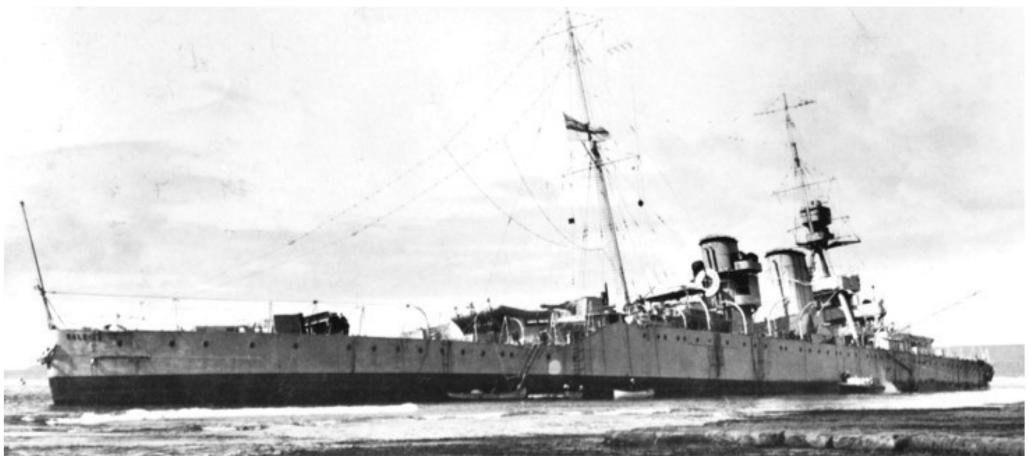


Figure 1: HMS *Raleigh* aground at Point Amour in August, 1922. This photo shows how close the ship was to the shallow rock ledges exposed at low tide. Photo: commons.wikimedia.org

Introduction

On August 8 1922, the Royal Navy cruiser HMS *Raleigh* ran aground in the fog at Point Amour, Labrador. The 605-foot-long warship was a total loss as heavy seas pounded the hull against the rocky shoreline. Divers from the Shipwreck Preservation Society of Newfoundland & Labrador (SPSNL) attended the 100th anniversary commemoration events at the Point Amour Lighthouse Provincial Historic Site on August 8 2022 and then conducted photo surveys of the shipwreck site.

HMS *Raleigh* joined the Royal Navy in July 1921. The cruiser spent the next year touring ports on the east and west coasts of North America, Panama Canal and the Caribbean on a goodwill tour (Rohmer 2003). On the morning of August 8 1922, *Raleigh* departed Hawke Bay on Newfoundland's Great Northern Peninsula to steam to Forteau Bay in southern Labrador (Carlill 1982). After passing an iceberg in the Strait of Belle Isle, the ship encountered thick fog as it approached Forteau Bay. Using dead reckoning, the ship's crew attempted to enter the Bay but instead ran aground on the rocky ledges of Point Amour (Rohmer 2003). With the ship's bow hard aground, the heavy following seas pushed the stern up against the shore, opening up a long gash in the hull (Figure 1). Captain Sir Arthur Bromley realized he would not get *Raleigh* off the rocks and he gave the order to abandon ship. In all, 11 or 12 sailors died in the aftermath, most when the first boat ashore capsized in the surf (Rohmer 2003; Naval-History.net 2023). However, roughly 700 officers and men got safety ashore and survived (Figure 2), in large part due to the shelter and assistance provided by the residents of Point Amour, L'Anse Amour and Forteau.

A salvage crew from HMS *Raleigh* remained at Point Amour for more than a month. They salvaged as much valuable equipment and classified documents as they could (Rohmer 2003). As soon as the Royal Navy abandoned the shipwreck in September 1922, fishermen in the Labrador Straits region began to salvage the wreck for food, alcohol, clothing, furniture, rifles, tools, coal, brass and copper. In 1923, the Royal Navy contracted Beasley Brothers from Halifax to recover the seven 7½" main guns and anchors from *Raleigh* (Rohmer 2003). In 1926, several Royal Navy warships including HMS *Calcutta* returned to Point Amour to demolish the *Raleigh* shipwreck with depth charges and explosives until it was unrecognizable. According to Royal Navy correspondence, the superstructure, bow and stern of the cruiser were blown off and the portside hull was blown open (Rohmer

2003). Salvage efforts were continued by T.F. & M. Salvaging and Wrecking Corp. of New York in 1932, by commercial salvage divers in the 1960s (Harvey-Clark 2013) and probably others.

Since 2002, the Royal Canadian Navy's Fleet Diving Unit (Atlantic) has been conducting periodic trips to the *Raleigh* shipwreck to dispose of unexploded ordnance, focusing on the hundreds of projectiles for the 7½" guns (Rohmer 2003).

Figure 2: HMS *Raleigh* aground at Point Amour and her crew ashore.
Photo: Naval-History.net

In recent years, Dr. Chris Harvey-Clark of Dalhousie University has led two scientific diving expeditions to the *Raleigh* wreck, which have included photo and video surveys and site mapping (Harvey-Clark 2013; Gallant 2013; Harvey-Clark unpubl. data).

Diving Surveys of HMS *Raleigh* on the 100th Anniversary of Its Grounding

Divers from SPSNL participated in the 100th anniversary commemoration event "Remembering the Raleigh" held at the Point Amour Lighthouse Provincial Historic Site (PALPHS) on August 8 2022. On display were artifacts from HMS *Raleigh* recovered by local families over the years (Figure 3). The anniversary event included speeches of remembrance, songs, videos and artwork by PALPHS artist-in-residence Karen Ann Pink.

We were unable to dive on HMS *Raleigh* on August 8 due to rough seas. However, we were able to dive on the shipwreck from shore on August 9 and 10. The remains of the shipwreck are located about 900 m west of the Point Amour lighthouse (Figure 4). On the first day, two SPSNL divers entered the water at the cobble beach near the *Raleigh* interpretive signs. This cobble beach was littered with wreckage including deck gun mounts and steel plating. We encountered remains of the ship immediately below the shallow bedrock ledges near shore. We swam southeast, parallel to

Figure 3: Some of the HMS *Raleigh* artifacts from the local community on display at the 100th anniversary event at the Point Amour Lighthouse Provincial Historic Site.
Photo: Neil Burgess.

Figure 4: Location map of the HMS *Raleigh* shipwreck at Point Amour, Labrador.

shore, from amidships on the wreck to the stern. The wreckage was strewn over the bottom between 5m and 8m deep. The remains of the ship were beaten flat and broken apart. There were dozens of large sheets of steel hull and deck plating, base rings from several deck guns (Figure 5), the motor from a torpedo, pipes, electric wiring, gear wheels, brass hardware, parts of a Yarrow boiler, sections of propeller shaft, davits and dozens of intact and broken projectiles for the 7½" main guns (Figure 6). At the stern of the wreck, we found a large hawse pipe, a stern anchor (Figure 7) and a steel four-blade propeller. We rose to the surface to locate the stern of the wreck relative to the shoreline.

On August 10, we entered the water at the same location and swam northwest from amidships on the wreck to the bow.

Figure 5: Base ring from a mount for a smaller deck gun. Photo: Neil Burgess.

The remains of the shipwreck were found at depths between 4 and 8 m. There were more sheets of steel hull and deck plating, brass hardware, steel springs and shackles, pipes, wiring, at least 10 m of anchor chain near the bow (Figure 8), and more intact and broken projectiles for the 7½" guns. We rose to the surface to locate the bow of the wreck relative to the shoreline.

Limitations

Water temperatures were warm at this site (14°C) and visibility was roughly 12 m. So, these conditions did not impair our ability to conduct visual surveys of the shipwreck site. There was limited seaweed growth on some of the larger steel features of the wreck.

Our small team of two divers conducted only two dives on the large wreck site. This limited our surveys to photography only. We did not determine

Figure 6: Intact projectile for 7½" gun on wreck of HMS *Raleigh*. Each unit of the scale bar is 10 cm. Photo: Neil Burgess.

the full extent of the wreck site and did not search deeper than 8 m. We made no attempt to accurately map or tape measure any of the features of the wreck site.

Interpretation and Discussion

The current state of the shipwreck confirms the extensive damage caused over the last 100 years by the demolition by the Royal Navy in 1926, the repeated salvage efforts by commercial salvage companies and local residents, saltwater corrosion, extreme wave action and winter sea ice. The extent of looting of artifacts by recreational divers over the years is unknown. Yet, despite all these disturbances to the wreck, thousands of features and artifacts of HMS *Raleigh* remain on the seafloor at Point Amour. The remaining parts of the wreck appear to roughly reflect their original positions on the ship when it ran aground. However, it is also obvious that many components of the ship (e.g., steam turbine engines, deck guns, brass propellers, etc.) have been removed, presumably by salvors.

The HMS *Raleigh* shipwreck does not have a lot of public profile outside the Labrador Straits region. There seems to be an opportunity to promote awareness of this significant shipwreck and its impact on the neighbouring communities in 1922 and thereafter. There are dozens of smaller and medium-sized artifacts that might be appropriate for interpretive display in local and provincial museums, if there was interest and financial support for their recovery and conservation. There are also funding sources (such as Digital Museums Canada) that might support online exhibits on HMS *Raleigh* and its fate. SPSNL is interested in partnering with other cultural heritage organizations to better tell the story of this shipwreck to the public.

However, the abundance of small artifacts on this wreck site could be attractive to unscrupulous recreational di-

Figure 7: SPSNL diver Ysabelle Hubert examines the stern anchor of HMS *Raleigh*. Photo: Neil Burgess.

Figure 8: Anchor chain at the bow of the HMS *Raleigh* shipwreck. Photo: Neil Burgess.

appeared to be clustered in what may have been the area of a magazine on the ship. HMS *Raleigh* in 1922 probably carried more than 1000 projectiles for the 7½" guns and perhaps 1800 3" artillery shells (Rohmer 2003). Despite the Explosive Ordnance Disposal (EOD) operations carried out by Royal Canadian Navy divers since 2002, which have deactivated hundreds of explosive projectiles and shells (Rohmer 2003), we have confirmed that more UXO remains on this wreck site in 2022. With storm events and the movement of the steel hull plating, it would seem inevitable that additional UXO will be exposed over time. Recreational divers and beachcombers visiting this wreck site need to be warned of the UXO risks.

vers, who might loot the wreck site. Stewardship of this shipwreck site is fostered by the proximity of the PALPHS and by the engagement of the local community, as demonstrated by the large turn-out at the 100th anniversary event. It is worth considering what other measures could help protect this site from illegal human interference.

Potential Risks to the Site

This shipwreck is an archaeological site regulated by the Provincial Archaeology Office. As such, it is strictly illegal to disturb or remove any artifacts or remains from the site under the Historic Resources Act.

As the wreck is located on a rocky point at shallow depths, it is exposed to extreme wave action and suspended particle abrasion during storm events. The site is also subject to sea ice in the winter and spring. The risk of looting by recreational divers is high, since the site has thousands of small to large artifacts and is readily accessible from shore or by boat when seas are calm.

There are significant risks from unexploded ordnance (UXO) at this wreck site. While the majority of the projectiles we saw for 7½" guns were broken open, more than a dozen were still intact. These

Project Outcomes

Through this project, SPSNL has met its goals of documenting and promoting public awareness of a historically significant Royal Navy shipwreck at the Point Amour Lighthouse Provincial Historic Site. Outcomes include:

1. supporting local community interest in their shipwreck heritage,
2. conducting underwater photo surveys of a historically significant shipwreck site,
3. establishing a new partnership with the staff of the Point Amour Lighthouse Provincial Historic Site, and
4. submitting this report to the NL Provincial Archaeology Office.

Next Steps

There are several activities which SPSNL is planning for the future:

1. further historical research on this shipwreck,
2. further research on past diving surveys of this shipwreck,

3. more detailed underwater surveys of the shipwreck,
4. continuing our public education activities on our website and social media channels,
5. opening discussions with the Point Amour Lighthouse Provincial Historic Site, The Rooms Provincial Museum Division and the Provincial Archaeology Office about the possibility of recovering selected artifacts from this shipwreck site for interpretive display to the public, and
6. sharing this report with the Department of National Defence's UXO Legacy Sites Program.

Acknowledgements

SPSNL gives special thanks to Bonnie Goudie and the staff at the Point Amour Lighthouse Provincial Historic Site and the Labrador Straits Historical Development Corporation for their hospitality at the 100th anniversary *Raleigh* event and for their generous support and encouragement for this shipwreck survey. We also thank Dr. Chris Harvey-Clark for sharing the results of his past scientific diving expeditions on HMS *Raleigh*. We also thank Ysabelle Hubert for her volunteer participation in the SPSNL diving survey. This shipwreck survey was carried out under an archaeological investigation permit from the NL Provincial Archaeology Office. SPSNL acknowledges the service and commitment of personnel from the Royal Canadian Navy's Fleet Diving Unit (Atlantic), who have carried out EOD operations at this shipwreck site to reduce UXO risks to recreational divers and the public. SPSNL also remembers the service and sacrifices made by the officers and crew of HMS *Raleigh*.

References

Carlill, Stephen. (1982) The Wreck of HMS *Raleigh*. Naval Review 70(3): 165-173.

Gallant, Jeffrey. (2013) Canadian expedition revisits the wreck of the HMS Raleigh: Explosive History Recalled. Diver Magazine, 38(4): 42-47.

Harvey-Clark, Chris. (2013) DRAFT Raleigh Expedition August 6-11 2012 Preliminary Report. Submitted to the NL Provincial Archaeology Office.

Kindell, Don. (2023) 1918-1939 – Casualty Lists of the Royal Navy and Dominion Navies: 1922 – in date, ship/unit & name order. accessed 7 Mar 2023. https://www.naval-history.net/xDKCas1922.htm

Rohmer, Richard. (2003) Raleigh on the Rocks: The Canada Shipwreck of HMS *Raleigh*. Creative Publ., St. John's, NL.

Photo Survey of Underwater Cannons at the Little Mortier Guns Site (CgAs-1) in Fox Cove-Mortier, Newfoundland & Labrador

Neil M. Burgess[1], Mike Brennan[2,3], Michael Schwinghamer[1,4] & Mary Mayo[3]
[1.] Shipwreck Preservation Society of Newfoundland & Labrador Inc. (email: neil@shipwrecksnl.ca)
[2.] Burin Eco-Tours Ltd.
[3.] Garrison Point Committee, Fox Cove-Mortier Municipal Council
[4.] Nova Scotia Underwater Council

Introduction

In 1982, the Newfoundland Marine Archaeology Society (NMAS) located "three severely abraded iron guns" underwater below a rocky point in Little Mortier Bay, Newfoundland & Labrador (NMAS 1982, 1983). The point, locally known as Garrison Point, was a former gun battery, thought to be "part of land fortifications for merchant interests at Mortier in the 18th and early 19th centuries" (NMAS 1982). It appears the three cannons were tipped over the cliff into the sea at some point.

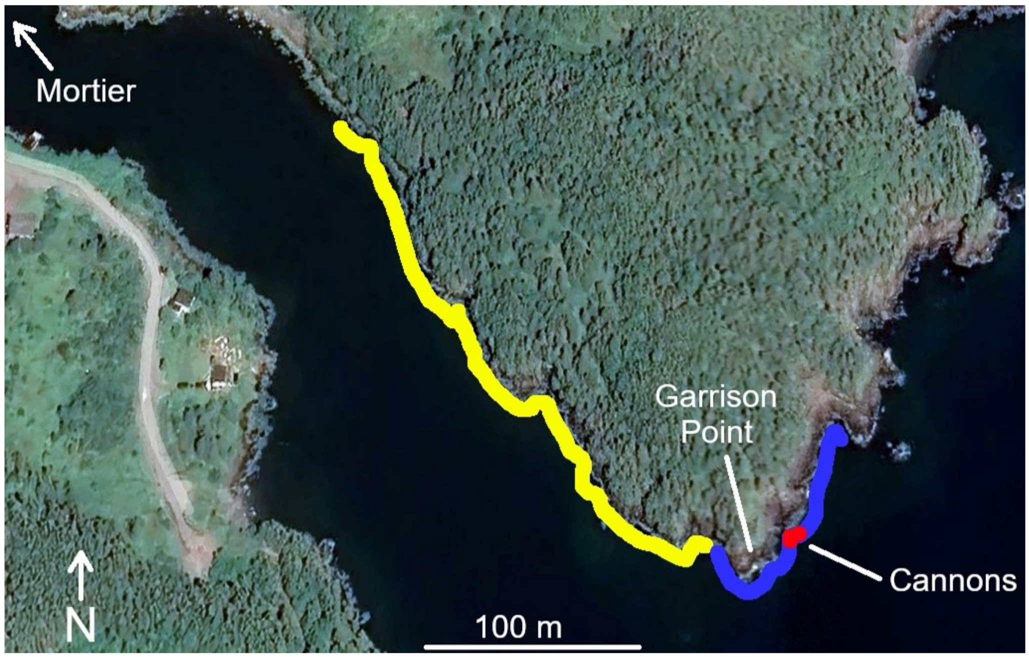


Figure 1: Locations of SPSNL diving surveys and three cannons at Garrison Point, Little Mortier Guns site (CgAs-1) in Fox Cove-Mortier, Newfoundland & Labrador. Scuba diving survey area is shown in blue and shoreline snorkel survey is shown in yellow. The three underwater cannon locations are shown by red dots.

Mortier was known as Little Mortier in the 18th century. Jamie Brake et al. (2022) provide a summary of the history of the place-name and historical references that confirm the presence of a gun battery at "Mortier." However, it is unclear from those historical references whether the battery was located in Little Mortier or Great Mortier, which was the 18th-century place-name for Marystown. Howley (1912) explains the place-name "Mortier" derives from the French word for "mortar." He also confirms the remains of a fortification and rusty iron guns on the ground there.

To this, we will add the following historical evidence for an 18th-century gun battery at Mortier. During the American War of Independence, the British Governor of Newfoundland John Montagu was concerned about possible attacks by American privateers on coastal fishing communities. In 1778, "Governor Montagu encouraged the more influential residents of the leading outports to support the erection of small [gun] batteries for the defence of their harbours, using ordnance no longer needed at Placentia" (Janzen 1984). As predicted, American privateers plundered several fishing communities including St. Lawrence and Burin in 1779, and then attacked Mortier unsuccessfully in the spring of 1780 (Janzen 1984). In September 1780, the new Governor of

Figure 2: SPSNL diver Neil Burgess collecting underwater photos of cannon 1 at Garrison Point, Little Mortier Guns site (CgAs-1). Photo: Michael Schwinghamer SPSNL.

Newfoundland Richard Edwards responded by ordering his Ordnance Quartermaster to supply four barrels of gunpowder, 150 round shot (cannonballs) for six-pounder cannons and 60 round shot for four-pounder cannons to Samuel Spratt (Janzen 1984), who was a merchant operating in Mortier, Burin, Oderin, and St. Lawrence. Presumably, Spratt already had cannons in place to fire this newly supplied ammunition. Therefore, it is possible the guns at Garrison Point date from this period.

In 2022, we set out to re-locate and record the three submerged cannons. This report summarizes that survey.

Diving Survey of the Little Mortier Underwater Guns Site: CgAs-1

On September 4 2022, three of the authors travelled by rigid-hulled inflatable boat (RHIB) from Burin to Little Mortier Bay on the south coast of the Burin Peninsula. Two divers with underwater cameras entered the sea just west of the southern tip of Garrison Point and searched eastward below the intertidal zone for the cannons (Figure 1). The first cannon we encountered was 5 m deep. The cast iron gun was heavily corroded. No markings or reinforcing rings were visible on the barrel. No button was visible on the breech. A raised mound of iron halfway along the barrel may have been the remains of a trunnion. The barrel near the muzzle was broken off. We collected photos of the cannon (Figure 2) and surfaced to get an approximate location of the gun relative to the shoreline.

We continued the search eastward and found a second cannon at 3.5 m deep. This iron gun was also heavily corroded. Like the first cannon, there were no markings or reinforcing rings visible on the barrel. There was no button on the breech or trunnions remaining. The barrel was broken off shorter than on cannon 1. Photos were collected of the gun and we surfaced to get an approximate location of the cannon.

Continuing eastward, we found a third gun at 4.5 m deep. This iron gun was even more corroded and pitted than the other two. It had no markings or rings on the barrel or button on the breech. However, there was the heavily corroded remains of a trunnion on the barrel. The barrel appeared to be intact but any features of the muzzle were corroded away. We collected photos and the approximate location again.

Cannon 1 was located on a rocky ledge, while cannons 2 and 3 were wedged in crevices on a steep bedrock slope, extending from the waterline down to 10 to 15 m. All the guns appeared to be securely attached to the surrounding bedrock with concretions. We continued searching eastward and then returned

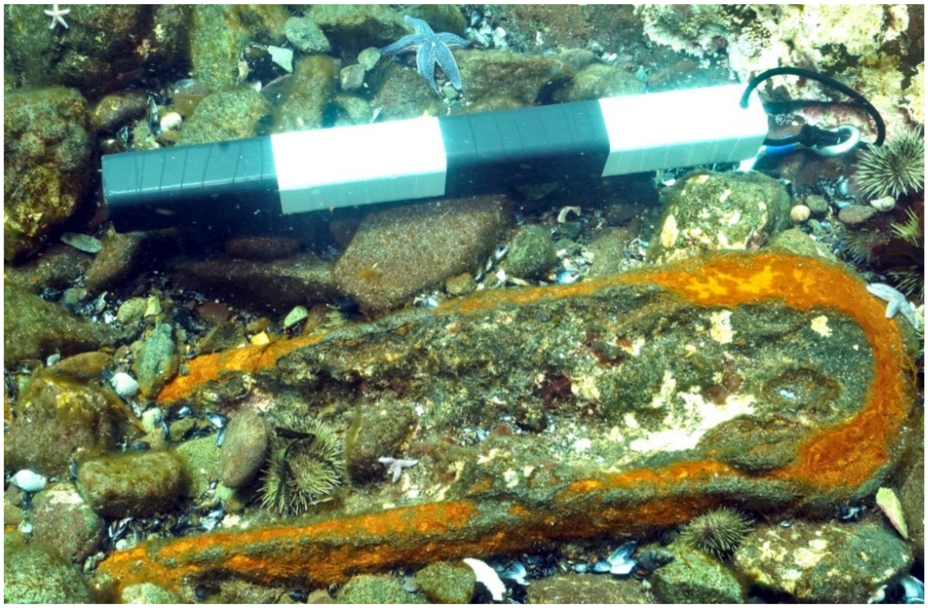


Figure 3: Iron fragment that appears to be a section of cannon barrel at Garrison Point, Little Mortier Guns site (CgAs-1). Each unit of the scale bar is 10 cm. Photo: Neil Burgess SPSNL.

to the west but at a depth of 13 m (Figure 1). We encountered an iron fragment at the bottom of the rocky slope that appeared to be a broken section of a gun barrel (Figure 3). No evidence of a shipwreck or other artifacts were found.

We then removed our scuba gear and snorkeled from Garrison Point northwest towards Mortier (Figure 1). We searched the intertidal zone for a small brass gun, suggested to be there by local knowledge and Walsh (1980). We found nothing.

Limitations

Water temperatures were warm at this site (17°C) and visibility was roughly 10 m. Therefore, these conditions did not impair our ability to conduct visual surveys for the submerged guns. Seaweed growth was thick in the intertidal zone from Garrison Point northwest towards Mortier. This made our snorkeling search of the shoreline less than completely thorough.

Our measurements of the underwater cannons will not reflect their original dimensions due to two factors: loss of the outer layers of cast iron to saltwater corrosion and abrasion, and ii) marine growth on the surface of the guns, mainly coralline algae.

Our small dive team of two and short time on site limited our surveys to photography only. We made no attempt to map the cannon site or tape measure the guns underwater.

Interpretation and Discussion

Walsh (1980) first mentioned these submerged iron guns in a Newfoundland scuba divers guide, but he provided no indication of the number of guns or their location beyond Mortier Bay. NMAS (1982, 1983) reported on the location of the three guns and indicated that measurements were taken of the guns (but provided no data). Research into the NMAS records held at the NL Provincial Archaeology Office yielded diver report forms, guns measurements and sketches (Figure 4) from the 1982 fieldwork at Mortier.

Figure 4: Sketch of three cannons at the Little Mortier Guns site (CgAs-1) by divers from the Newfoundland Marine Archaeology Society (NMAS) in 1982. Sketch: David Barron and Brian Fleming NMAS.

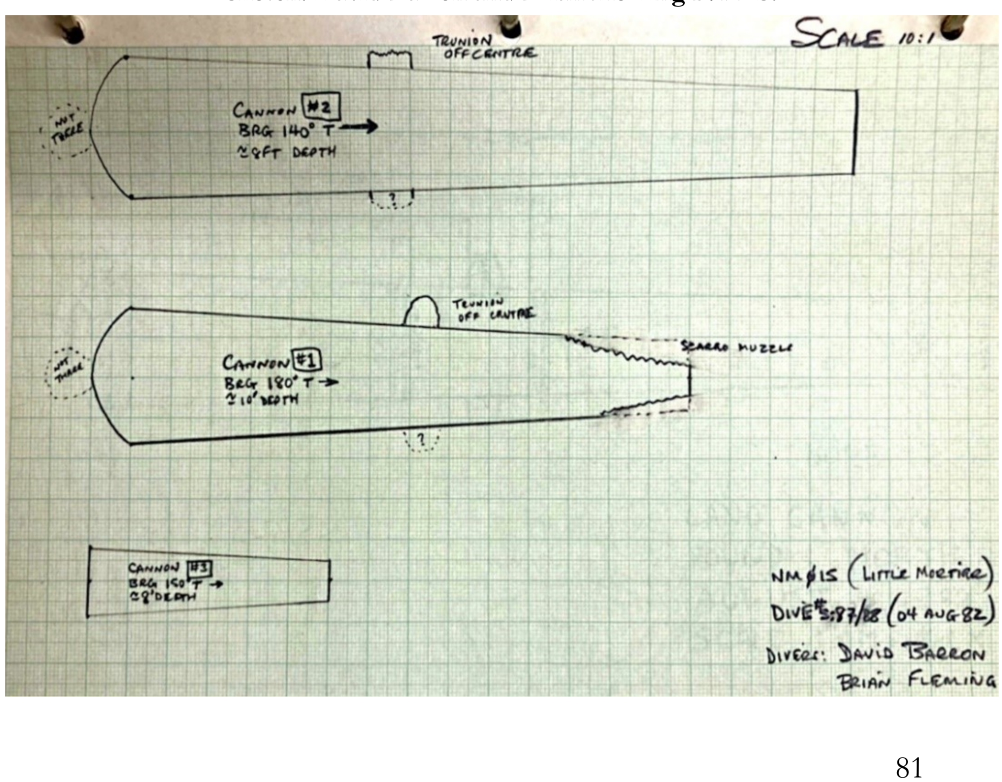


Figure 5: 3D photogrammetry image of cannon 1 at Garrison Point, Little Mortier Guns site (CgAs-1) in Fox Cove-Mortier, Newfoundland & Labrador. Each unit of the scale bar is 10-cm. 3D model: Neil Burgess SPSNL. View the interactive 3D model at https://skfb.ly/oE9RZ

Figure 6: 3D photogrammetry image of cannon 2 at Garrison Point, Little Mortier Guns site (CgAs-1). Each unit of the scale bar is 10-cm. 3D model: Neil Burgess SPSNL. View the interactive 3D model at https://skfb.ly/oE9SA

Figure 7: 3D photogrammetry image of cannon 3 at Garrison Point, Little Mortier Guns site (CgAs-1). Each unit of the scale bar is 10-cm. 3D model: Neil Burgess SPSNL. View the interactive 3D model at https://skfb.ly/oE9WN

Artifact	3D cannon models			NMAS 1982		
	Length overall (cm)	Diameter base ring (cm)	Bore (cm)		Length overall (cm)	Diameter base ring (cm)
Cannon 1	176 (broken)	29	~10			
Cannon 2	147 (broken)	27	8	cannon 1	150 (broken)	33
Cannon 3	187	28	--	cannon 2	190	30
Fragment	47 (broken)	15	~11			
				cannon 3	60 (buried)	17

Table 1: Measurements of 3D photogrammetry models of three underwater cannons at Garrison Point, Little Mortier Guns site (CgAs-1). Also cannon measurements made by the Newfoundland Marine Archaeology Society (NMAS) in their 1982 survey.

We converted our series of underwater photos of the three cannons and the barrel fragment into three-dimensional (3D) photogrammetry models (Figure 5 – 7) using Agisoft Metashape software (Agisoft 2023). Using the measurement feature in Metashape, we measured the three cannon models and compared those to the 1982 NMAS measurements (Table 1). The measurements match fairly well between our cannon 2 and NMAS cannon 1. Likewise, our cannon 3 seems to correspond to NMAS cannon 2. However, we are unsure if NMAS cannon 3 is the same as our barrel fragment or perhaps cannon 1, if it was mostly buried in sediment in 1982. From the measurements, it seems the barrel fragment may be a closer match. If this is the case, then our cannon 1 may have been buried in gravel or sediment in 1982 and it was missed by the NMAS survey. In all cases, our measurements are a few cm smaller than the NMAS dimensions from 1982, which confirms the continuing deterioration of the cast iron guns by saltwater corrosion and particle abrasion.

The cannon bore measurements suggest that cannon 1 is a nine-pounder gun, cannon 2 is a four-pounder and the barrel fragment is from a nine-pounder gun (possibly cannon 1), according to the dimensions given by Collins (2023). More accurate measurement of the cannon bores in-situ would strengthen these conclusions. The length of cannon 3 indicates it is a six-foot long cannon (muzzle to base ring).

The location of the three submerged cannons is directly below a grassy clearing near the southern tip of Garrison Point. Two more cast iron muzzle-loading guns are located in this clearing (Brake et al. 2022), which may be the site of the original gun battery mentioned by Howley (1912). One of the terrestrial guns appears to be a nine-pounder cannon (Brake et al. 2022). The second gun is a shorter carronade, which until recent years was buried under the grass. We agree with the conclusions of NMAS (1982, 1983) that the three guns underwater were probably tipped into the ocean from this terrestrial gun battery at the top of the seacliff directly above.

A more detailed examination and analysis of these cannons above and below the water may be able to better determine their age and size. Further historical research might provide more details on the establishment of this gun battery by merchants in Little Mortier.

Potential Risks to the Site

These underwater cannons comprise an archaeological site regulated by the Provincial Archaeology Office. As such, it is strictly illegal to disturb or remove any artifacts or remains from the site under the Historic Resources Act.

As these guns are located on a rocky point at shallow depths, they are exposed to wave action and suspended particle abrasion during storm events. The heavy corrosion of these guns is the result. The risk of looting of the guns by recreational divers is low because of their weight, their concretion to the bedrock and their heavily corroded condition. The two guns at the old battery site on land are probably at greater risk than these three guns underwater.

Project Outcomes

Through this project, SPSNL has met its goals of locating, documenting and promoting public awareness of a historically significant cannon site at Garrison Point. Outcomes include:

1. responding to local community interest in their maritime heritage,

2. conducting dive surveys of three underwater cast iron cannons,
3. collecting photos of the guns and creating 3D photogrammetry of all three,
4. establishing new partnerships with Burin Eco-Tours Ltd. and the Garrison Point Committee, and
5. submitting this report to the NL Provincial Archaeology Office.

Next Steps

There are several activities which SPSNL is planning for the future:

1. further historical research on these cannons,
2. further research on past NMAS surveys of this cannon site,
3. more detailed underwater surveys of these three guns, and
4. continue our public education activities on our website and social media channels.

Acknowledgements

SPSNL thanks Kerry Wiscombe from Burin Eco-Tours Ltd. for assisting with this survey and sharing his knowledge about the site. We also thank the Garrison Point Committee of the Fox Cove-Mortier Municipal Council for their support. Special thanks to the volunteer divers who conducted the 1982 cannon surveys for the NMAS. Thanks also to John Erwin for his recent survey of the two terrestrial guns at this site. This shipwreck survey was carried out under an archaeological investigation permit from the NL Provincial Archaeology Office.

References

Agisoft. (2023) Agisoft Metashape, version 1.8.4. Agisoft LLC, St. Petersburg, Russia. https://www.agisoft.com/

Collins, A.R. (2023) British Cannonball Sizes. accessed 3 Mar 2023. https://www.arc.id.au/Cannonballs.html

Brake, Jamie, John Erwin, Stephen Hull and Delphina Mercer. (2022) Permit 21.31: Report on the Fox-Cove-Mortier Survey and Testing of the Little Mortier Guns (CgAs-01). in 2021 PAO Review, vol. 20. Stephen Hull and Delphina Mercer (eds.) pp. 13-21. Provincial Archaeology Office, Tourism, Culture, Arts and Recreation, Government of Newfoundland, St. John's, NL.

Howley, M.F. (1912) Newfoundland Name-Lore XXXIII. The Newfoundland Quarterly 11(4): 1-2.

Janzen, Olaf. (1984) The Royal Navy and the Defence of Newfoundland during the American Revolution. Acadiensis 14(1): 28-48.

Newfoundland Marine Archaeology Society (NMAS). (1982) Newfoundland Marine Archaeology Society Annual Report 1982. NMAS, St. John's, NL.

Newfoundland Marine Archaeology Society (NMAS). (1983) A Survey of Underwater Archaeological Shipwreck Sites on the Newfoundland Coast: II. The Burin Peninsula and the Isle-aux-Morts. in Archaeology in Newfoundland & Labrador 1982. Jane Sproull Thomson and Callum Thomson (eds.) pp. 195-203. Historical Resources Division, Department of Culture, Recreation & Youth, Government of Newfoundland & Labrador, St. John's, NL.

Walsh, David. (1980) The Intriguing Waters of Newfoundland. Jesperson Printing Ltd., St. John's, NL.

Rediscovery and Initial Exploration of RCAF B-24 Liberator Plane Wreck in Gander Lake

Neil M. Burgess[1], Tony Merkle[1], Kirk Regular[1,2], Rick Stanley[1,3], Jill Heinerth[4], Maxwel Hohn[5], and Adam Templeton[2]
1. Shipwreck Preservation Society of Newfoundland & Labrador Inc. (email: neil@shipwrecksnl.ca)
2. Centre for Applied Ocean Technology, Fisheries & Marine Institute, Memorial University of Newfoundland
3. Ocean Quest Adventures
4. Royal Canadian Geographical Society Explorer-in-Residence
5. Salish Sky

Figure 1: Consolidated Liberator bomber 595 "X" of No. 10 Bomber Reconnaissance Squadron based in Gander. This aircraft had the same design and markings as Liberator 589 "D" that crashed into Gander Lake. Photo: Library & Archives Canada.

Introduction

In 1943, a B-24 Liberator bomber from No. 10 Bomber Reconnaissance (BR) Squadron of the Royal Canadian Air Force (RCAF) crashed into Gander Lake shortly after take-off. The four RCAF airmen on board were killed in the crash. In 2022, members of the Shipwreck Preservation Society of Newfoundland & Labrador Inc. (SPSNL) set out to determine the current location of the bomber wreck in Gander Lake and to conduct initial diving surveys of the wreck site. This report will summarize SPSNL activities and findings in 2022.

Background on the Aircraft and the Crash

Liberator 589 "D" was one of the first 15 Consolidated Liberators GR Mk. V (Canada) delivered to the RCAF in April 1943 (Figure 1) (Vincent 1975). (It was a B-24D under the American USAAF classification system.) It joined No. 10 (BR) Squadron at Gander in late April, 1943, to carry out very-long-range anti-submarine patrols and convoy escorts over the western North Atlantic (Vincent 1975). The bomber was fitted with an Air-to-Surface Vessel (ASV) centimetric radar in the chin position (under the nose of the fuselage) (Vincent 1975). This radar was used to locate U-boats on the surface of the ocean, day or night. Liberator 589 was armed with six .50 caliber Browning M2 machine guns when it crashed but carried no depth charges or bombs (RCAF 1943a).

Early on September 4, 1943, Liberator 589 "D" took off from the Gander air station with four RCAF personnel on board for a "local night practice" flight (RCAF 1943b). The bomber's pilot was Wing Commander John Maitland Young from Oakville, ON (the commanding officer of No. 10 (BR) Squadron). The co-pilot was Flying Officer Victor Edward Bill from Winnipeg, MB and the aero-engine crewman was Leading Aircraftman Gordon Ward from Toronto, ON. Squadron Leader J. Grant MacKenzie from Lucknow, ON was a passenger on the bomber,

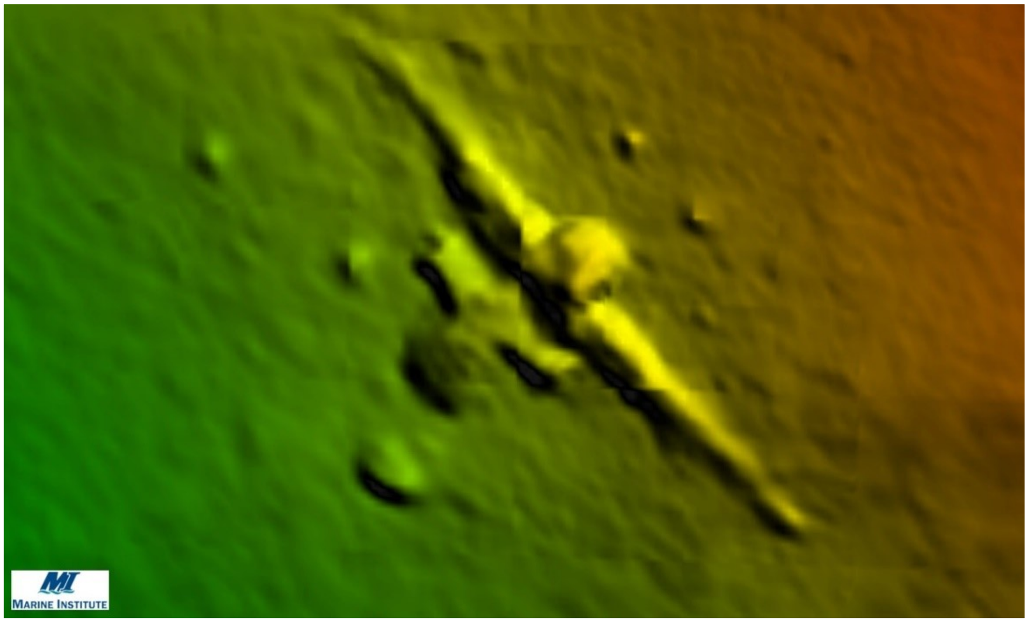


Figure 2: Multibeam echosounder image of the plane wreck site on the bottom of Gander Lake. Photo: Kirk Regular, Marine Institute.

doing medical research on hearing loss among RCAF aircrew (RCAF 1943a,b; CVWM 2023). The bomber took off at 12:06 am local time (01:36 GMT) on runway 27. Eyewitnesses said that as the bomber climbed from the runway "the port wing dropped and the aircraft rolled over 3 or 4 times, finally stalled and dove into the water of Gander Lake, still turning" (RCAF 1943c). The RCAF crash investigation concluded that "the cause of the accident is obscure and from the evidence may have been due to the outboard port engine failing with resultant loss of control" (RCAF 1943a, c). All four airmen were initially designated "missing presumed killed" and their next of kin were notified (RCAF 1943b).

The approximate location for the plane wreck was included in the RCAF crash documents as "150 yards off shore north side Gander Lake 1 mile southwest of west end of runway 27" (RCAF 1943b) or "approx. 2 miles W[est] from end of runway" (RCAF 1943c).

Recovery Efforts in 1943

Hard-hat divers from the Royal Canadian Navy were flown into Gander the day after the crash. It took them three days of diving to locate the Liberator bomber wreck (Annis 1943), despite it leaking fuel to the surface of the lake. They found the wreck at a depth of 42 m (138 feet) (RCAF 1943a). The divers recovered the body of Squadron Leader MacKenzie from the wreck on September 10, 1943 (Annis 1943). The divers described the bomber as "very seriously damaged" (RCAF 1943a). Diving operations continued until September 16, when they were called off due to the "strong danger" to the Navy divers (Annis 1943). They were unable to recover the plane wreckage for the crash investigation or the other three bodies from the bottom of Gander Lake (RCAF 1943a). Efforts continued to recover some or all of the plane wreck using grappling hooks from the surface of the lake but with no success (Annis 1943).

Relocating the Bomber Wreck in Gander Lake

On June 21, 2022, staff from the Centre for Applied Ocean Technology at the Marine Institute were conducting bathymetric surveys of western Gander Lake with a multibeam echosounder under contract to New Found Gold Corp. With the approval of New Found Gold, they moved their survey vessel to the eastern half of Gander Lake, to search for the wreck of Liberator 589. Using the approximate location found in the RCAF crash documents (RCAF 1943b, c), a multibeam echosounder survey (Kongsberg EM2040P operating at 400kHz) soon located the bomber wreck on the lake bottom at a depth of approximately 38 – 46 m. The exact location of the bomber wreck was determined with a Differential Global Navigation Satellite System (DGNSS), positioning the wreck within 10 cm accuracy. From the multibeam sonar images, the bomber's wings and a portion of the fuselage appeared to be fairly intact but the rest of the fuselage and tail assembly seemed to be broken apart (Figure 2). The four engines did not appear to be attached to the wing.

ROV Dive on the Bomber Wreck

On June 30, 2022, the team from the Marine Institute used a remotely operated vehicle (ROV; Deep Trekker Pivot) to examine the bomber wreck.

Figure 3: Frame from underwater video collected using a remotely operated vehicle (ROV) in Gander Lake. The photo shows the engine mount piping on the wing of the Liberator bomber wreck. Frame from video: Adam Templeton, Marine Institute

Video collected by the ROV showed parts of the heavily damaged fuselage and the wing with the exposed piping of an engine mount (but no engine) (Figure 3). Particulate matter stirred up by the ROV's thrusters impaired the visibility of the video images as did the brown colour of the lake water. The limited visibility resulted in the ROV images showing only small portions of the plane wreck.

Initial Scuba Surveys of the Bomber Wreck

The first diving surveys of the Liberator bomber wreck occurred on September 5 & 6, 2022 by divers from SPSNL and a team of underwater videographers, technical divers and recreational divers taking part in the Great Island Expedition, organized by dive operator Ocean Quest Adventures and supported by the Royal Canadian Geographical Society. The depth of the plane wreck (39 m) was at the very limit for recreational scuba diving, so the technical divers on the team conducted decompression dives to extend their bottom times on the wreck. One member of the team used a rebreather for the same purpose. Underwater video and photographs were collected with the goal of confirming the identity of the plane wreck as Liberator 589 "D".

Using the DGNSS coordinates determined in the June sonar survey, we were able to dive onto the plane wreck and temporarily attach a buoy line. The dark brown water in Gander Lake reduced the visibility underwater, even with powerful dive and video lights, to about 2 m. Nevertheless, we were able to collect 113 min of video and dozens of photos of the plane wreck.

During the dives, it was apparent that the plane wreck was upside-down with the wings intact, the landing gear partially extended and the fuselage heavily damaged (Figure 4). The forward section of the fuselage was attached to the leading edge of the wing, but the bottom of this part of the fuselage was

Figure 4: Preliminary site map of RCAF Liberator bomber wreck site in Gander Lake. The wreck site extends beyond the area shown and has yet to be fully explored. Locations of the outlying objects are approximate. Portions of this drawing are adapted from Liberator GR Mk. V (Canada) plans contained in Vincent (1975). Map: Neil Burgess

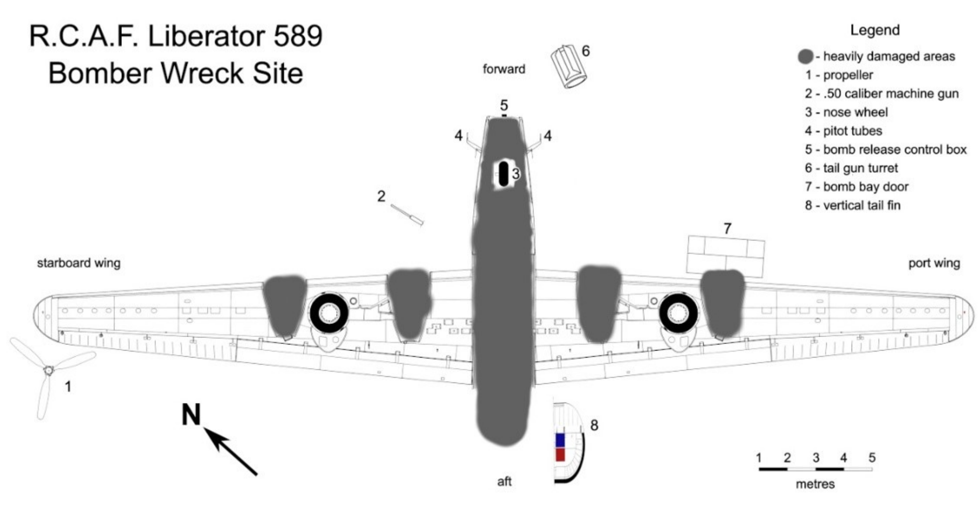


Figure 5: Nose wheel of landing gear in the extended position. Metal pieces on the left are the two nose wheel doors that close when the wheel is retracted into the fuselage after take-off. Frame from video: Jill Heinerth

torn open, exposing bent aluminum structural frames, electrical cables, hydraulic lines and jumbled machinery. A belt of .50 caliber ammunition was also visible, presumably for the upper turret machine guns. The plexiglass windows and their frames in the front of the nose (also called the "greenhouse") (see Figure 1) were ripped out, but some of the windows along the sides of the forward fuselage were intact or broken. Since the plane wreck was upside-down, the cockpit and upper gun turret were buried in the lake bottom and were not visible. The nose wheel of the landing gear was extended (Figure 5) but the two larger wheels on the underside of the wings were almost fully retracted.

All four engines were torn from their mounts on the wings. However, the pipes of the four engine mounts remained on the leading edges of both wings. The four engines were not found during these or subsequent diving surveys in 2022.

Several markings on the exterior of the forward fuselage and underside of the wing were visible. A vertical red propeller warning stripe (about 5 cm wide) was seen on either side of the forward fuselage. Similar horizontal red stripes were located outboard of the outboard engine mounts on the underside of each wing. These stripes can be seen in Figures 1 & 6.

The aft half of the fuselage and most of the bomb bay were no longer attached to the wings. We did not locate the aft fuselage, most of the tail assembly or the four engines during our diving surveys. With limited dive time on the wreck because of the depth, the poor visibility impaired our ability to visu-

Figure 6: Vertical red propeller warning stripes on the port side of the forward fuselage. Frame from video: Maxwel Hohn

Figure 7: Bomb release interval control box in the open nose of the bomber wreck. Frame from video: Maxwel Hohn

ally search and determine the full extent of the wreck site.

Several parts of the plane were dislodged from the main wreck (Figure 4). A single .50 caliber machine gun and some of the ammunition feed track was partially buried in the lake bottom just forward of the inboard starboard engine mount. With the heavy damage to the nose of the plane, the contents of the bombardier's and navigator's compartment were in disarray. However, one of the bombardier's controls was sitting on top of a debris pile at the very nose of the plane wreck. This was the bomb release interval control box (or intervalometer), which controlled the number of bombs dropped and their spacing (Figure 7) (Consolidated Aircraft 1942). Near the nose of the plane wreck, the tail machine gun turret was displaced from the fuselage and found lying on its front on the lake bed (Figure 8). One of the bomb bay doors was lying flat on the lake bottom just forward of the outboard port engine mount. One of the vertical tail fins was partially imbedded in the bottom just behind the inboard port wing. A RCAF fin flash (red and blue flag) was clearly marked on the side of this tail fin (see Figures 1 & 9). What looked like a second bomb bay door lay crumpled beside the tail fin.

Follow-up Scuba Surveys

On October 16 & 17 2022, additional diving surveys were carried out to collect more video of the bomber wreck. These surveys focused more on the starboard wing and fuselage. One three-bladed propeller assembly was found near the starboard wingtip (Figure 10). Two of the propeller blades were bent. There were masses of bent tubing and wiring still attached to the starboard engine mounts, but not on the port side. An engine oil cooler and oil tank were also found connected to the inboard starboard engine mount only.

Limitations

The multibeam echosounder survey clearly identified the wreck site and DGNSS coordinates allowed our team to dive directly onto the plane wreck. However, the resolution of the multibeam images did not provide adequate detail to identify parts of the aircraft away from the main bomber wreck. Nor were

Figure 8: Tail machine gun turret lying on the lake bed near the nose of the bomber wreck. Frame from video: Jill Heinerth

they clear enough to provide much detail for mapping the wreck site beyond the wings. Without accurate DGNSS coordinates, it would be next to impossible to locate the wreck site by diving, given the limited visibility underwater. The plane wreck was also not visible to boaters using consumer-grade echosounders (fishfinders).

The diving surveys of this bomber wreck faced several significant limitations: i) dark brown waters with limited visibility, ii) deep dives with limited bottom time, iii) nitrogen narcosis, and iv) cold water temperatures. The dark brown colour of the water in Gander Lake is the result of the inflow of dissolved humic acids in runoff from bogs in the upstream watershed. It limited our visibility by absorbing light from dive and video lights within 2 m. Visibility was also hampered by an easily-disturbed layer of light sediment on the surface of the plane wreck. The fin kicks of the dive team tended to suspend this sediment in the water around the wreck. The combined impact of the brown water and suspended sediment made it impossible to view the entire wreck site from one location, difficult to navigate around the site and hard to collect high-quality video and photos of the wreck. On these initial surveys, very little time was available to search away from the main plane wreck for dislodged parts, such as the tail assembly, the aft fuselage and the four engines. The depth of the wreck (39 m) meant that dive times were limited. The no-decompression dive time limit for recreational divers on this wreck was only 8 min. Decompression divers in our team limited their bottom time to roughly 20 minutes and

Figure 9: RCAF fin flash on vertical tail fin of Liberator bomber wreck. Frame from video: Neil Burgess

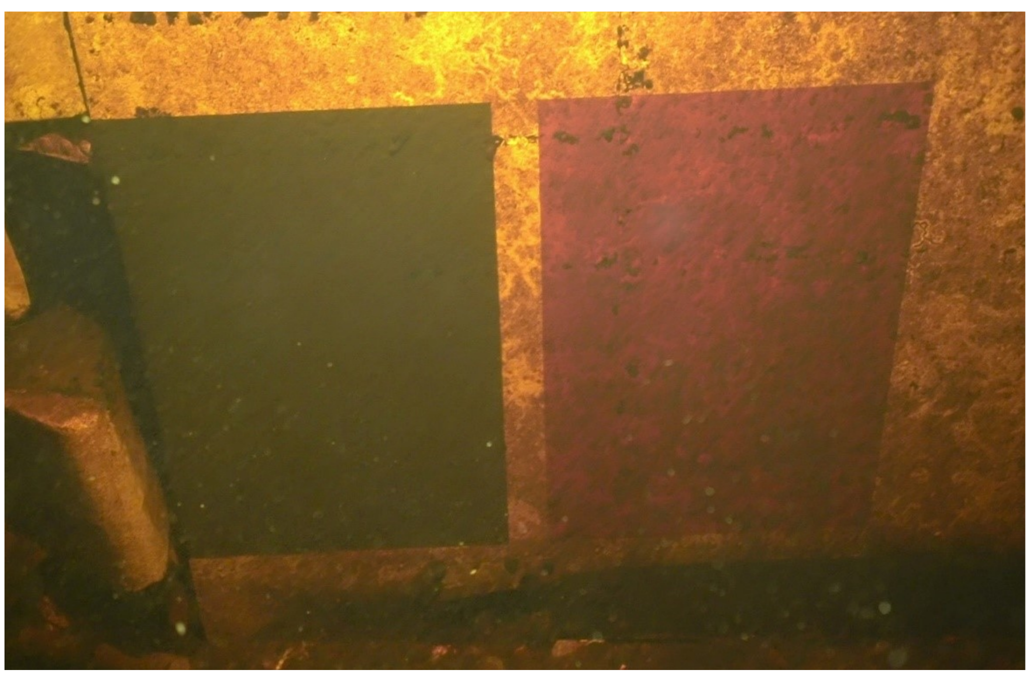


Figure 10: Propeller with three blades near the starboard wingtip. Frame from video: Rick Stanley

then took another 20+ minutes ascending and decompressing before reaching the surface. At 39 m depth, all divers breathing air or nitrox (oxygen-enriched air) experienced impairment caused by nitrogen narcosis. This narcosis inhibits mental abilities such as cognition, memory and decision making. These effects have a negative impact on data collection, situational awareness and diver safety. These risks can be mitigated by adding helium in the diver's breathing gas (trimix), but this is expensive and requires additional technical dive training. Trimix was used by one survey diver on October 16 to successfully mitigate narcosis risks. The cold water temperatures year-round on this wreck in Gander Lake (6°C) put added stress on the divers' comfort, mental acuity, manual dexterity and safety. The cold water can also limit the length of decompression dives, in order to avoid hypothermia. Appropriate diving equipment, training and experience can reduce the risks associated with cold water temperatures, deep depths and nitrogen narcosis. Strong safety awareness, preparation, equipment, training and experience, along with adequate dive boat support, are essential to safe diving operations at this depth.

Interpretation and Discussion

Examination of the many features of and markings on the plane wreck in the underwater videos and photos confirm that this is the wreck of a Consolidated Liberator bomber. The markings on this aircraft are consistent with those of Liberator bombers used by the RCAF and RAF for anti-submarine patrols. The features and markings of this bomber wreck match those of Liberator GR Mk. V (Canada) bombers that belonged to No. 10 (BR) Squadron of the RCAF in 1943 (see Figure 1). The wreck cannot be conclusively identified as Liberator 589 until unique serial numbers or identification markings are found on the wreck, which has yet to be done. However, the location and depth of the bomber wreck match exactly those given in the RCAF crash reports (RCAF a, c) and historical records indicate that Liberator 589 was the only Liberator bomber to crash in Gander Lake. Thus, we are almost certain this bomber wreck is RCAF Liberator 589.

The bomber sustained extensive damage from its crash into Gander Lake and perhaps also from subsequent recovery efforts in September 1943. The current state of the bomber indicates the wings were the strongest part of the aircraft. The heavy damage to the forward fuselage has displaced most of the features from their original configuration. Yet, many components of the aircraft's armaments, aviation, hydraulic, communication and life-support systems can be identified in the wreckage.

The preservation of the plane wreck appears to be excellent. Corrosion of the aluminum structure of the aircraft appears to be limited. Metal tubing, electrical equipment and fabric objects on the wreck all seem to be in good condition, aside from the damage sustained during the crash. Slow deposition of sediment on the wreck is evident everywhere, but this poses no risk of burial in the foreseeable future. There was little or no biological growth attached to the bomber. Despite contrary statements in the RCAF crash reports, the plane wreck (to the extent surveyed here) is not located on a steep slope with any danger of it slipping into deeper waters.

This plane wreck site offers numerous opportunities for the recovery, study and museum display of artifacts from a Second World War RCAF bomber. However, no recovery of artifacts can be considered without prior discussion and approval from the relevant regulatory authorities. Development of a conservation plan for the preservation of the artifacts and an exhibit strategy for their display would also be essential. Any recovery of artifacts should only be undertaken by divers with the appropriate archaeological training in data collection and recording.

The wreck site is a war grave, since the remains of three RCAF airmen are likely still in the plane wreck. The fate of those human remains falls within the mandate of the Department of National Defence. The body of Squadron Leader MacKenzie was recovered by Navy divers in 1943 and was buried in the Commonwealth War Graves cemetery in Gander.

SPSNL has plans for additional non-disturbance sonar and dive surveys of this bomber wreck site (assuming the necessary approvals are obtained). If the needed funding can be raised, we would like to use sidescan sonar to obtain higher resolution imagery of the plane wreck and outlying parts. This combined with future diving surveys would enable us to accurately map the entire wreck site and identify additional parts of the aircraft. SPSNL would also like to collect additional video of the bomber wreck that is suitable for interpreting the site to the public. Finally, we would like to confirm that this plane wreck is RCAF Liberator 589 "D" by locating unique serial numbers or identification markings on the remains of the bomber.

The rediscovery and exploration of this RCAF bomber wreck provides a unique opportunity to raise public awareness of the important role played by Canadian airmen in protecting Allied shipping and attacking German U-boats in the Battle of the Atlantic. It brings home the dangers faced by operational aircrews flying out of Newfoundland & Labrador in the Second World War.

Potential Risks to the Site

This RCAF bomber wreck and all its associated artifacts (and human remains, if any) are the property of the Department of National Defence (DND). The wreck site is a war grave. It is also an archaeological site regulated by the Provincial Archaeology Office. As such, it is strictly illegal to disturb or remove any artifacts or remains from the site under the Historic Resources Act. Thus, we limited our dive operations to non-disturbance surveys only on this wreck site.

Despite all these protections, this plane wreck is vulnerable to looting by recreational divers. Without accurate GPS coordinates for the wreck, it would be virtually impossible for divers to locate it visually due to the poor visibility in the lake. However, covert monitoring of future diving operations on the wreck site may reveal its location to others. There is an abundance of artifacts on this wreck that would be valuable to unscrupulous collectors. Efforts to strengthen the stewardship of this plane wreck by the local community would be worthwhile.

The RCAF crash reports list only machine gun ammunition and no larger ordnance on the aircraft when it crashed. So, there should be little danger from unexploded ordnance at this site. However, the .50 caliber ammunition and machine guns would probably be attractive to looters.

Project Outcomes

Through this project, SPSNL has met its goals of locating, documenting and promoting public awareness of a historically significant plane wreck in Gander Lake. Outcomes include:

1. conducting years of historical research on this RCAF bomber, its crew and the crash in 1943,
2. locating and collecting multibeam sonar images of the RCAF Liberator bomber wreck in Gander Lake by the Marine Institute,
3. initial exploration and video survey of the wreck using an ROV by the Marine Institute,
4. examining a partially restored RCAF Liberator bomber also from No. 10 (BR) Squadron, courtesy of the Avalon Historical Aircraft Recovery Association,
5. assembling a technical diving team for the first diving surveys of the plane wreck in September

2022. The team included SPSNL members, professional videographers, technical and recreational divers with the Great Island Expedition organized by Ocean Quest Adventures and supported by the Royal Canadian Geographical Society,
6. assembling a smaller team of technical divers to conduct follow-up video surveys in October,
7. technical diving teams collecting underwater photos and videos that confirm the identity of the plane wreck as a Consolidated Liberator bomber,
8. sharing photos, sonar imagery and videos of the bomber wreck on social media, TV and radio to increase public awareness of this wartime plane wreck and appreciation of its importance to provincial heritage,
9. participating in interviews for the news media and documentary filmmakers to further raise public awareness,
10. establishing new partnerships with New Found Gold Corp. and the Avalon Historical Aircraft Recovery Association to promote awareness of this aircraft wreck and our wartime aviation history,
11. strengthening our existing partnerships with the Marine Institute and Ocean Quest Adventures,
12. collaborating with Ocean Quest Adventures to identify and document a new wreck diving opportunity in the province, to help augment the adventure tourism economy in an archaeologically responsible and environmentally sustainable manner, and
13. Producing this report of our findings.

Next Steps

There are several activities which SPSNL is planning for the future:

1. further historical research on this bomber wreck,
2. submitting a report of SPSNL activities on this Liberator bomber wreck to DND,
3. fundraising to carry out future sidescan sonar surveys of this plane wreck,
4. further non-disturbance diving surveys to explore, record and map the entire plane wreck site (and hopefully conclusively identify the wreck as Liberator 589),
5. continue our public education activities on our website and social media channels, and
6. explore possible interpretative partnerships for this RCAF bomber wreck with the North Atlantic Aviation Museum, The Rooms Museum Division, the Canadian War Museum and the Department of National Defence.

Acknowledgements

SPSNL thanks our volunteer members who donated their time and energy to the historical research, wreck photography, community liaison and running the organization. We thank the Marine Institute staff who contributed to the multibeam and ROV surveys. We thank the members of the Great Island Expedition who participated in or supported the diving surveys of this plane wreck: Tiare Boyes, Chris Broadbent, Russell Clark, Jill Heinerth, Maxwel Hohn, Tom Howarth, Krystal Janicki, Agata Koniecek, Greg Koniecek, Robert McClellan, Luc Michel, John Olivero, Debbie Stanley and Rick Stanley. We thank our partners at Ocean Quest Adventures for excellent dive, safety and logistical support. We thank the Royal Canadian Geographic Society for supporting members of the dive team. We thank Collin Kettell, Greg Matheson and Michael Regular at New Found Gold Corp. and Robert Maher at the Avalon Historical Aircraft Recovery Association for their generous and timely support. The plane wreck surveys reported here were carried out under an archaeological investigation permit from the Provincial Archaeology Office. We acknowledge the service and sacrifice of the RCAF crew and passenger aboard Liberator 589 “D”.

References

Annis, Clare L., Group Captain (RCAF). (1943) Letter to Mrs. J.M. Young (wife of Liberator 589 pilot Wing Commander John M. Young). September 28, 1943.

Canadian Virtual War Memorial (CVWM). (2023). Squadron Leader John Grant MacKenzie. accessed 14 Mar 2023. https://www.veterans.gc.ca/eng/remembrance/memorials/canadian-virtual-war-memorial/detail/2953961?John%20Grant%20MacKenzie

Consolidated Aircraft. (1942) Flight Manual: B-24D Airplane. Consolidated Aircraft Corp., San Diego, CA.

Royal Canadian Air Force (RCAF). (1943a) Proceedings of Court of Inquiry or Investigation, Flying Accidents: Liberator Mk. V 589. Library & Archives Canada, RG24, microfilm reel T-12340, file no. 1700-589.

RCAF. (1943b) Flying Accident Signal Report: Liberator 589. Library & Archives Canada, RG24, microfilm reel T-12340, file no. 1700-589.

RCAF. (1943c) Summary of Accident Investigation: Liberator 589. Library & Archives Canada, RG24, microfilm reel T-12340, file no. 1700-589.

Vincent, Carl R. (1975) Canada's Wings vol. 2: Consolidated Liberator & Boeing Fortress. Canada's Wings, Stittsville, ON.

Multibeam Echosounder Survey of SS *Empire Ocean* Shipwreck off Ferryland, Newfoundland & Labrador

Neil M. Burgess[1] & Kirk Regular[1,2]
1. Shipwreck Preservation Society of Newfoundland & Labrador Inc. (email: neil@shipwrecksnl.ca)
2. Centre for Applied Ocean Technology, Fisheries & Marine Institute, Memorial University of Newfoundland

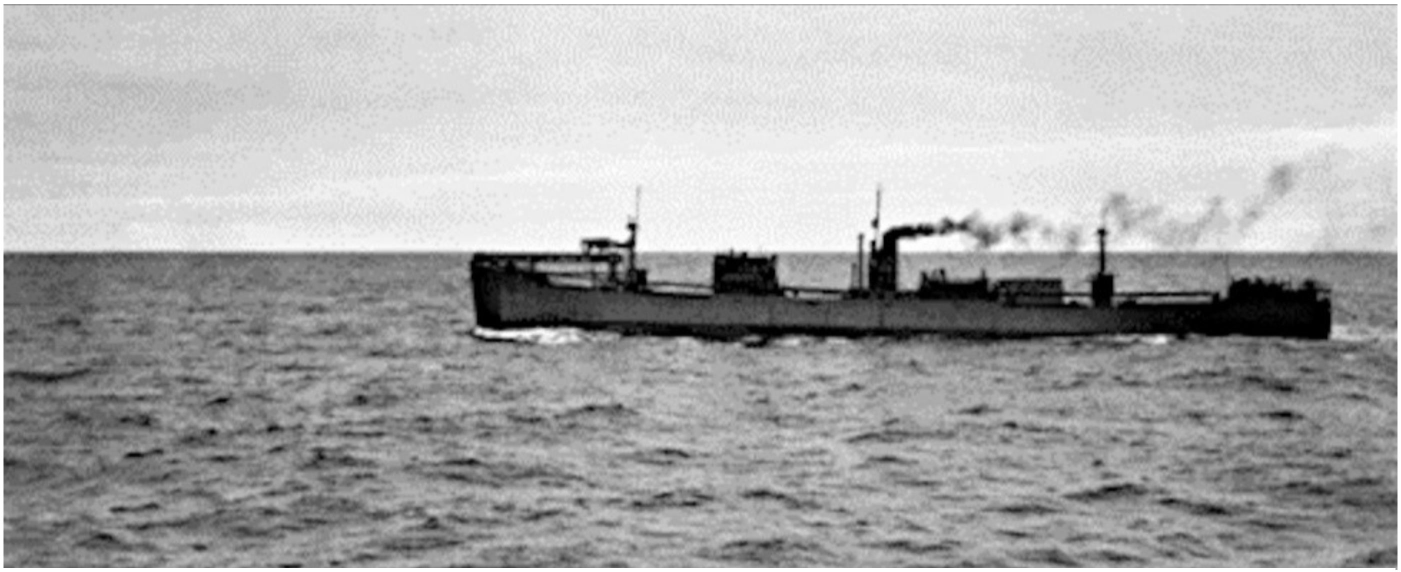


Figure 1: SS *Empire Ocean* with Sea Hurricane fighter on bow catapult.

Introduction

In August 1942, the British merchant ship SS *Empire Ocean* sank off Ferryland Head, NL while under tow. The day before *Empire Ocean* had run aground near Cape Race trying to evade a German U-boat. Two British servicemen onboard drowned in the sinking. In October 2022, Kirk Regular of the Marine Institute and the Shipwreck Preservation Society of Newfoundland & Labrador Inc. (SPSNL) was on a scientific cruise to carry out seabed mapping on the Grand Banks. He was able to have the ship conduct a multibeam echosounder survey of the *Empire Ocean* shipwreck. This report will summarize the findings of that survey.

Background on the Ship and its Loss

SS *Empire Ocean* was constructed in West Hartlepool, England in 1941 as part of Great Britain's wartime merchant fleet. The prefix "Empire" was given to all merchant ships built for the British government during the Second World War (Mitchell and Sawyer 1990). *Empire Ocean* was one of only 35 British merchant ships that were fitted with a catapult designed to launch a Hawker Sea Hurricane fighter plane off the ship's bow (Figure 1). These ships were known as Catapult-Armed Merchantmen (CAM). The strategy was to launch the fighter if any long-range German aircraft attacked a trans-Atlantic shipping convoy.

SS *Empire Ocean* left Belfast, Northern Ireland on July 25, 1942 with a cargo of coal (Tomkins 1942). Master W.J. Tomkins was in command. The ship joined convoy ON-115 headed for Boston, USA (Convoy Web 2023). The convoy included 43 merchant ships and 6 Royal Canadian Navy (RCN) escorts to protect against German U-boats. On July 30 and 31, the convoy was attacked by thirteen U-boats (Wolfpack *Pirat*) (uboat.net 2023). The Navy escorts successfully fended off the U-boat attacks and sank U-588. The convoy was attacked again during the night of August 2 and the merchant ships scattered (Tomkins 1942). *Empire Ocean* encountered dense fog and when it cleared on the morning of August 3, the ship had lost contact with the rest of the convoy. In the evening, *Empire Ocean* encountered the RCN cor-

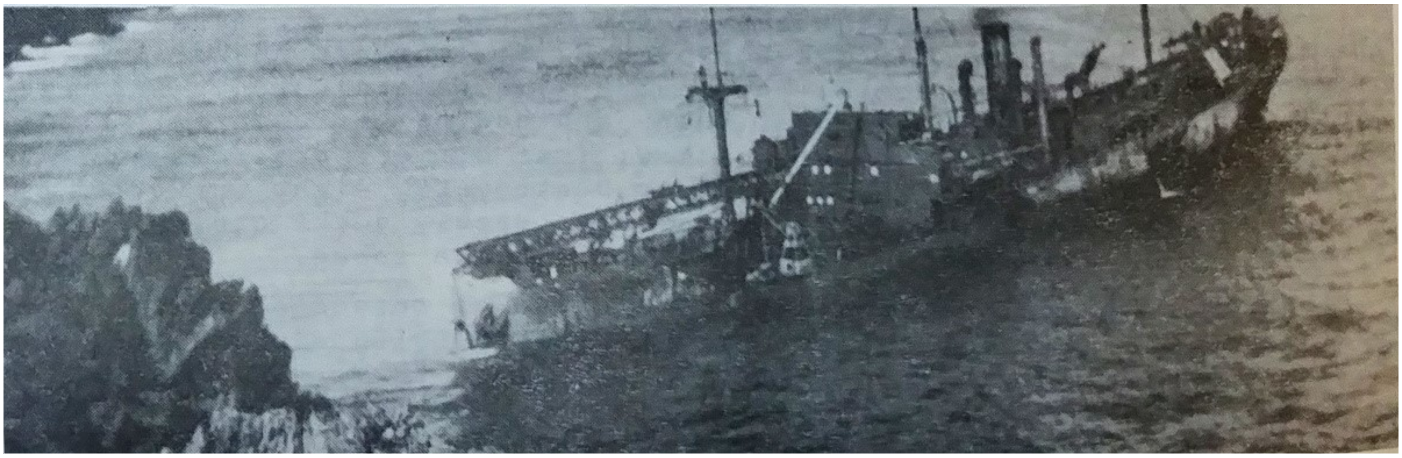


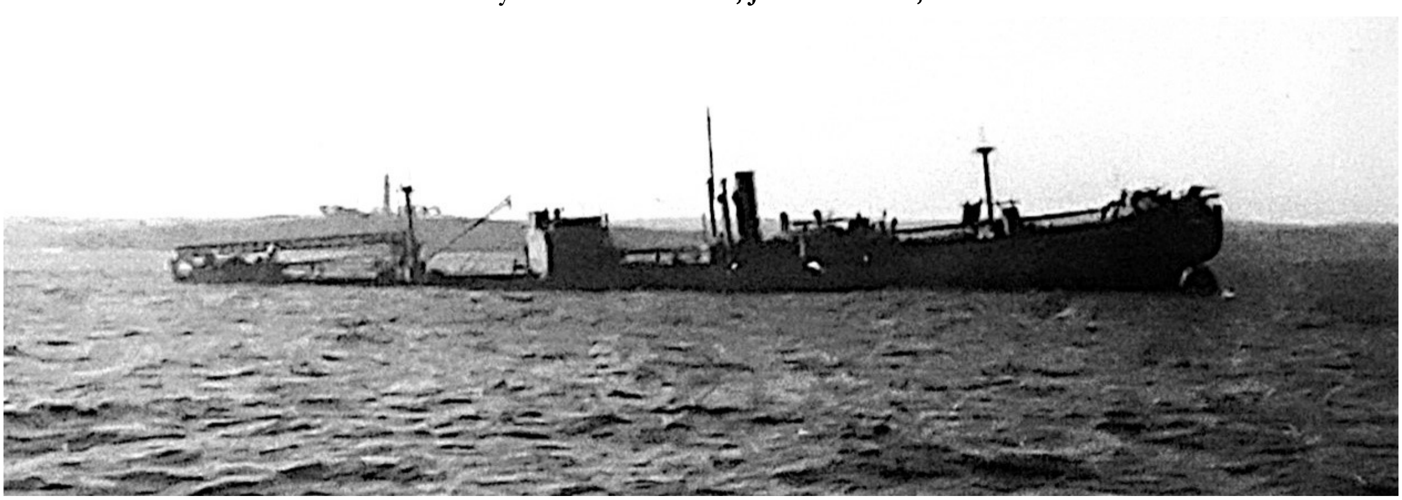
Figure 2: SS *Empire Ocean* aground near Cripple Cove Point, NL on August 4, 1942. Empty catapult is visible at the bow (on the left). Photo: Thomas Myrick (from Wells 1977).

vette HMCS *Galt* off Cape Race and joined it heading for Argentia, after being warned a U-boat was in the vicinity (Tomkins 1942). During the night, dense fog enveloped the ship again and it lost contact with HMCS *Galt*. Still in the fog early on August 4, Master Tomkins heard a distant fog horn. Thinking the ship was clear of Cape Race, he changed course but ran aground 1.5 nautical miles east of Shingle Point at 02:53 (RCN 1942; Tomkins 1942). Damage to the hull allowed water to enter *Empire Ocean*'s forward holds (Tomkins 1942). Thomas Myrick worked at the Cape Race Marconi (wireless telegraph) Station and took a photo of *Empire Ocean* aground (Figure 2) just southwest of Cape Race. Distress calls brought the salvage tug *Foundation Franklin* to the scene at 11:00.

At 17:15 on August 4, *Empire Ocean* slipped off the rocks and was "well down by the head" (Tomkins 1942). *Foundation Franklin* took the steamship in tow, stern first, and started around Cape Race (Figure 3) and north towards St. John's at about three knots (Davis 1942). At 22:30, 32 of the *Empire Ocean*'s crew abandoned ship in lifeboats and were picked up by the RCN Fairmile motor launch HMCML Q-060, which was commanded by Lt. James Davis (Davis 1942; Tomkins 1942). As the ship continued to sink lower under tow, the remaining crew took to the lifeboats. The 1st and 2nd Officers searched *Empire Ocean* for any remaining crew and reported "all clear" to the Master (Tomkins 1942).

> "The Master and two Officers then took to the boats which continued to tow alongside [the ship]; at 01:05 [August 5] the stern commenced to rise steeply and the boats' painters

Figure 3: SS *Empire Ocean* being towed around Cape Race by the stern (on the right). Cape Race lighthouse is visible in the background. Ship is slowly sinking at the bow (on the left). Photo: Library & Archives Canada, James S. Davis, e011213814.



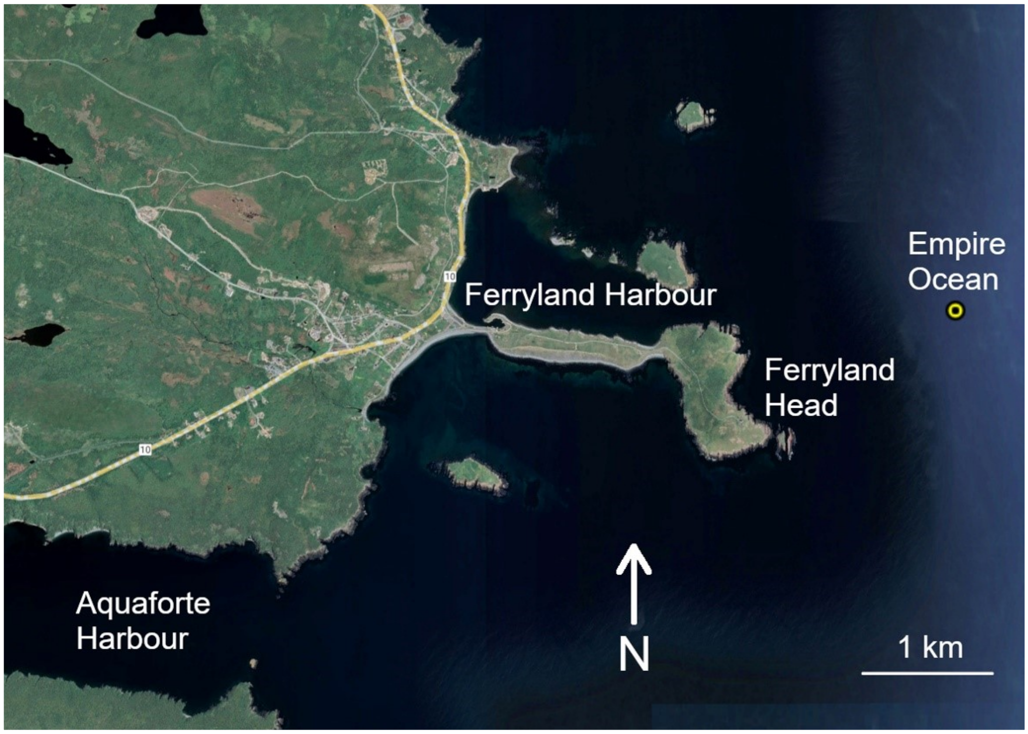


Figure 4: Location of *Empire Ocean* shipwreck off Ferryland Head.

Historical research done by SPSNL members Bill Flaherty and Neil Burgess, along with an approximate wreck location provided by local fisherman Gerard Chidley Jr., provided a search area for the shipwreck just off Ferryland Head. On October 10 2022, the wreck of *Empire Ocean* was located and surveyed using a multibeam echosounder (Kongsberg EM710) and Differential Global Navigation Satellite System (DGNSS) by the Marine Institute team. The depth of the shipwreck at the bow was 97 m and at the stern was 105 m. The shallowest point on the wreck (the ship's bridge) was 84 m deep. The location of the shipwreck off Ferryland Head is shown in Figure 4. Two multibeam images of the shipwreck are shown in Figures 5 and 6.

were cut and the steamer, after breaking in two, sank at 01:10" (Tomkins 1942).

According to Mitchell and Sawyer (1990), *Foundation Franklin* was unable to tow *Empire Ocean* into Aquaforte Harbour at night and decided to try beaching the steamer in Ferryland Harbour. However, when the tug slowed to shorten the towline, bulkheads inside *Empire Ocean* collapsed and the ship sank off Ferryland Head (Mitchell and Sawyer 1990). Shortly after the remaining crew were picked up by HMCML Q-060, they realized two men were missing (Davis 1942). It remains unclear why two of the DEMS gunners, Able Seaman John H. Collins of the Royal Navy and Bombardier George Sisterson of the Royal Artillery, were lost when the ship sank (Tomkins 1942; CWGC 2023a,b).

Multibeam Survey of *Empire Ocean* Shipwreck

In October 2022, Fisheries and Oceans Canada led a scientific cruise aboard MV *Patrick and William* to conduct ecosystem stressors research on the Grand Banks. Kirk Regular of the Marine Institute was onboard to carry out seabed mapping. The need to test the multibeam echosounder on a subsea target provided an opportunity to survey the wreck of SS *Empire Ocean*.

Limitations

The multibeam echosounder survey clearly identified the wreck site and the DGNSS coordinates will allow us to easily return to this wreck. However, the resolution of the multibeam images did not provide adequate detail to identify many parts of the ship or the catapult. The depth of the shipwreck (100 m) reduced the resolution possible with the vessel-mounted multibeam echosounder.

Interpretation and Discussion

The location and orientation of the *Empire Ocean* shipwreck is consistent with the historical accounts of it being towed northward stern first. It's position just east of the mouth of Ferryland Harbour matches the account of Mitchell and Sawyer (1990) that the ship sank when the tug *Foundation Franklin* slowed to shorten up the towline before entering the harbour.

The multibeam imagery is too low in resolution to be able to conclude much about what condition the shipwreck is in. It appears there may be some damage to the bow, either from running aground or

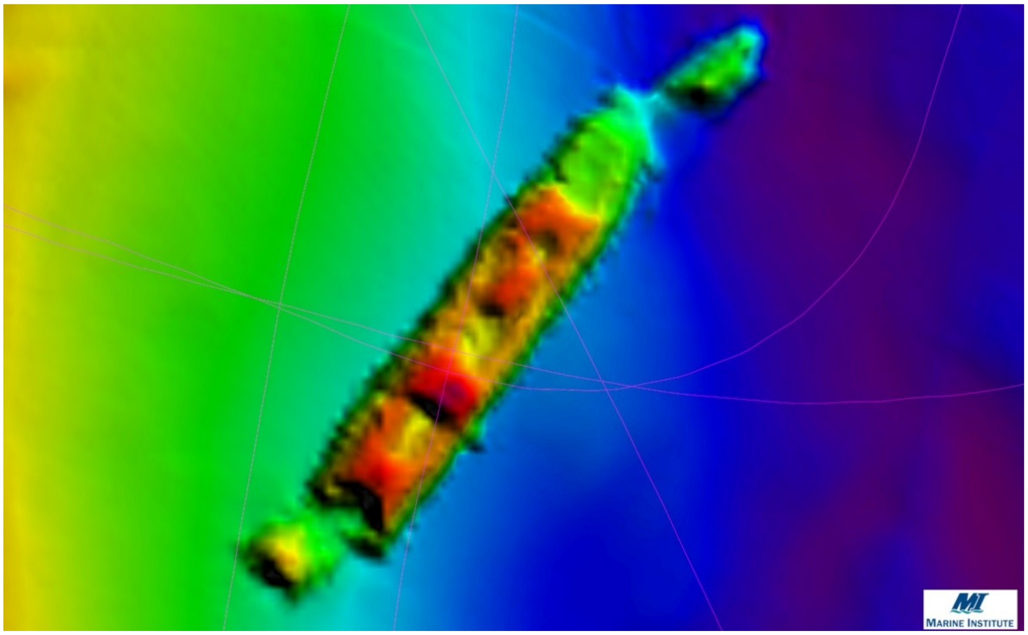


Figure 5: Multibeam echosounder image of *Empire Ocean* shipwreck. Bow of the ship at the bottom left. Purple lines indicate the multiple tracks of the survey vessel. Photo: Kirk Regular, Marine Institute, Memorial University

the impact of the bow striking the seafloor when it sank. The configuration of the superstructure on the wreck seems to match that in photos of the ship (Figs. 1, 2 & 3) but there is no sign of the masts or smokestack in the multibeam images (Figs. 5 & 6). The catapult on the bow could likewise not be seen in the multibeam imagery.

It is not surprising that the Sea Hurricane fighter was not present on the ship when it ran aground on August 4 and was under tow the following day (see Figures 2 & 3). It was normal practice for the Sea Hurricane on CAM ships to be launched when the ship approached landfall (Skaarup 2023). In this case, the fighter would probably have taken off once *Empire Ocean* diverted to Argentia and would have likely landed at RCAF Station Torbay for routine maintenance, where RCAF No. 125 (Fighter) Squadron was based and flew Hurricanes.

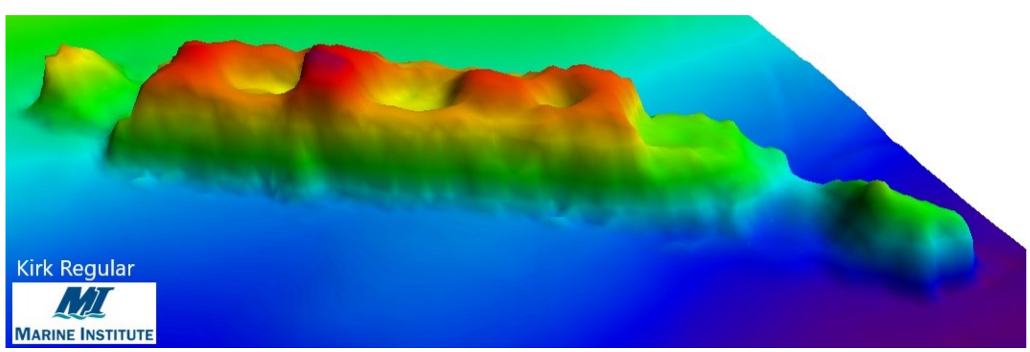
We look forward to having an opportunity to survey this shipwreck with sidescan sonar, in order to obtain higher resolution imagery. This would permit us to better ascertain what damage the ship has sustained and how corroded the steel wreck is. Since this wreck is in deeper, colder waters than the four steamships sunk off Bell Island, we predict it may be less corroded than the four in Conception Bay. On the other hand, the wreck of *Empire Ocean* is more exposed to storm-driven ocean swells than the Bell Island shipwrecks, which may have caused different types of damage.

Potential Risks to the Site

The depth of this wreck (100 m) puts it beyond the reach of recreational scuba divers, so looting of the wreck is not a risk. The wreck could be reached by highly trained technical or commercial divers, but that is unlikely to occur. It is more probable that the wreck might be explored with a remotely operated vehicle (ROV) but again the looting of artifacts is unlikely.

The presence of DEMS gunners in the crew of *Empire Ocean* (Davis 1942) confirms the ship carried a deck gun on the stern (see Figure 3) and an unknown number of artillery shells as ammunition. There is little risk to recreational divers from unexploded ordnance because of the depth of the shipwreck.

Figure 6: Multibeam echosounder image of *Empire Ocean* shipwreck. Bow of the ship on the left and stern on the right. Photo: Kirk Regular, Marine Institute, Memorial University



Project Outcomes

Through this project, SPSNL has met its goals of locating, documenting and promoting public awareness of the wreck of the SS *Empire Ocean* off Ferryland. Outcomes include:

1. conducting years of historical research on this British merchant ship, its grounding and sinking in 1942,
2. locating and collecting multibeam sonar images of *Empire Ocean* off Ferryland by the Marine Institute,
3. Submitting this report to the NL Provincial Archaeology Office.

Next Steps

There are several activities which SPSNL is planning for the future:

1. further historical research on this shipwreck,
2. fundraising to carry out future sidescan sonar surveys of this wreck,
3. continuing our public education activities on our website and social media channels,
4. exploring possible interpretative partnerships for this shipwreck with the Historic Ferryland Museum, the Myrick Wireless Interpretation Centre and The Rooms Museum Division.

Acknowledgements

SPSNL thanks the Centre for Applied Ocean Technology at the Fisheries and Marine Institute, Memorial University of Newfoundland for their continued support in documenting our province's nautical heritage. We also acknowledge the support of Fisheries and Oceans Canada and the crew of MV *Patrick and William* for their assistance with this work. This shipwreck survey was carried out under an archaeological investigation permit from the NL Provincial Archaeology Office. We acknowledge the service and sacrifice of the Merchant Navy, Royal Navy and British Army personnel who served aboard SS *Empire Ocean* during the Second World War.

References

Convoy Web. (2023). Convoy ON.115. Arnold Hague Convoy Database. accessed 14 Feb 23. http://www.convoyweb.org.uk/on/index.html?onz.php?convoy=115!~onzmain

CWGC. (2023a) Able Seaman John Henry Collins. War Dead Database, Commonwealth War Graves Commission. accessed 15 Feb 23. https://www.cwgc.org/find-records/find-war-dead/casualty-details/2369639/john-henry-collins/

CWGC. (2023b) Bombardier George Sisterson. War Dead Database, Commonwealth War Graves Commission. accessed 15 Feb 23. https://www.cwgc.org/find-records/find-war-dead/casualty-details/2472450/george-sisterson/

Davis, J.S., Lt. (1942) Survivors of S.S. EMPIRE OCEAN (dated Aug. 5, 1942). Dept. of National Defence, Naval Service. Library & Archives Canada, Dept. of National Defence fonds, RG24-D-1c, vol 6773, file NSS8181-2468. Collisions and groundings - EMPIRE OCEAN.

Mitchell, W.H., and L.A. Sawyer. (1990) The Empire Ships: A Record of British-Built and Acquired Merchant Ships During the Second World War, 2nd ed., Lloyd's of London Press, London, UK.

Royal Canadian Navy (RCN). (1942) EMPIRE OCEAN – Naval WT Traffic. Library & Archives Canada, Dept. of National Defence fonds, RG24-D-12, vol 11958, file NFM 18-19-23.

Skaarup, Harold A. (2023) Canadian Warplanes 3: Hawker Hurricane. accessed 16 Feb 23. https://www.silverhawkauthor.com/post/canadian-warplanes-3-hawker-hurricane

Tomkins, W.J. (1942) S.S. EMPIRE OCEAN. Report to Royal Canadian Navy. Library & Archives Canada, Dept. of National Defence fonds, RG24-D-1c, vol 6773, file NSS8181-2468. Collisions and groundings - EMPIRE OCEAN.

uboat.net. (2023) Wolfpacks: Pirat (e. Pirate). accessed 17 Feb 23. https://uboat.net/ops/wolfpacks/37.html

Wells, Herb. (1978) The Empire Ocean in Forgotten Heroes. Regal Promotions. St. John's, NL.

Exploration for Shipwrecks near Robert's Arm and Pilley's Island, Newfoundland & Labrador

Neil M. Burgess[1], Rick Stanley[1,2] & Kirk Regular[1,3]
1. Shipwreck Preservation Society of Newfoundland & Labrador Inc. (email: neil@shipwrecksnl.ca)
2. Ocean Quest Adventures
3. Centre for Applied Ocean Technology, Fisheries & Marine Institute, Memorial University of Newfoundland

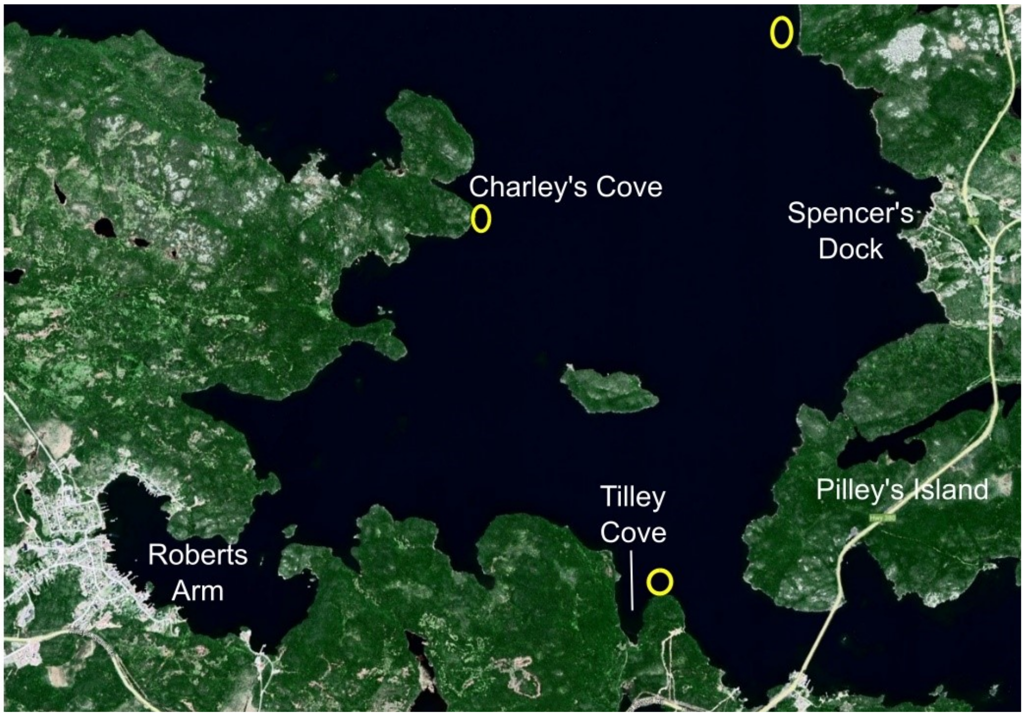


Figure 1: Locations of scuba diving surveys for shipwreck remains on April 9 & 10, 2022. Three diving search areas are shown by yellow ellipses.

Introduction

Amateur historians and community members in Triton and St. John's, NL have gathered oral histories from local fishermen in the Robert's Arm and Pilley's Island area concerning several old wooden shipwrecks. A team was assembled from the Shipwreck Preservation Society of Newfoundland & Labrador (SPSNL), Ocean Quest Adventures, Panoramic Pictures and the Marine Institute of Memorial University to investigate these conjectured shipwrecks. Scuba diving exploration dives were carried out on possible shipwreck targets in April 2022. This was followed up by multibeam echosounder and sidescan sonar surveys in June 2022. This report will summarize the findings of those surveys.

Background

Ronald Lloyd Ryan is an amateur historian in St. John's who shared oral history he had gathered on potential old wooden shipwreck sites in Green Bay South near Robert's Arm and Pilley's Island with SPSNL. He had further identified some of these possible shipwreck sites using Google Earth. There was interest in exploring these sites from the local community in nearby Triton, and from Ocean Quest Adventures and Panoramic Pictures. SPSNL got involved to contribute our expertise in maritime archaeology.

As the project got underway, local fishermen like Eric Warr also contributed their knowledge of local shipwrecks to the project. This knowledge helped us focus on some 20th century shipwrecks in the area.

Diving Exploration for Shipwrecks

Ocean Quest Adventures mobilized two large Rigid-Hulled Inflatable Boats (RHIBs) in mid-April 2022, for scuba diving surveys of potential shipwreck sites. The RHIBs were launched from Robert's Arm on April 9 and 10. Based on the possible shipwreck sites suggested by Ronald Ryan, the team narrowed our focus to two sites with depths less than 35 m (Figure 1). On April 9, two pairs of divers searched the point south of Charley's Cove but found no evidence of any shipwrecks from shore to a depth of 19 m. Several large boulders (3 – 5 m) were found on the shallow bottom. Later that day, the dive teams searched the point on the east side of Tilley Cove (locally known as Hubley's Cove) but again found no remains of any shipwrecks from shore to a depth of 32 m (search areas shown in Figure 1).

Having found no evidence of older shipwrecks, the team re-focused our efforts on 20th century shipwrecks in the area. A retired fisherman in Spencer's Dock joined the team on April 10 to search for the wreck of the schooner *Norman O* on the west side of Pilley's Island. The two dive teams searched just off a beach north of Spencer's Dock (Figure 1), based on the knowledge of the local fisherman. Pairs of divers made four exploratory dives but found only a single wooden timber at that location (Figure 2).

Sea ice inside of the harbour at Robert's Arm prevented us from approaching a shallow shipwreck at the east end of the harbour in April. Given the limited results of the diving surveys, the team decided to switch to a different approach for our shipwreck search.

Multibeam Survey for Shipwrecks

In June 2022, staff from the Centre for Applied Ocean Technology at the Marine Institute, Memorial University joined the project with their survey vessel *D. Cartwright*. Our goal was to carry out multibeam echosounder surveys of the target shipwreck areas previously identified. We also wanted to conduct higher resolution sidescan sonar surveys of a subset of these search areas.

On June 15 2022, the team from the Marine Institute surveyed the area shown in Figure 3 using a multibeam echosounder (Kongsberg EM2040P) and Differential Global Navigation Satellite System (DGNSS). The point east of Tilley Cove was also searched with sidescan sonar (Klein System 3000). No remains of any shipwrecks were visible in the three shipwreck target areas suggested by Ronald Ryan, in either the multibeam echosounder or the sidescan sonar imagery.

When we headed east towards Pilley's Island to search for the wreck of the schooner *Norman O*, we encountered a fisherman in his boat. He volunteered to show us the location of the *Norman O* shipwreck. The schooner wreck was visible from the surface in shallow water. We carried out multibeam echosounder (Figure 4) and sidescan sonar (Figure 5) surveys of the shipwreck. The depth of the schooner wreck at the bow was 14 m, at the stern 15 m and at its shallowest point was 12.7 m (these depths are uncorrected for tide). We did no diving surveys on this shipwreck.

Figure 2: Worn timber found during a diving survey on April 10, 2022 just off a beach on the west side of Pilley's Island, north of Spencer's Dock. Photo: Neil Burgess SPSNL

On June 15, 2022, we also located the wreck of the barge *Pine Lake* at the eastern end of Robert's Arm harbour, based on knowledge provided by local fishermen (Figure 3). The bow of this large wooden barge was at the surface and the rest of the wreck was just underwater (Figure 6). Since the wreck was so shallow, we were unable to collect multibeam echosounder data of this wreck. However, the barge wreck is clearly visible on Google Earth. The wreck is at least 67 m in length. We did not carry out any diving surveys on this wreck.

Limitations

The cold-water temperatures (0°C) during our April dive surveys limited our dive times to less than 30 minutes. Visibility in the water was limited to

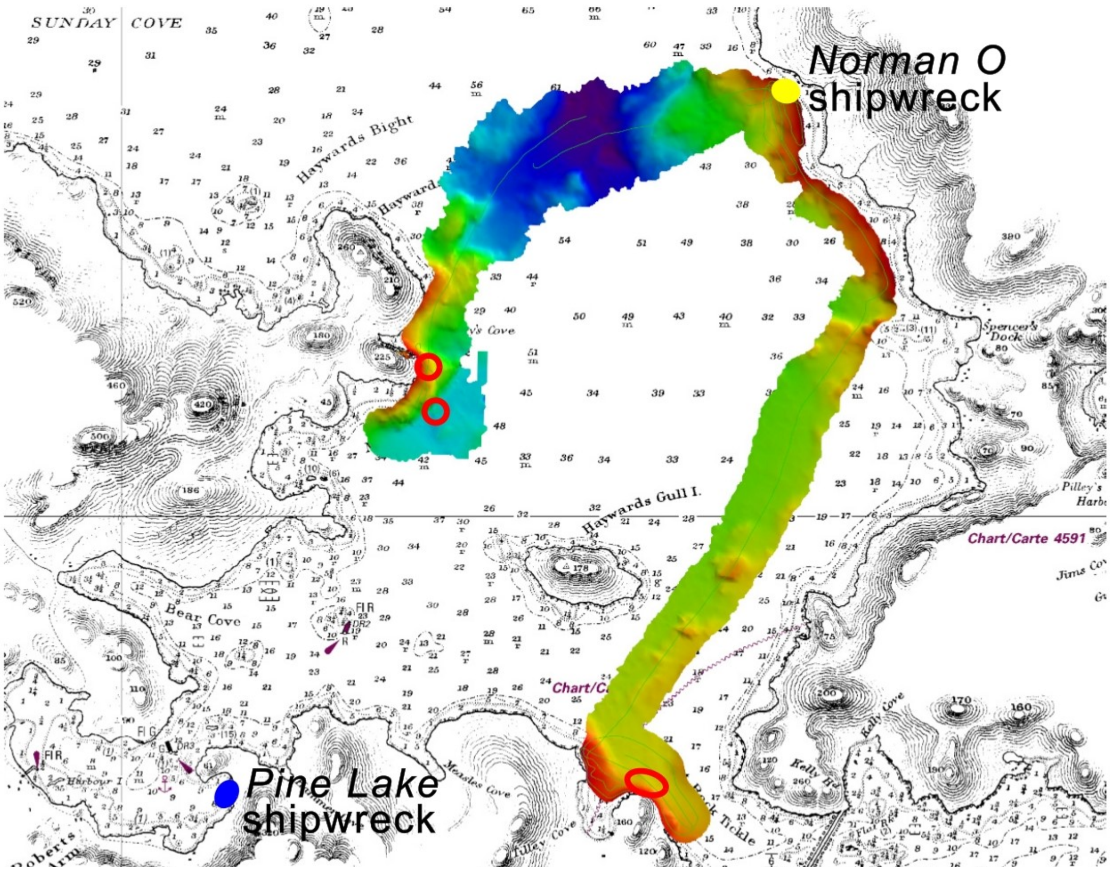


Figure 3: Seabed areas surveyed with a multibeam echosounder on June 15, 2022 by staff from the Marine Institute, Memorial University are shown in colour. Shallow areas are orange and deeper areas are dark blue. The red ellipses indicate three shipwreck search areas suggested by Ronald Lloyd Ryan. The yellow ellipse indicates the location of the *Norman 0* schooner shipwreck. The blue ellipse indicates the location of the *Pine Lake* barge wreck. Canadian Hydrographic Service nautical chart 4593 in the background (depths in fathoms). Image: Kirk Regular, Marine Institute, Memorial University.

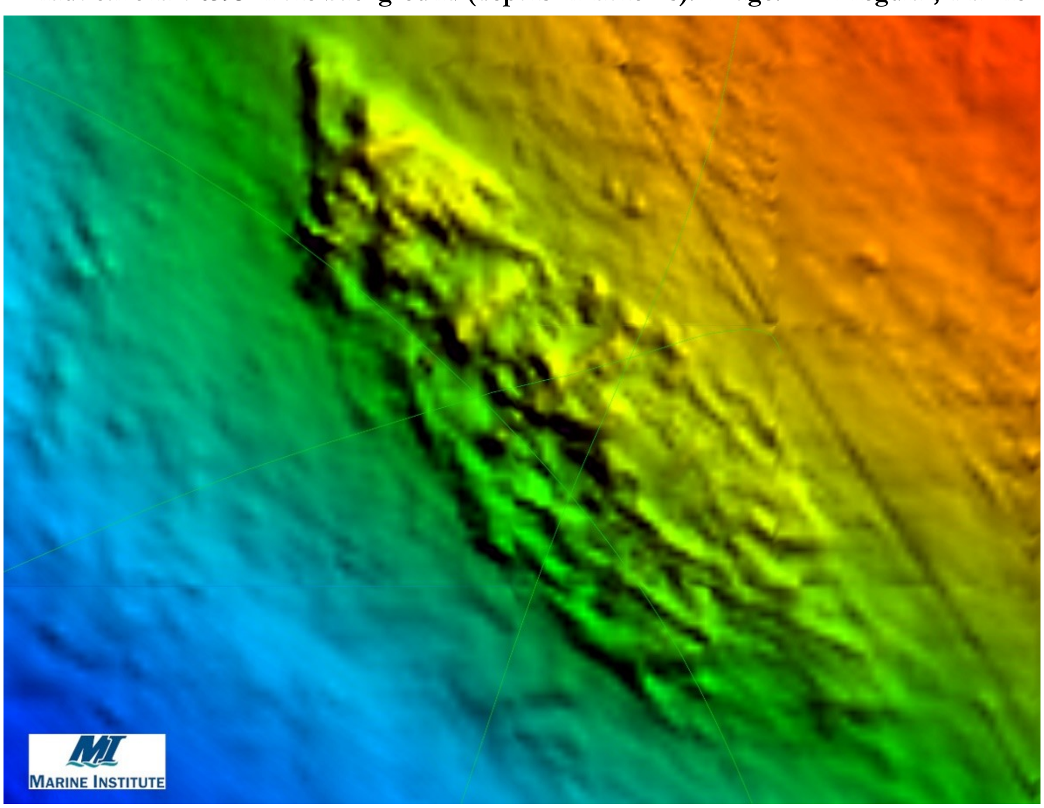


Figure 4: Multibeam echosounder image of *Norman O* schooner wreck. Bow of the shipwreck at the top left. Green lines indicate the multiple tracks of the survey vessel. Photo: Kirk Regular, Marine Institute, Memorial University

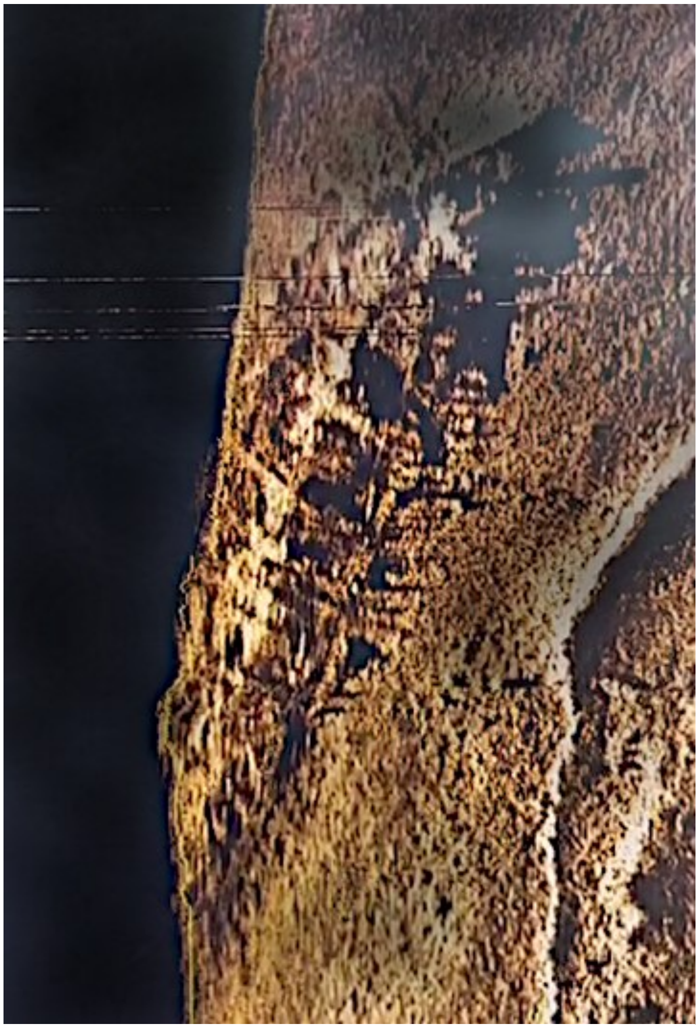


Figure 5: Sidescan sonar image of *Norman O* schooner wreck on the west coast of Pilley's Island, NL. Photo: Kirk Regular, Marine Institute, Memorial University.

about 9 m, due to a spring plankton bloom. These two factors limited the spatial extent of our diving surveys. We were unable to explore the *Pine Lake* wreck during our April dive surveys, due to the presence of sea ice in the eastern side of Robert's Arm harbour. Our challenge in locating the *Norman O* wreck in April versus June points out the uneven quality of shipwreck locations provided by local fishermen.

Our experience with this project leads to the conclusion that it would be more efficient if sonar surveys preceded any diving surveys. Sonar surveys are able to cover a greater spatial area and are better suited to locating credible shipwreck targets for further investigation. Diving surveys cover a more limited spatial area but can collect more detailed photo and video data on shipwreck remains. Trying to locate "new" shipwrecks using diving surveys proved to be ineffective in this project.

Interpretation and Discussion

No remains of shipwrecks were found at any of the target sites suggested by Ronald Lloyd Ryan. It was clear that the *Pine Lake* barge wreck (less than 5 m deep) was visible on Google Earth imagery, whereas the *Norman O* schooner wreck (15 m deep) was not. Thus, the possibility of locating shipwrecks at depths of 20 or 40 m in Newfoundland waters using Google Earth imagery is not plausible. It seems the shipwreck targets suggested by Ronald Ryan were random patterns on the ocean surface in the Google Earth images.

Our initial exploration dives to locate the *Norman O* schooner wreck were 200 m to the south of the actual wreck site. The sonar surveys of *Norman O* indicate that the wooden ship has significantly deteriorated since it sank. From the sidescan sonar image (Figure 5), it appears that much of the planking has rotted away leaving the larger framing timbers. Since we did not dive on the wreck, we could not assess if any artifacts remained besides the ship's wooden structure. Since this wreck is shallow (15 m), it would make for easy diver surveys in the future.

John Young in St. Jacques, NL (MHA 2012), built the two-masted schooner *Norman O* in 1910. Its official number was 127753, it was 66 feet in length and was 59 gross registered tons (Figure 7). In 1947, Harold G. Warr and Pierce Blackmore of Pilley's Island (Ministry of Transport 1948) owned the schooner. The British registry for this ship was closed in 1948 (Registry of Shipping & Seamen 1948). One source states that this ship sank at Pilley's Island in 1945 (MHA 2023).

On our visit to the *Pine Lake* wreck, a steel windlass was visible just above the surface of the water at the bow. The stern was several metres underwater. Much of the main deck appeared to have collapsed but the hull seemed to be mostly intact. There were walls of at least one cabin amidships. The shallow wreck was so overgrown with algae that it was impossible to look for evidence of a fire from the surface. This wreck is shallow enough that it could be sketched from a boat or by snorkelers.

The barge *Pine Lake* was built in Hampton, Virginia, USA in 1919 (Ministry of Transport 1948).

Figure 6: Wreck of the wooden barge *Pine Lake* in Robert's Arm harbour. A windlass at the bow is on the left; midships on the right. Photo: Neil Burgess SPSNL

Its official number was 174498 and it was 2200 registered tons. Bowater's Newfoundland Pulp & Paper Mills Ltd. in Corner Brook, NL, owned the barge. The British registry for this ship was closed in 1951 (Registry of Shipping & Seamen 1951). One source states that Bowater's used the barge to collect and transport pulpwood to its paper mill in Corner Brook in the 1940s (Anon. 1995). It also indicates the barge was abandoned in Robert's Arm harbour in the early 1950s and that it burned and sank there in the late 1950s.

Since *Pine Lake* apparently sat abandoned in Robert's Arm harbour for several years in the mid-1950s, it is doubtful that many removable artifacts would remain on the wreck. We were unable to assess the extent of any fire damage to the barge on our initial visit. This wreck would be an easy survey project for interested volunteers with SPSNL or in the local community.

Potential Risks to the Site

These shipwrecks are now archaeological sites regulated by the Provincial Archaeology Office. As such, it is strictly illegal to disturb or remove any artifacts or remains from the site under the Historic Resources Act.

Because they are shallow, both shipwrecks are vulnerable to looting by recreational divers. Swimmers and snorkelers can also access the *Pine Lake* easily. Due to its very shallow location, the *Pine Lake* wreck is obvious to any boaters in the eastern side of Robert's Arm harbour or to anyone walking the eastern shoreline. However, it is likely that most removable artifacts are already gone from both shipwrecks. Efforts to strengthen the stewardship of these shipwrecks by the local community would be worthwhile.

Winter sea ice forms in Robert's Arm harbour and poses a risk to the shallow bow section of the *Pine Lake* wreck.

Project Outcomes

Through this project, SPSNL has met its goals of locating, documenting and promoting public awareness of shipwrecks near Robert's Arm and Pilley's Island. Outcomes include:

1. responding to local community interest in their shipwreck heritage,
2. conducting dive and sonar surveys of three possible shipwreck sites suggested by Ronald Ryan,
3. locating and collecting multibeam and sidescan sonar images of the *Norman O* schooner wreck by the Marine Institute,

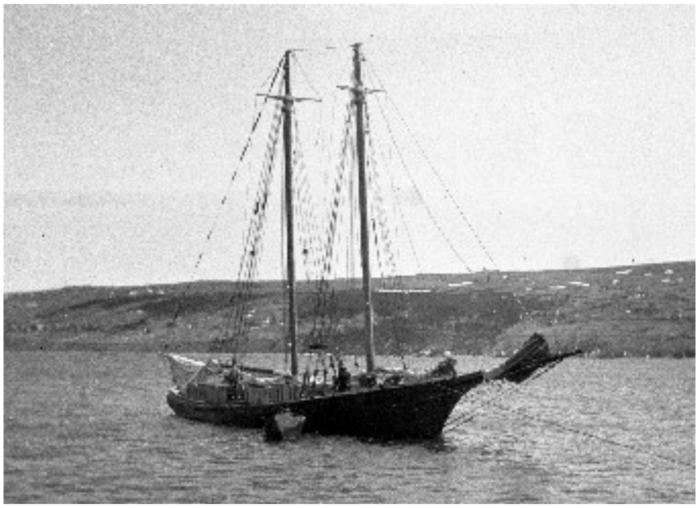


Figure 7: Norman O schooner at Harbour Grace, Newfoundland prior to 1940. Photo: Maritime History Archive (2023).

4. collecting photos of the *Pine Lake* barge wreck,
5. collecting video of the shipwreck search activities by Panoramic Pictures, and
6. submitting this report to the NL Provincial Archaeology Office.

Next Steps

There are several activities, which SPSNL is planning:

1. further historical research on these shipwrecks,
2. fundraising to carry out future dive surveys of these two shipwrecks, and
3. continue our public education activities on our website and social media channels.

Acknowledgements

SPSNL thanks the team from Ocean Quest Adventures: John Olivero, Mark McGowan, Jack Wood, Will Murphy, Megan Tower and Alain Langlais for their continued support to document our province's nautical heritage. We also thank Eric Davis from the Centre for Applied Ocean Technology at the Fisheries and Marine Institute, Memorial University of Newfoundland. We thank Mark O'Neill and his team at Panoramic Pictures for recording the survey activities. We would like to thank Fabian James, Jason Roberts, Gregory Roberts and Eric Warr for their planning, support and assistance to the project. We thank Ronald Lloyd Ryan for sharing his suggestions about possible shipwrecks in the area. This shipwreck survey was carried out under an archaeological investigation permit from the NL Provincial Archaeology Office.

References

Anonymous. (1995) The Pine Lake in Remembrances of Robert's Arm: A Come Home Year 1995 Commemorative Book. Wanda Jackman, Bonnie Warr and Russell A. Bragg (eds.) Western Star Publ., Corner Brook, NF. accessed 21 Feb 23. http://www.robertsarm.ca/Come%20Home%20Year%201995.PDF

Maritime History Archive (MHA). (2012). *Norman O* in Ships and Seafarers of Atlantic Canada database. Maritime History Archive, Memorial University of Newfoundland, St. John's, NL.

Maritime History Archive (MHA). (2023) Photo: "*Norman O*" at Harbour Grace, Newfoundland. Maritime History Archive, Memorial University of Newfoundland, Munn-Godden collection. accessed 21 Feb 23. https://mha.mun.ca/mha/pviewphoto.php?Record_ID=18595&pagev=1

Ministry of Transport. (1948) The Mercantile Navy List and Maritime Directory 1947. His Majesty's Stationary Office, London, UK.

Registry of Shipping and Seamen. (1948) Ship *Norman O*, official number 127753. The National Archives, Kew, BT 110/1902/30.

Registry of Shipping and Seamen. (1951) Ship Pine Lake, official number 174498. The National Archives, Kew, BT 110/1911/32.

Lost Aircraft and Documentaries at CgAl-01, Gull Pond, Cape Shore, NL

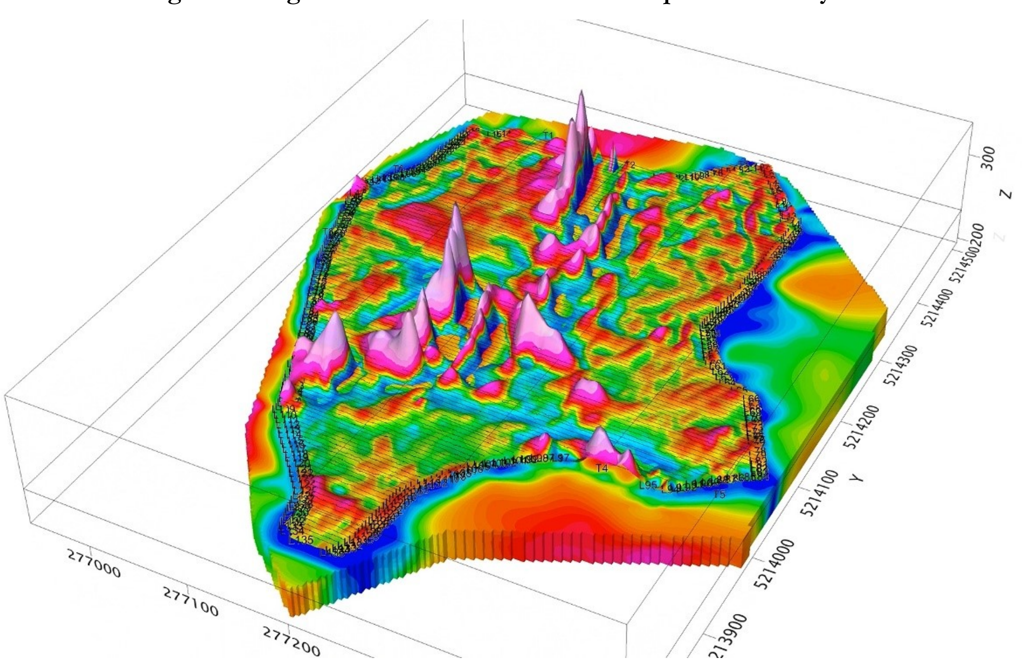
Lisa M. Daly[1], Ken Keeping[2], Kathryn Hargan[3], Johanna Bosch[3] & Maliya Cassels[3]
1. Independent Archaeologist
2. Maritime Survey Services Ltd.
3. Hargan Lab

I had heard about Gull Pond before, from an excerpt of a letter from Patrick Judge to C. Noonan dating to 06 April 1948 at the Provincial Archives of Newfoundland and Labrador (Judge 1948) and later a short article from *The Newfoundland Herald* (Fitzgerald 1969) article called "A Key to World Aviation History Lies Buried Near Patrick's Cove" stating that the *Oiseau Blanc* had been found on the Cape Shore and that it was likely that the pilots Charles Nungesser and François Coli, were "entomb[ed]" at the bottom of the lake. Later, I received a case of documents from Nelson Sherren about Frances Grayson and Gull Pond. Frances Grayson attempted to fly from New York to Denmark in December 1927 via Harbour Grace and England but went missing before reaching Harbour Grace. Her aircraft has never been found, and Sherren seemed to have a theory that the metal that had been found at Gull Pond on the Cape Shore belonged not to the *Oiseau Blanc*, but to *The Dawn* (Daly 2021).

Fitzgerald's evidence came from informants from around the Patrick's Cove area who had recovered metal and other objects from the area. Some of these pieces were painted blue, and it is reported that the fuel tanks on the *Oiseau Blanc* were blue. The earliest of these stories comes from the 1930s or 1940s (records are at times unclear about dates), and there are stories of metal and a tool box, but no stories about any wood, canvas, or engine components being found (TIGHAR 1993). All of the material that was recovered from Gull Pond has gone missing over the years, except a pair of binoculars found somewhere in the area, but that cannot be linked to any specific aircraft or person.

Over the years, researchers and aviation enthusiasts have searched the Cape Shore and Saint Pierre for the missing *Oiseau Blanc*, and TIGHAR (The International Group for Historic Aircraft Recovery) has been in Newfoundland a couple of times as part of their search (TIGHAR 2022). In 2021, I was contacted by Ping Pong Productions to be the permitted archaeologist for an episode of Expedition Unknown searching for the *Oiseau Blanc* that would feature Gull Pond. Richard Gillespie of TIGHAR was also invited as a guest presenter alongside Josh Gates, the main presenter.

Figure 1: Magnetometer data from Pioneer Exploration. Daly 2022.



On 26 September 2021, a team was flown to Gull Pond. While the production company filmed, Pioneer Exploration started a magnetometer survey of the pond using a DJI M600 Pro aerial survey. The drone was mapped to fly 10m above the water

while the sensor hung 5m above the water. I did a walkover of the area where the production team would be working so that they could set up. Video and drone video were captured as part of the filming. We also conducted a walkover of the west side of Gull Pond, walking through thick brush and along the edge of the pond looking for any evidence of an aircraft, up as far as the outflow where evidence may have gathered. All that was found during the walkover were beer cans and Vienna sausage cans, which were disposed of.

On the second day on site, two days later, the magnetometer data was used to flag multiple abnormal areas. Some of those could be reached by foot as the pond is not very deep, only about a meter for much of the pond. They were visually searched and a metal detector was used, but nothing found. Other areas had to be searched by boat, and the island in the middle of the pond was to be searched. The production company prioritized going to the pond. Myself, Gates, and Gillespie, plus a small camera crew, rowed to the island. A walkover was performed, and nothing resembling aircraft wreckage was found. The island is actively used as the area is frequented for fishing, especially ice fishing in the winter, according to Bradley Power and Edward Nash, local wilderness guides who were on site. There was a modern, but broken, kettle on the island, plus a small cairn at the eastern end of the island. Caribou scat was also found on the island.

Gillespie and Gates searched the pond around the southeast end of the island, where Gillespie said he had found a piece of metal in 1992 (CgAl-01:01). The artifact was collected when there was no

Figure 2: The island in the middle of Gull Pond. Photo by TIGHAR 2021.

Figure 3: CgAl-01:01: A piece of metal recovered by TIGHAR in 1992 housed at The Rooms. Photo by Daly 2021.

Figure 4: CgAl-01:02: Copper wire. Photo by Daly 2021.

archaeologist present and a precise location was not recorded. Under a flat rock, two pieces of metal were found: a piece of copper wire (CgAl-01:02) and a steel disk (CgAl-01:03). Neither are diagnostic. The weather started to turn, and the helicopter pilot informed us we had to fly back, so the other anomalous points in the pond were not searched.

Figure 5: CgAl-01:03: A piece of metal. Photo by Daly 2021.

I returned to the site on 15 November 2021 with a small team from TIGHAR and Ken Keeping of Maritime Survey Services Ltd. The purpose of the visit was for TIGHAR to film for a fundraising video, and for Keeping to see the site to assess the potential for underwater exploration as he would be the underwater archaeologist for any diving. A drone was used to take some aerial images of the pond and the island.

On 19 June 2022, myself, members of TIGHAR, and two graduate students from Hargan Lab, Johanna Bosch and Maliya Cassels, flew to the site. TIGHAR's goal was to do some survey work from the island to note any evidence of an aircraft near the island, in particular in areas flagged by the survey and by their own underwater work conducted in 1992 to 1994. Bosch and Cassels were to take core samples at Gull Pond. The winds were relatively high, and TIGHAR members had difficulty getting a boat into the water and their diver found the area too shallow to effectively dive. While they were working with the boat, I did a brief walk-over of the dense spruce at the northwest edge of the pond near the outflow, even though TIGHAR did not want any survey work done on this visit. Nothing was found.

Once TIGHAR decided they could not safely use the boat, Bosch and Cassels decided to attempt to take core samples and launched the boat three times trying to find an area suitable for sampling, but could not find adequate sediment to sample. They thought they saw a suitable sample site on one launch, but the winds were too high for them to maintain their position to take the sample. Hargan Labs may potentially return to the site to get core samples which could potentially determine if something left contaminants in soil, such as lead from aircraft fuel, and could give a possible date

Figure 6: Johanna Bosch and Maliya Cassels of Hargan Lab attempting to obtain a core sample at Gull Pond. Note the island visible just beyond the boat. Photo by Daly 2022.

range for the deposition of the lead, but would not be able to pinpoint to a specific year, and particularly not distinguish between a crash from early 1927 *l'Oiseau Blanc*) and late 1927 (*The Dawn*).

A plan was made to revisit the site in September 2022, but the forest fires meant the helicopter was not available. TIGHAR did go to the site themselves without informing archaeologists to take more aerial photographs, and told us after the fact. While they would like to continue to search Gull Pond, these aerial photographs, as well as the others collected in 2021 and having visited the site, suggests that there is no material culture at Gull Pond that would confirm that an aircraft had crashed in the area. The *Oiseau Blanc* was mostly wood, and while blue metal is reported to have been recovered from the area over the years, there is no indication of something definitively aircraft, such as an engine or engine components, being present at Gull Pond.

References

Daly, Lisa M. 2022. The Plane in the Pond: A Survey of the Gull Pond Area, Cape Shore, Newfoundland and Labrador for permit 21-47. On file PAO.

2021. Courage? I Should Say So: Frances Grayson, *The Dawn*, and the Plane in the Pond. *NQ*. 114(2):30-42.

Fitzgerald, Jack. 1969. A Key to World Aviation History Lies Buried Near Patrick's Cove. *The Newfoundland Herald*. 24(43):1.

Judge, Patrick. 1948. Extract letter from Patrick Judge of Gooseberry, Cape Shore, to C. Noonan, 06 April 1948. PANL AG/47.

TIGHAR. 2022. The Newfoundland Expeditions. *TIGHAR* Tracks. 38(1): 17-22.

1993. Found Objects. *TIGHAR Tracks*. 9(4): 5-7.

2022 Grand Lake & Lower Naskaupi River Survey

David M. Finch
Memorial University

Figure 1: Crew overlooking Kaneshekau-shipiss/Cape Caribou River.

Between August and October 2022, reconnaissance and shoreline surveys were conducted on Kakatshu-utshishtun (Grand Lake) and the lower reaches of Meshikamau-shipu (Naskaupi River). These form part of the Meshikamau-shipu Travel Route, an Innu transportation route and land use area that extends some 330 km inland from Sheshatshiu to the former Lake Meshikamau (which is now flooded by the Smallwood Reservoir). In 2019 this route was designated as a National Historic Event by Parks Canada. It follows a series of rivers and lakes punctuated by overland portages, and multiple Precontact archaeological sites have been recorded in its upper portions. However, very few sites have been recorded in the lower section of the route, nearer to Sheshatshiu and North West River.

The fieldwork was part of the author's doctoral dissertation research at Memorial University of Newfoundland and Labrador (MUNL). It was con-

No.	Name	Number	Culture / Period	Visit Type	Tests
1	*Upatshuan Portage	13F/09 Ethno 9	Innu 20th century	survey	0
2	*Air Force Rec Camp	FjCb-01	Eurocanadian 20th century	survey	0
3	Breakdown Site	FkCd-01	Innu 20th century	survey	0
4	Cape Caribou River 1	FjCc-01	Innu 20th century	survey, testing	26
5	Berry Head	FkCe-01	Multicomponent Precontact to 20th century	survey	
6	*Kaistunanut	FkCf-01	Innu 20th century	survey, testing	17
7	*Long Island 1	13F/15 Ethno 1	Unknown 20th century	testing	1
8	The Office	FkCf-02	Eurocanadian 19th – 20th century	survey, testing	13
9	Amatshuatant / Naskapi Portage	FlCf-01	Innu 19th- 20th century (but see below)	survey	0

Table 1: New and Re-visited Sites in the 2022 Study Area.

** Denotes a newly recorded site*

ducted in partnership with the Innu Nation under the terms of a research agreement between it and MUNL. As a result, the Innu Nation Cultural Guardian was involved in planning and community members were involved as field crew and informants. Prior to beginning the survey, the Nunatsiavut Government (NG) and the NunatuKavut Research Council (NCC) were informed regarding the research. The study area falls outside of NG lands but they have members living in the area, one of whom were employed in the course of this work. The area falls within the NCC proposed claim area so an application was made to them for a research authorization, though no response was received from their office. I have committed to keep all organizations informed of research results.

The first objective of the survey was to identify and revisit Innu cultural sites in the permit area, as well as any other non-Innu sites encountered during fieldwork. The second objective was to create an opportunity for Innu interns to acquire field techniques, while allowing archaeologists an opportunity to learn from Innu about recent and historical land-related values.

The 2022 survey recorded two new archaeological sites and two new ethnographic sites, and revisited five archaeological sites known from previous projects (see Table 1).

Field Crew

Our crew was a mix of Memorial University personnel and Innu interns. Our interns, Jordanna Benuen and Agathe Aster, live in Sheshatshiu and have prior experience in environmental monitoring. They were employed by the Conservation Corps of Newfoundland and Labrador (CCNL), a non-government organization focused on environmental issues, with support from the Innu Nation and MUNL. The permit was held by myself (David Finch), a doctoral candidate in Archaeology, and the field crew was rounded out by my academic co-supervisor Dr. Scott Neilsen. The pre-survey reconnaissance was aided by Morgan Michelin of North West River.

Methodology

Preliminary reconnaissance of the shorelines in the study area was done between August 16 and 20, 2022. During this time, the investigation was purely non-invasive (i.e., pedestrian survey, uncontrolled surface collection, photography, GPS recording). Prior fieldwork indicated four archaeological sites and one ethnographic site known from the study area. During reconnaissance I was able to visit all of

Figure 2: Sites Visited in 2022.

these except an ethnographic site in the lake's west end. Following this first orientation to the area, testing locations were selected with the assistance of Innu Nation staff, informants from Sheshatshiu and North West River, and existing land use and toponym studies.

The full crew returned to the study area between October 4 and 14, 2022, after the completion of unrelated work elsewhere in Labrador. We first spent four days shovel testing at the mouth of Kaneshekau-shipiss/Cape Caribou River. We then boated to a base camp just inside the mouth of Meshikamau-shipu/Naskaupi River, from which we performed additional survey via canoe and tested locations nearby. In total, shovel testing was performed at four locations, one of which was a known site and the other three newly recorded as part of this work. Artifacts are currently in St. John's for conservation and analysis.

Sites Visited

The following site summaries are organized from east to west. This mirrors the autumn movement patterns of historic Innu along the Meshikamau-shipu Travel Route.

1. Upatshuan Portage (13F/09 Ethno 9)

An ethnographic site on the southeast end of Grand Lake, immediately west of Upatshuan/The Rapids. It is in a small clearing approximately 7-10 m from shore (depending on tide), about 10 m south of an overgrown sled trail that is visible as a thinning in the tree cover (and visible in satellite imagery). The site was not tested, but pieces of cut and nailed lumber and carpeting were visible embedded in the turf. This likely indicates a relatively contemporary campsite or boil-up location. William Fitzhugh's field-

Figure 3: Structural material near the Upatshuan portage.

notes from his 1968 survey indicated a "Recent Indian camp" near this site (Fitzhugh, 1968). It is likely that there have been multiple short-term camps in this area. Shovel testing near the portage is recommended, as there is the possibility of finding contemporary, historic, and precontact sites.

The term *upatshuan* is an Innu-aimun toponym for the stretch of water between Grand Lake and Little Lake, a.k.a. The Rapids. It literally means "rapids in narrows" (Pepamuteiati nitassinat, n.d.). The rapids themselves are not currently a huge impediment to boat traffic but in the past the corridor was difficult in winter. It should be noted that contemporary and historic Innu camps are often located near rapids, portages, and *ashkui* (winter-season open water areas).

2. Air Force Recreational Camp (FjCb-01)

This site is a ten-minute boat ride from North West River, on the west side of Upatshuan/The Rapids. It represents a Cold War era recreational camp for Air Force personnel, consisting of multiple building footprints (6 cabins, 1 cookhouse), a stone boat quay, and a wheeled generator (now in disrepair). The area is forested with multiple clearings and trails dating to the camp's lifetime. More documentary research is required to determine the camp's years of use and occupants. Fitzhugh's 1968 field notes do not note it as abandoned so it was likely in operation at that time. A series of paths connect the cabin locations to a trail that apparently leads back to North West River near the sandpits. Morgan Michelin, a resident of North West River, reported that there is a dump associated with the camp that lies a few hundred metres north of the site, its potential for contamination being unknown. Cabins were reported by North West River residents as having been removed for re-use elsewhere. This site is a ten-minute boat ride from North West River and would make a good field school location for contemporary or military archaeology.

3. Breakdown Site (FkCd-01)

Located at the east end of Wattey's Cove on the north side of Grand Lake, about 15 km northwest of Ten Mile Point and 30 km northwest of Sheshatshiu and North West River. The site was first

Figure 4: At the former Air Force Recreational Camp, looking south to Upatshuan/The Rapids.

documented by Fred Schwarz (1996) and was so named as his crew was put ashore here after problems with their boat motor. The cove has several brooks draining into it, the largest of which is east of the site and known to Innu as *Ashkashkuaikan-shipiss* ("log cache box small river"). A beach covers about 400 m of the cove shoreline, ending at a wooded rocky point near the recorded site location. About 400 m west of the site a modern portage trail leads north and upslope. An informant stated that the streams here were used by Innu for winter access to areas north of Grand Lake and towards Sebaskachu Bay. A similar settler use was confirmed by guide Morgan Michelin. An old bear trap (disarmed) was spotted on the portage trail, which he felt may be associated with Henry Michelin who used to have a cabin near that location.

No artifacts were collected in 2022. Near the previously recorded site location were observed a plastic cup, bottles, and a partial caribou skull. These appear to be relatively recent, and no Precontact features or objects were observed. The area is close to shore and may be periodically inundated. The portage route and the named brook on the west end of the site are probably better locations for future survey and subsurface testing, though a modern cabin is near the brook mouth.


Figure 5: Derelict generator northwest of the cabins.

4. Cape Caribou River 1 (FjCc-01)

Located on a sand and gravel peninsula on the north side of the mouth of Cape Caribou River, about 20 km northwest of North West River on the south shore of Grand Lake. The site was first visited by Fred Schwarz in the late 1990s and was relocated based on prior site forms (Schwarz & Schwarz 1997). The southernmost part of the peninsula corresponds to Schwarz's description, and recent campsites are obvious. Older camps (c.1940s-60s) can be found scattered on the eastern side of the point within 330 metres of this area.

The site was tested based on its previous recording, history of use, and location near an *ashkui*. Contemporary and historic Innu camps tend to be located near rapids, portages, and ashkui. Informants indicate that the area was used by Innu as required, either in winter as boil-up locations while heading south to intercept caribou, or in fall by boaters heading to the Naskaupi River. Traditional land use maps compiled for the LAMAP (Innu Nation, 1980) project show three historic camps near the mouth of the river; these are now in the possession of the Innu Nation and were made available for this project. Bill Fitzhugh's 1968 field notes also noted "a Michelin trapper's cabin" on the peninsula and a Division of Northern Labrador Affairs (DNLA) lumber camp south of the river mouth. The interior of the peninsula is extensively disturbed by logging and vehicle activity.

A total of 26 test pits were dug by our crew. Most of the testing consisted of two parallel lines of test pits crossing the site from west to east, spaced 5 m intervals apart with 3 m between rows. Another five tests were made in a clearing just northwest of the site, in the area where Fitzhugh had indicated a cabin may be found. No traces of the cabin were observed but some recent objects and flat rocks were noted in the clearing. Along the east side of the peninsula, two other locations were tested near former camps indicated by box and barrel stoves, both of which yielded positive tests. All recoveries appear 20th century in origin and include metal cans, glass fragments (bottle; mug; burned fragments), a metallic container or pillbox, nylon rope, and tar paper. The presence of tar paper suggests that a structure may have been present at the site at some point in the past.

Figure 6: Beach at Cape Caribou, looking north.

The site shows repeated historical use in multiple locations and its boundaries should be extended to encompass the entire peninsula. The area tested is low and appears to have been intermittently inundated, and areas north of it (while disturbed) may have traces of older occupations. The author concurs with the observation made by Schwarz (1997) of the relative inaccessibility of higher terraces in this area of Grand Lake. The low modern areas of FjCc-01 are accessible to modern visitors but older occupations are more likely to be found at higher elevations. If this site is re-visited, an E-W transect could be tested across its northern portion – from shore to the higher terraces and slopes, which are about 50 m ASL and similar in elevation to Intermediate period sites in Sheshatshiu and North West River.

On the west side of the river mouth, the DNLA lumber camp could not be located though cut stumps and tracked vehicle trails are plentiful. A major forest fire occurred on this shore in the 1980s and it is likely that local wood harvesting has occurred since that time.

5. Berry Head (FkCe-01)

Located on the north shore of Grand Lake on Berry Head, about 40km northwest of Sheshatshiu and North West River. The site was first recorded by Geoffrey Conrad, a student of William Fitzhugh, who recorded a lithic spot find in 1968. It lies on a 1.4 km long beach on the south and southwest sides of the head, roughly in the middle of the beach, with several modern cabins east of it. The term "Berry Head" is echoed in Innu-aimun as *mina-utshu* (berry hill). However, no modern good berry picking spots are evident and the area is steep-sided and heavily wooded.

In 2022, an uncontrolled surface collection was made of the beach, avoiding the frontage of settler cabins. No evidence was seen of beachside hearths or other features, which is not surprising as the shore is exposed to waves and wind. Recoveries included one piece of flaked/modified quartz, a white earthenware sherd, bottle glass, and pane glass. The site is likely turned over regularly by water action, so further monitoring of the beach may be hit-or-miss but the modern cabin sites may be more productive.

Figure 7: Drum stove found about 100 m north of tested area.

Figure 8: Crew testing at FjCc-01 (L-R, Scott Neilsen, Agathe Aster, Jordanna Benuen).

The cabins are located on flat land about 2 to 5 metres above the modern lake level.

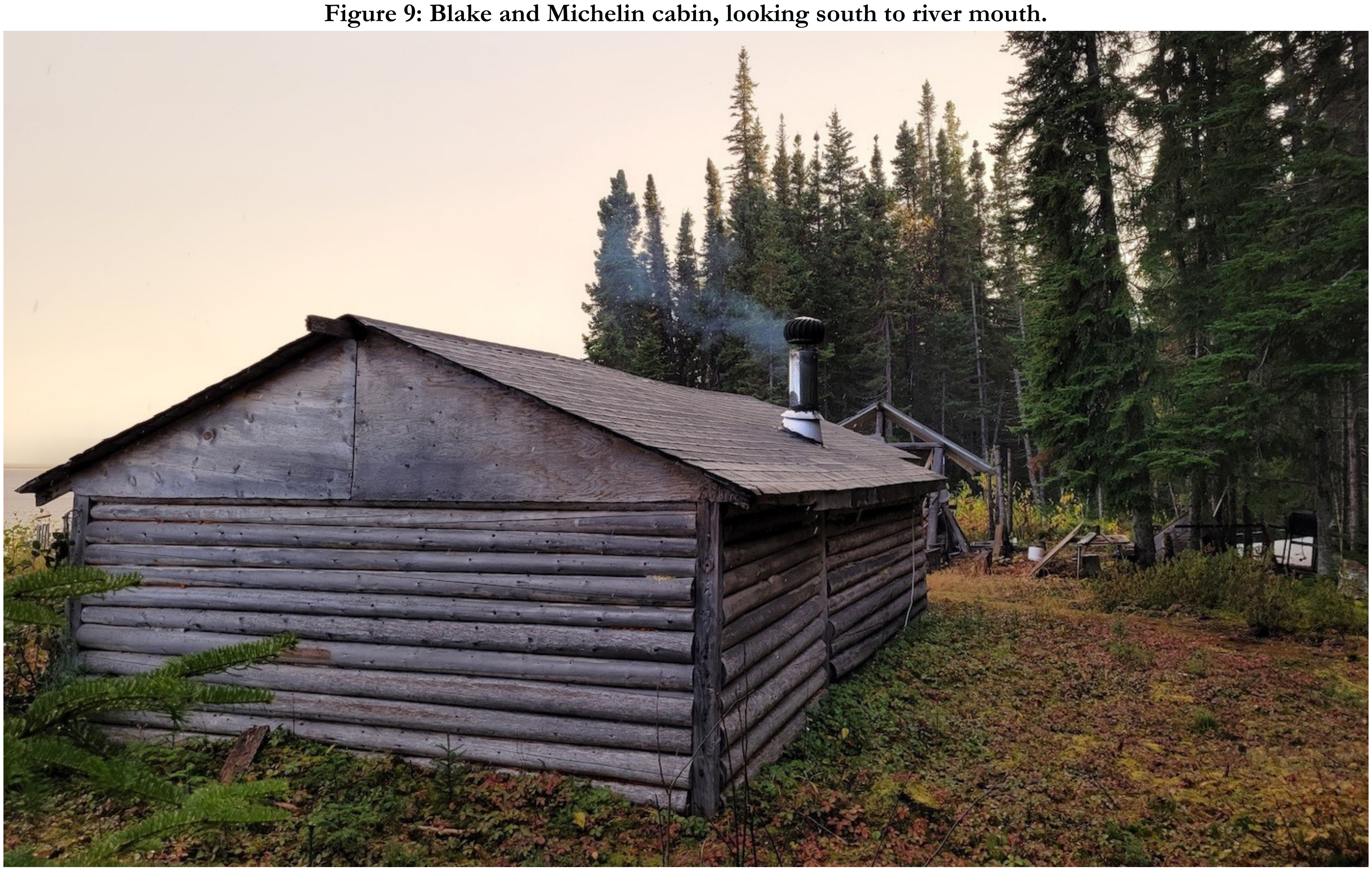
6. Kaistunanut (FkCf-01)

This site is on the west side Meshikamaushipu/Naskaupi River, north of the stabilized sand bar at its mouth. It is adjacent to the cabin of Dave Blake and Paul Michelin of North West River, who graciously allowed our crew to rent their premises for part of the survey. The site is located on a 3-4m high terrace that flattens out just past the sandbar. The banks here are flat for about a kilometre but have sharp cutbacks and are densely forested. Testing was concentrated in a patch of younger spruce (<30-40 years) near the cabin, which is visibly different than the nearby forest which is a mix of balsam, spruce, and poplar. A series of 17 test pits were dug, most of which were in three rows parallel to the riverbank north of the cabin, and four in the yard north of the cabin. Beneath the moss and humus are deep layers of sand (up to 1 metre). Objects recovered in the 2022 tests were consistent with those from a mid-20th century camp (cans, probable stove pipe fragments, louse comb, textile and/or canvas) mixed with materials that may be associated with the current cabin (tar paper, cans, food wrappers). Artifacts are being conserved and the total number of objects recovered is under 100.

A map in the Innu Nation's files shows place names recorded by the late Sylvester Andrew of Sheshatshiu (S. Andrew, 1993). This includes a location at the area tested that was labeled "Kaistunanut." Innu from in Sheshatshiu stated that the term indicated a place where canoes were made. Several residents of North West River also related that there used to be an Innu camp at that spot where Innu built canoes, and the current property owners reported that the yard had already been cleared when they built the cabin in the mid-1980s. Louie Montague's memoir (2013: 72) noted that Innu camped and built canoes at this location in the area when he was younger. Fitzhugh's 1968 fieldnotes stated that an Innu camp was thought to be near this spot, but no camp was observed at that time. This suggests that the site may have last been occupied before this time.

During the 2022 investigation, no sign of canoe manufacturing was found except possibly for what may be a piece of canvas, nor were Precontact materials recovered. The most interesting objects

Figure 9: Blake and Michelin cabin, looking south to river mouth.



from this field season – a piece of lace ribbon and a lice comb – were found eroding from the riverbank. The banks in this area are sandy and shorelines have likely been affected by hydroelectric development upstream. It may be that the site has been eroded, or that Innu camps in the area were ephemeral and not limited to this portion of the terrace. A comparison of modern shorelines will be made with historic aerial photos to understand changes at the river's mouth.

7. Long Island 1 (13F/15 Ethno 1)

A recent ethnographic site located on Long Island, about 1.6 km northwest of the confluence of Nipishish-shipu (Crooked River) and Meshikamau-shipu (Naskaupi River). It is situated in a 4 metre wide clearing on the west side of Long Island, just inside where the spruce begin on the north side of the island. Present is a tent frame made from unpeeled spruce poles, nestled into deadfall and lashed with nylon rope. The frame's crosspieces are just visible from the river. It has no visible hearth or signs of recent activity, appearing to have been unused for several years. Our crew put in a single test pit at the centre of the structure, yielding a single steel round head nail. Its cultural affiliation could not be determined. The tent frame style did not seem Innu (i.e., no vertical poles were placed on the inside of the structure) and seemed somewhat improvised to fit between deadfall.

8. The Office (FkCf-02)

The site is located on a terrace on a side channel of Meshikamau-shipu/Naskaupi River, on its east side across from the head of Long Island. A path leads up the riverbank near a tall lone poplar that stands out against the spruce, emerging into a relatively open area bounded by the river to the south and west and a long raised linear ground feature (2-3 m high) running roughly E-W. Scattered historic artifacts are embedded in the moss, plus two pits/ depressions, and a raised flat area to the site's east end that is interpreted as a cabin floor.

This site is interpreted as representing one or more settler cabins associated with Joshua Michelin and family. Oral and textual records also indicate the presence of a Hudson's Bay Company (HBC) outpost called "The Office" that was abandoned around 1925. Shovel testing in 2022 intercepted what appears to be an early- to mid-20th century settler habitation. Features associated with the HBC was not detected.

Louie Montague's memoir (2013: 72-73) described The Office as an HBC post that ceased operation before his time. He remembered derelict houses at the site and recalled that the Michelin family had a cabin there. Fitzhugh's (1968) field notes state that his father John Montague thought the HBC outfit had been abandoned since about 1925. Fitzhugh himself observed floor boards and historic artifacts, as well as more recent camp sites, but the site was not officially recorded or Bordenized. The aforementioned mylar map with place names by Sylvester Andrew (1993) had a location corresponding to the site that was marked by a house symbol. It was labeled "Nuskuautshuap," which Innu community members and our interns translated as "flour house" or "flour store" – suggesting a provisioning role. HBC post journals have not been fully analyzed but it appears that the company established houses on the Naskaupi River in 1836 and again in 1850 (White, 1926, map 2; HBCA B.153/a/1, North West River Post Journal, 14 September 1836; HBCA, B153/b/4, Richard Hardisty to George Simpson, 23 September 1850, pp.25-26).

Informants from North West River indicate that the site also supported one or more settler families. Associated with these are graves of three children who died in 1919. Dave Blake and Paul Michelin recalled a gravestone east of the most obvious boat landing spot (the lone white poplar on the shore), and that a path was cleared to the graves about 10-15 years ago. The graves were previously documented by Anne Budgell (2018: 119) who linked them to three children of Joshua and Nellie Michelin during the Spanish Flu epidemic. Budgell published a photograph of the unseen headstone. However, the graves could not be located during our survey and the headstone may have been toppled or covered by treefall.

The site was tested judgementally with 13 shovel tests. Two depressions were located on the west side of the site; tests in and around them were positive. A raised rectangular area was located on the east end of the site and yielded structural items. Between these two areas can be seen numerous historic objects embedded in the moss. Artifacts are being conserved at MUN and have not been fully inventoried but included .22 casings, shotgun primer, grouse bones, hinge parts, cans, wire, a metal eyelet, ceramic cup fragments, round headed nail, a large tack, tar

Figure 10: Aim for the poplar! The approach to The Office, looking north.

in which planters began to replace Innu as the focus of the HBC's fur trading.

My working hypothesis is that The Office represents an intermittent provisioning outpost run by the HBC, most likely dating to the late 19th and early 20th centuries. Families who already had trap lines in the area possibly operated it. This is consistent with local HBC practice in the 19th century including storehouses and provisioning camps on lower Lake Melville, as well as an increased reliance upon settlers for contract labour. It is recommended that the site be investigated again to identify the outpost, and to locate, mark, and avoid the Michelin children's graves.

paper, pane glass, and metal fragments. All objects appear to date to the early to mid-20th century.

In January 2022, I began archival research at the Hudson's Bay Company Archives in Winnipeg to identify the outpost's years of operation and its relationship to local Innu and settler families. This is only partly complete though I can report some gross patterns in the records. The HBC post at North West River traded with and made deliveries to Innu camped at the head of Grand Lake from the 1850s through 1870s. Mentions of these groups appear to decline somewhat in the decades following, with increasing reference made to trade with planters (settlers). This parallels Korneski's (2016) observations of trends in the 1830s-1850s

Figure 11: Agathe Aster screening test pits 1-3, at west end of FkCf-02.

9. Amatshuatant/Naskapi Portage (FlCf-01)

In August 2022, we revisited an important Innu site on Meshikamau-shipu/Naskaupi River. The

Figure 12: Container lid embedded in wall of area 3, test pit 2, at east end of FkCf-02.

Amatshuatant site (also known as Naskapi Portage) was the location of an important ca.18th -20th century crossroads from which Innu families travelled over the Quebec-Labrador Peninsula. It was described by William Brooks Cabot in the early 1900s, and later investigated by Fitzhugh (1968) and Loring (1993).

The site is about 70 km northwest of North West River on the northeastern shore of Meshikamau-shipu/Naskaupi River, across from the mouth of Kamikuakamiu-shipu/Red Wine River. The site is in a clearing atop a steep bank, bounded on north and south by small brooks. It lies within 100 metres of a cabin formerly belonging to Louis Montague, whose grandson Scott provided access to the property.

The site was partially excavated by Sheshatshiu community members and Stephen Loring in 1993, and overgrown traces of the units are still visible. The site seems untouched since the 1993 excavations, and the edges of excavation units are still visible under layers of reindeer lichen and moss. Unexcavated portions of the site have camp detritus such as remnants of grub boxes, metal cans and pails, and box stoves. The actual trail from here to Nipishish Lake is overgrown and peters out after a few tens of metres.

No artifacts were collected in 2022. However, the author received seven lithic artifacts from the Innu Nation, which were labelled as from Loring's 1993 project (permit 93.19). The reason for their being separate from the original collection is unknown but they were found in materials stored at the Labrador Campus Research Station for several years. Fortunately their listed provenience was confirmed by

Figure 13: Box stove on surface of FlCf-01, northeast of 1993 excavation area.

a former crew member living in Sheshatshiu. These objects include a flaked grey quartzite cobble, 2 grey quartzite flakes, 1 piece grey quartzite shatter, 2 pieces red quartzite shatter, and 1 piece of shatter of an unidentified green and white banded material. The Innu Nation has requested that these be added to the existing site collection. It should be noted that the 1993 collection already includes lithics which implies a Pre-contact component at what has been considered a late historic site. Future visits are recommended to monitor the site and explore its history of use.

Discussion

No early Innu archaeological sites were found during this field season, which is disappointing but not entirely unexpected. Three factors come to mind to explain this gap: the locations chosen for survey, the nature of historic Innu land use, and obscurement by non-Innu development.

On the first point, fieldwork focused on areas easily accessible by boat, with a bias towards those with recorded toponyms and previously recorded sites. Further, much of the study area is steep sided and thickly forested, meaning that surveying higher elevations is difficult. The areas investigated were of low elevation and close to water which weighted results towards locating recent sites which were probably occupied in warmer seasons. As Innu and other First Nation groups are highly mobile in colder seasons, the survey could not capture fall and winter encampments that were probably located in uplands and in river valleys. Further, the low elevations favour interception of recent sites as central Labrador had much higher relative water levels prior to significant isostatic rebound (Fitzhugh 1972). There has also been an unquantified drop in the level of Meshikamau-shipu after the creation of the Smallwood Res-

Figure 14: Morgan Michelin standing by 1993 excavation area at FlCf-01.

Figure 15: Jordanna Benuen.

ervoir in the 1960s. Land use data (including toponyms) are largely derived from the experience of Innu born in the 20th century, which means that some cultural information that is online or in print is of limited value without interpretation by community members. As a result of these factors, there are no reliable archaeological predictive models for the study area.

The second factor relates to Innu land use. Contemporary and historic Innu camps are ephemeral and low density, which is particularly the case for winter occupations. Camps also may not have been re-used, or only struck in the same general area. Some recorded toponyms may refer to general areas rather than single locations. I would suggest that this is related to an apparent gap in ancient First Nations sites known from central Labrador. Few sites have been identified that date between the Point Revenge Complex (c.1000-350 BP) and 19th century historic Innu.

The final factor relates to settler land use. Simply put, settler cabins appear to occupy prime real estate in the study area. Near-shoreline terraces would be equally as attractive to Innu camping in the 17th to 20th centuries as they would to trappers building tilts in the 19th and 20th. These locations remain basically untested as I made a point to not trespass on current cabin footprints.

Some recommendations for future fieldwork include the following:

- investigation of terraces or relict points at about the 50 m ASL level
- testing of modern cabin sites for 19th century or earlier camps
- surveying the mouth of Mitinissiu-shipu/Beaver River
- surveying the east side of the mouth of Meshikamau-shipu/Naskaupi River
- surveying the bush behind the long sandy shoreline along Grand Lake that extends southwest of the Naskaupi's mouth; and
- testing at higher elevations on the point leading towards FjCc-01.

Many of these endeavours would be aided by using historic photos and aerial imagery to better estimate relative changes in lake and river shorelines.

Concerning the internships, the project was quite rewarding. Our crew were exposed to areas that they had not visited in the past, though connected to their families through stories and personal details. Camp life was an opportunity to exchange stories and to learn Innu land use practices. Our interns participated

Figure 16: Agathe Aster.

Figure 17: Sunset behind Morgan Michelin's cabin.

in survey and testing on this project and were involved in several other projects in 2022, including non-invasive surveys in the Akami-Uapishku-KakKasuak-Mealy Mountains National Park Reserve, water monitoring with Water First (a conservation NGO) around Iatuekupau/Park Lake, and excavation in Sheshatshiu at FjCa-51 as part of Dr. Neilsen's ongoing research program. Shoreline survey and test pitting were activities not otherwise conducted as part of their work, so this was a good opportunity for them to pick up experience in these activities.

Documentary research at the Hudson's Bay Company Archives will continue in 2023 to find more information on fur trade outposts in the Grand Lake area. This is also an opportunity to update a list of local Innu traders mentioned in HBC records from the 19th century. Ideally, more testing can be done at The Office and at Amatshuatant in the summer of 2023, hopefully built around visits from community members.

Acknowledgements

I would like to acknowledge the Innu Nation for their ongoing partnership and support. Specifically, thanks go to Jodie Ashini, Jack Penashue, Jean-Paul (JP) Penashue, and my co-workers Agathe Aster and Jordanna Benuen. Thanks also to Dr. Scott Neilsen (not the least for his patience as I tried to remember how to use a compass), Donna Teasdale for help with artifact conservation, and the following people for some great conversations: Tony Jenkinson, Richard Nuna, Ben Andrew, Liz Dawson, and Morgan Michelin. Thanks to Scott Montague for access to his family's cabin, and Paul Michelin and Dave Blake for letting us stay at their place and dig holes in their lawn. Lastly, thanks to my funding agencies whose financial support made this possible: the Social Studies and Humanities Research Council (SSHRC), the Institute for Social and Economic Research (ISER), the J.R. Smallwood Foundation, the Northern Scientific Training Program (NSTP), and the NL Provincial Archaeology Office (PAO). Finally, thanks to the Conservation Corps of Newfoundland and Labrador for helping set up the internships for Jordanna and Agathe.

References

Andrew, Apatet (Ben). (2022). Personal comment.

Andrew, Sylvester (1993). "Kakatshu-utshishtun place names." [map] Innu Nation November 1993.

Budgell, Anne (2018). "We all expected to die: Spanish influenza in Labrador, 1918-1919."
St. John's: ISER Books.

Conrad, Geoffrey (1969). "The Lake Melville Project 1968. A preliminary report on the archaeology of the central coast of Labrador." [B.A. thesis] Cam:ridge, MA: Harvard University.

Fitzhugh, William W. (1968) "Amatshuatant notes. Unpublished field notes for NL Permit 68.00." Manuscript on file with Labrador Campus Research Station and the PAO.

Fitzhugh, William W. (1972). "Environmental archeology and cultural systems in Hamilton Inlet, Labrador: A survey of the Central Labrador Coast from 3000 B.C. to the present." Washington, D.C.: Smithsonian Institution Press. In Smithsonian Contributions to Anthropology, 16. https://doi.org/10.5479/si.00810223.16.1.

Innu Nation (Naskapi Montagnais Innu Association) (1980) LAMAP. Land use and occupancy maps. Innu Nation: Sheshatshiu, NL.

Jenkinson, Anthony (2022). Personal comment.

Korneski, K. (2016). Planters, Eskimos, and Indians: Race and the organization of trade under the Hudson's Bay Company in Labrador, 1830-50. Journal of Social History, 50(2), 307-335.

Montague, Louie (2013). "I never knowed it was hard: Memoirs of a Labrador trapper." St. John's: ISER Books.

Nuna, Richard (2022). Personal comment.

"Pepamuteiati nitassinat: As we walk across our land." [website] https://www.innuplaces.ca/fiche.php?id=538&lang=en.

Schwarz, Fred (1997). "An Historic Resources Overview Assessment of Forest Management Districts 19 and 20, South-Central Labrador." Report for the Department of Natural Resources.

Schwarz, Lynne M, & Schwarz, Frederick A. (1997). "An archaeological survey of Grand Lake - North West River, Central Labrador, 1996." Permit report 96.14.

White, James (1926). Forts and trading posts in Labrador Peninsula and adjoining portions of Ontario and Quebec. [map] In Great Britain, Privy Council, Judicial Committee, "Forts and trading posts in Labrador Peninsula and adjoining territory." Ottawa: King's Printer.

Archival Sources

Hudson's Bay Company Archives

HBCA B.153/a/1, North West River Post Journal, 14 September 1836.

HBCA, B153/b/4, Richard Hardisty to George Simpson, 23 September 1850, pp.25-26.

A Small Basque Whaling Station in St. Paul River, Quebec

William Fitzhugh[1], Sarai Barreiro-Argüelles[2] & Francisco Rivera Amaro[1,3]
Smithsonian Institution [1], Université de Montréal [2], The Archaeology Centre, University of Toronto [3]

Figure 1: Bonne Espérance-4 (EiBk-61) viewed to SW before excavation. (photo: W. Fitzhugh)

To date, much of our information on Basque whaling in Labrador and the Gran Baya region comes from Red Bay and a few other locations (Barkham 1980, 1987; Azkarate et al. 1992; Grenier et al. 2007; Loewen and Delmas 2012). This seems unusual considering the large number of Basque stations now known from Nova Scotia and New Brunswick, Newfoundland, southern Labrador, and the western St. Lawrence Gulf. Basque materials are common finds in Inuit winter villages between Brador and Petit Mecatina on the Quebec Lower North Shore (QLNS), but the tiles, ceramics, metal, wood, and other European materials have never been linked to specific Basque sites. The large quantity of European materials including fragile objects like wine glasses and tableware in the Inuit sites indicates that exchanges must have been conducted in person at Basque shore stations or from floating trade rather than by scavenging from abandoned or seasonally vacated Basque stations. With very little literature available describing these contacts, we have to rely on archaeological evidence.

To date most of this evidence has come from Inuit winter houses and middens from four sites: Hare Harbor (EdBt-3), Little Canso Island (EhBn-9), Belles Amours (EiBi-12), and Hart Chalet (EiBh-47), ranging geographically from Harrington Harbor to Brador and Brador (Fitzhugh 2019a). A fifth site recently excavated on Grande Isle in St. Paul River (Fitzhugh et al. 2019b) provides an opportunity to investigate possible Inuit-Basque exchange with a small Basque whaling station located less than a kilometer away on Bonne Espérance Isle. The Grande Isle site has two components: a rectangular tent (qarmat) structure which was found half-eroded from a beach terrace a few meters from a partially constructed sod and earth winter structure. Both structures contained Inuit soapstone vessel fragments together with forged nails, roof tiles, and other European materials. The winter house had part of its floor paved with a wide sawn plank from a European ship. This settlement appears to have been occupied by an Inuit family who may have been the first of their people to settle in the St. Paul region. And as far as we know, they were also the last to do so, as their house was burned and an Inuit male was buried with his harpoon and snow-knife in a make-shift grave a few hundred meters away.

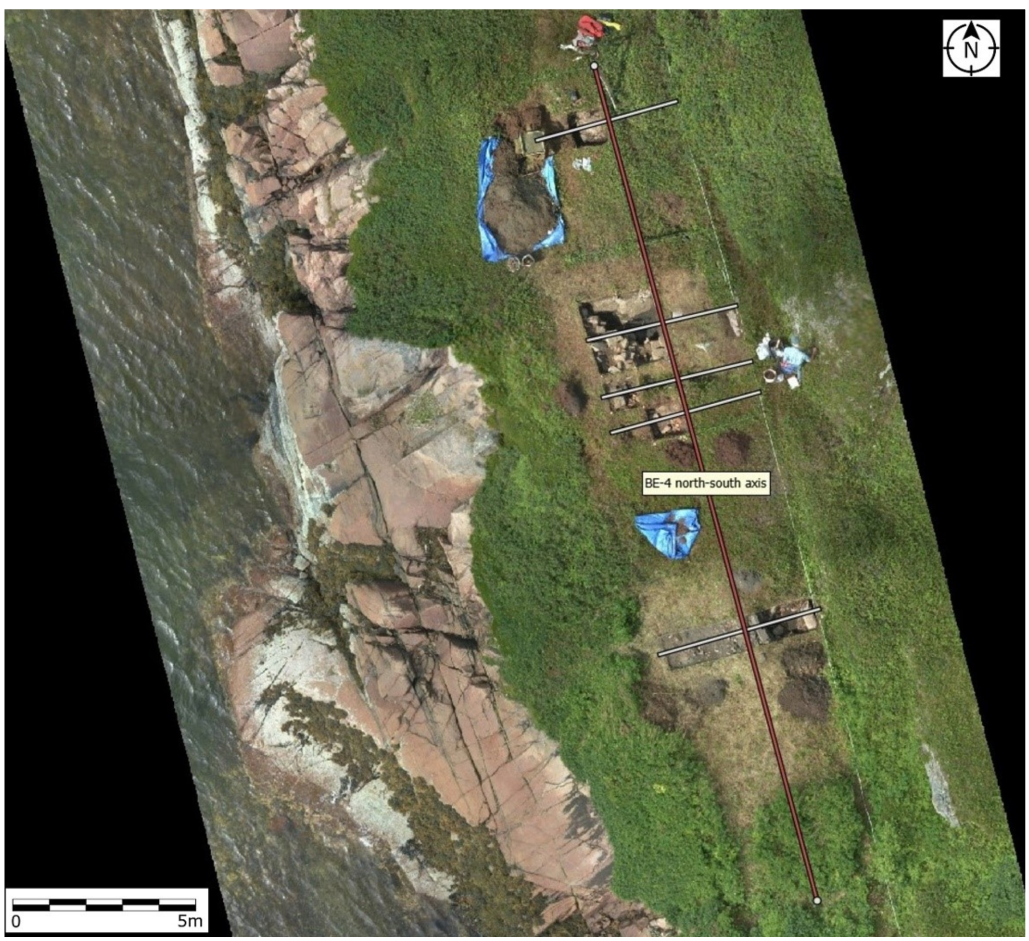
While we were excavating the Grand Isle site in 2019, University of Montreal divers conducted an underwater survey of the Basque anchorage between Bonne Espérance and Grand Isle, known today as Bonny Harbor. The divers found tiles and ship ballast in deep water along the western shore of Bonne Espérance, and a land survey at these locations revealed two small trywork mounds hidden beneath surface vegetation. These sites, BE-3 (EiBk-60) and BE-4 (EiBk-61), are on a narrow channel separating the southern extension of Grande Isle from Bonne Espérance and are within a kilometer of the whaling grounds in the Gulf. Only a few hundred meters apart, separated by a high bluff, both sites are sheltered from wind and surf and have ready access to whaling grounds nearby in the Gulf.

For two weeks in August, we tested BE-4 and found it to be a small-scale butchering and blubber-rendering station containing large amounts of baleen, charcoal and cinder, and a small inventory of Basque ceramics and iron. Excavations were conducted in four areas: a stone wall at the south end of the site; a central mound composed of boulders and cinder; a 'baleen pit' full of charcoal and baleen adjacent to the mound; and a residential or general work area at the north end of the site. Time constraints limited our work to a few square meters in the tryworks and exploratory tests at the more open and level north end of the site.

Other than James Tuck's general descriptions of the Saddle Island sites, there are few accounts of the construction and layout of Basque whaling stations. Jean-Pierre Proulx provides the following:

> Each tryworks consisted of a granite and sandstone structure measuring around 1.0 m high by roughly 2.5 m deep and comprising one or more fireboxes. An opening situated at the base of each firebox and always facing shoreward was used to introduce fuel for stoking the ovens. Up to six additional circular openings were located on top of the try-

Figure 2: BE-4 layout and excavation areas. (photo: F. Rivera Amaro)



works for installing the copper cauldrons used to boil down the whale blubber…. [they] put the ruggedness of the terrain to good use. They began by building a wall opposite a vertical outcrop of bedrock and then set tree trunks on the wall to serve as posts. Next they installed rafters, placing one of their ends on the wooden posts and the other on top of the rock outcrop. According to one historian they laid baleen on the rafters to support the tiles used to roof the shelter (Proulx 2007:1-66, 67).

Site Description

Bonne Espérance-4 lies on a ten-meter wide bench that extends along the shore ca. 150 meters from a sea cliff at the south end of the site to a small cove that terminates the level ground to the north.

Figure 3: Westward view of the wall trench. (photo: W. Fitzhugh)

On its west side the 2.5 m high bench (ledge) drops into deep water, allowing boat accesss at any tide; the site is bounded to the east by a steep hillside. The location would not be ideal for a habitation, but it is suitable for bringing boats alongside, for butchering whales, landing blubber, loading casks of oil, and assembling barrels. A meter wide linear mound runs through the site's south end, paralleling the rising hill for ten meters, ending in an oval, meter-high mound in the center of the site. The north side of the mound has a declivity where our 2019 test pit produced baleen, charcoal, seeds, and bone. The north end of the bench has a 4-6 m wide level open area that rises gradually into the steeper hillslope. The 2019 underwater survey revealed roof tiles and ballast rock on the bottom below the ledge, deep enough to be protected from winter sea-ice scour. No underwater work was conducted in 2022.

Excavation Procedure

Time constraints and a small crew called for exploration and mapping rather than broader excavation. We laid out a grid following the north-south orientation of the site, photographed it from the surface and flew drones to establish general layout, local topography, and excavation views. Four areas were selected for test excavation: a 1x4 E/W trench across the wall at the south end of the site; two 1x1 m units on the central mound; a 2x2 m unit in the declivity tested in 2019; and a 1x1 m and two 50 cm test pits to the north.

The Wall

We imagined that BE-4 would follow the pattern of the Red Bay tryworks—a 2-meter wide linear pile of rocks, sand, and sod with openings on top for rendering pots and openings at the seaward base for fuel—wood at first followed by cooked blubber wastings. The structure that emerged from the 1x4 m cut revealed something different: a 50 cm thick, 70 cm high wall of 3-4 courses of laid-up rocks with no place for pot depressions. West of the wall, extending to the shore edge of the ledge, the soil consisted of tryworks sheet midden containing burned rock, charcoal, burned and broken tile, and blubber cinder. This deposit contained no artifacts other than tile. In the 2 -meter wide space between the wall and the rising hillside was a 50 cm deep cultural deposit ending with a waterlogged layer of cut wood and a garment fragment looking like sealskin. Tiles, a few pieces of domestic ceramic, nails, baleen, birchbark, and small flint fire-starter flakes were present, but no bone was preserved and trywork debris was absent. This deposit appeared like a domestic cultural midden rather than trywork refuse. At this point, the function of the wall and its relation to oil rendering and other activities remains unclear. However, it is interesting that building a wall on the seaward side of a tryworks was a common element of Basque tryworks design as noted in the Proulx quote above.

The Mound and Baleen Pit

The stone wall ends in the central area in a 3x4 m oval mound that at first appeared to be bedrock. However, excavation revealed a construction of small boulders, gravel, and sand containing tiles, charcoal, and large lumps of cemented cinder. Time permitted only 1x1 m tests into the top and the northwest side of this structure, and toward its inner parts of the latter, we found voids between the rocks, confirming it is a tryworks feature and not of geological origin.

Adjacent and north of the mound was the declivity tested in 2019. Here we opened a 2x2 m unit expecting to find a small tent site or domestic work area, but instead encountered layer upon layer of charcoal and baleen separated by lenses of gravel and sand extending 60 cm below the surface, with large pieces of baleen and partially burned, ax-cut wood. Stratigraphy indicated we had excavated part of a 2-meter wide pit bounded by the mound to the south and a jumble of large rocks to the south and west. Time did not allow us to reach the bottom or to explore its margins or structure. In addition to meter-long strips of baleen near the bottom, its upper level produced a 20x20 cm wide bundle of baleen plates stacked on top of each other like a deck of cards. The width of the plates indicate they were from a large whale.

Northern Area Tests

We also explored the relatively level area north of the mound and pit that had no surface sign of construction features and was the only area suitable for trywork support activities such as barrel assembly or domestic life. A 1x1 m unit north of the

Figure 4: Oval mound and fire-pit excavations. (photo: F. Rivera Amaro)

Figure 5: Baleen pit and oval mound to its south. (photo: W. Fitzhugh)

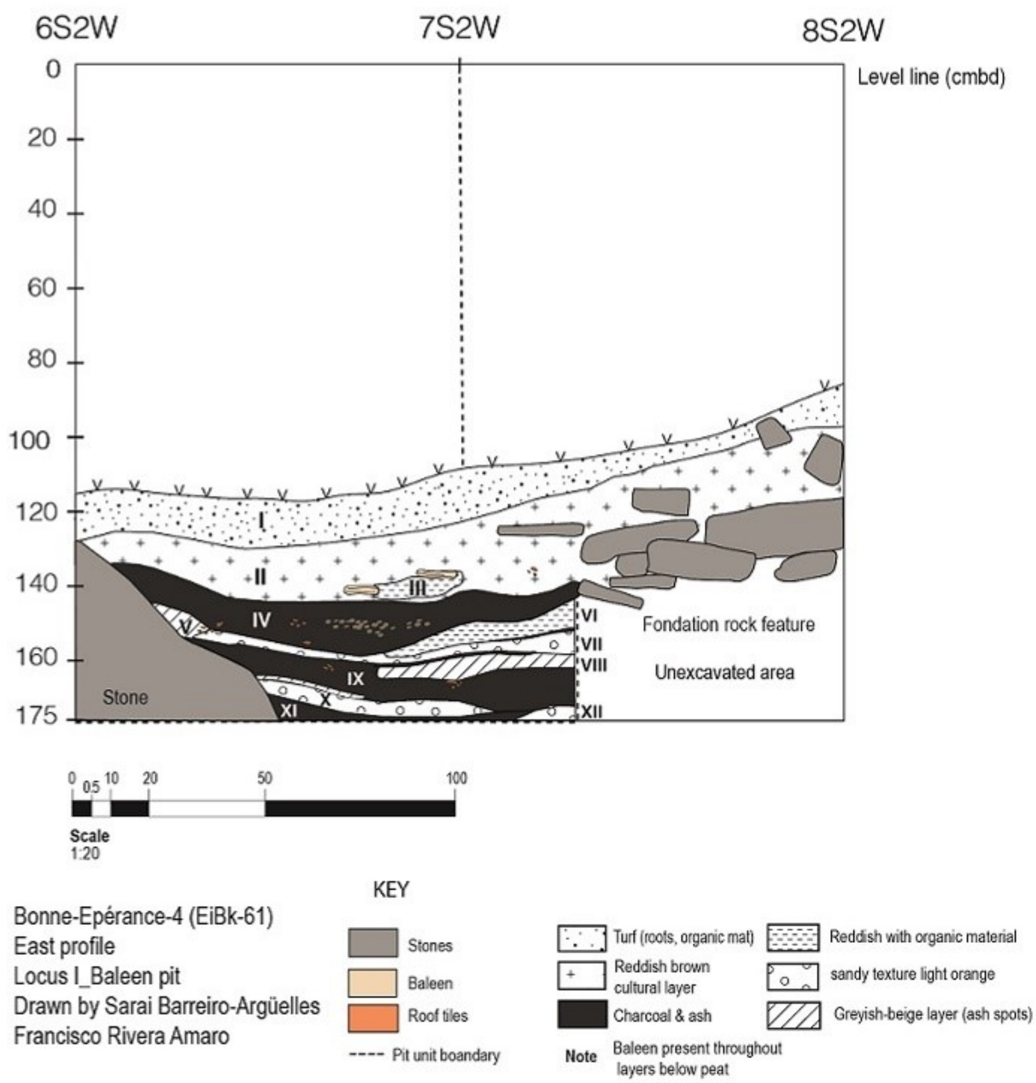
Figure 6: Layered stack of baleen plates. (photo: W. Fitzhugh)

fire pit exposed, below a thick cover of sterile peat, a culture layer with a few nails and ceramics as well as charcoal and baleen resting on sloping bedrock. And in the likely area for general habitation at the north end of the site, two 50 cm tests revealed a 10-15 cm thick cultural layer beneath 30 cms of peat. This layer produced charcoal, baleen, marmite ceramic sherds, flint chips, and wood—a convincing assemblage suggesting that this area may have seen domestic or try-work support activities.

Summary

Bonne Espérance-4, like its neighbor BE-3, appears to be a small-scale blubber processing whaling station that required a relatively small amount of labor to construct its rendering oven and related facilities. The central mound may, if fully excavated, reveal a space for a single rendering pot, but the site certainly does not have multi-pot furnaces known from Saddle Island in Red Bay. The site therefore seems to have been operated by a small team who may have worked at the site's north end, and who must have been supported by a large ship anchored nearby in Bonny Harbor. BE-3 seems to have been a parallel operation, and each may have been built and manned by separate chaloupe teams affiliated with a mother ship. A striking feature of the archaeological finds was the large amount of large baleen, some from large whales—presumably bowheads—found throughout the site, but especially in a deep, stratified, pit in the center of the site next to a mound that may

Figure 7: Baleen pit east wall stratigraphy. (credit: S. B-Argüelles, F. Rivera Amaro)



have been the site's single furnace. None of the baleen appears to have been burned, and its casual disposal suggests it was not of special commercial value at the time. Use as shed roofing might explain its ubiquity. Our excavations—while quite limited—did not produce many nails or ceramics, but the presence of marmite cooking pots and abundant flint fire-starting chips indicates domestic as well as industrial activity and recalls the type of assemblage found in the 16th century Basque hearths at Petit Mécatina near Harrington Harbor. The absence of clay pipes from BE-4 may also be a clue to a 16th C. date.

It is not surprising that our limited tests did not turn up evidence of Inuit contact, given the few square meters excavated. However, the proximity of the Grande Isle Inuit settlement offers a chance that the BE-3 and BE-4 whalers might have been present at the same time as the Inuit, and if so, each would have been curious about the other's activities and materials. So far, evidence of contact is found only at the Inuit site in the form of tiles, iron spikes, and a large oak ship's plank. We will be curious to see if Inuit soapstone vessel fragments turn up in future work at BE-3 or -4. Even if not, these sites show promise of defining a new type of small-scale Basque whaling station conducted by small chaloupe crews. Further work will be necessary to determine if the sites date to the early phase of Basque Grand Bay whaling before the development of the industrial scale seen at Red Bay and other sites, or whether they are small-scale operations contemporary with the larger sites. Proteomic, DNA, and sable isotope studies of the baleen may provide clues to help clarify the age, nature, and history of the Bonne Espérance whalers and their Inuit neighbors.

Acknowledgments

Our brief fieldwork was made possible by support from the University of Montreal, SSHR, and Smithsonian Institution. Local support was provided by the Whiteley Museum, the Bonne Espérance Municipality, and the Centre de Services Scolaire du Littoral, Québec. Garland Nadeau and Eileen and Piercy Schofield were invaluable hosts and information sources. Perry Colbourne provided transportation and boating assistance and kept us well-stocked with stories and bakeapples.

References

Azkarate, A., & José Antonio Hernádez, Julio Núñez. 1992. *Balleneros vascos del siglo XVI. Estudio arqueologico y contexto historico (Chateau Bay, Labrador, Canada)*, Servicio Central de Publicationes del Gobierno Vasco.

Barkham, S. 1980. A note on the Strait of Belle Isle during the period of Basque contact with Indians and Inuit. *Études/Inuit/Studies*, *4*(1-2), 51-58.

Barkham, S. 1987. *Los vascos en el marco Atlántico Norte: Siglos XVI y XVII.* (Vol. 3). Etor.

Fitzhugh, W. 1919a. Paradise Gained, Lost, and Regained: Pulse Migration and the Inuit Archaeology of the Quebec Lower North Shore. *Arctic Anthropology* 56:52-76.

Fitzhugh, W., Igor Chechushkov, Michael Mlyniec, and Abigail Piegols (eds). 2019b. *The Gateways Project 2019: Excavations at Hart Chalet, Grand Isle, and Bonne Espérance*. Arctic Studies Center, National Museum of Natural History, Smithsonian Institution. 134pp. Washington D.C.

Grenier, R., Stevens, W., & Bernier, M.-A. 2007. *L'archéologie subaquatique de Red Bay : La construction navale et la pêche de la baleine basques au XVIe siècle*. Parcs Canada.

Loewen, B., & Delmas, V. 2012. The Basques in the Gulf of St. Lawrence and Adjacent Shores. *Canadian Journal of Archaeology / Journal Canadien d'Archéologie*, *36*(2), 213-266. JSTOR.

Archaeology at Ferryland 2022

Barry Gaulton
Memorial University

Figure 1: Collapsed back wall of the Mansion House (Structure 16) fireplace, looking south, after displaced wall rocks were removed.

The 2022 field season at Ferryland began with the repair of several extant stone wall features that partially collapsed over the previous winter. Even though many of the 17th-century remnants of the Ferryland colony are quite stable, and we protect at-risk features such as fireplaces with tarps each fall, some damage is to be expected over time due to freeze-thaw, intense storms, and other factors. The most notable feature that required attention was the large fireplace associated with the colony's principal dwelling or 'Mansion House' built in the 1620s and occupied by George Calvert, David Kirke, Sara Kirke, and other members of the Kirke family until 1696. Repairs to the back wall of the Mansion House (designated Structure 16) fireplace necessitated that we first remove dozens of large wall rocks that had pushed forward and collapsed onto the hearth floor due to pressure from infill directly behind the fireplace — fill which had been dumped there during the final construction phase of the Mansion House when a massive builder's trench was capped off with upwards of two metres of clay, gravel and rock. To facilitate the restoration of the fireplace to the condition in which it was first uncovered/recorded, we also excavated a 0.5m by 4m trench behind this feature (Figures 1-2). The excavation trench allowed us to expose the lowest courses of intact wall upon which to rebuild, and to remove the adjacent clay and rock infill to alleviate future pressure upon the newly rebuilt fireplace. Unsurprisingly, the infill deposit contained scattered bits of building material such as brick, slate roofing tile and chunks of limestone, along with occasional ceramic and glass fragments (for additional

Figure 2: Excavation trench behind Structure 16 fireplace, in progress.

Figure 3: 1m by 4m excavation to the northeast of Feature 217, Area D, looking southwest.

**Figure 4: (left) ca. 1620s-40s clay tobacco pipe bowl fragment;
(right) monogrammed IS maker's mark on heel of same pipe.**

Figure 5: Excavation of builder's trench on the exterior east wall of Feature 2017, Area D, looking south.

information on previous builder's trench excavations see Gaulton 2015; Gaulton and Hawkins 2015, 2016, 2017). Excavations also revealed the remnants of an upright wooden post, roughly 12.5cm in diameter, set at the bottom of the builder's trench which we interpret as part of a wooden scaffolding. Given the two-story height of the stone Mansion House, it is believed that some form of scaffolding would have been required to complete the upper level and to roof the dwelling in slate tiles; yet this is the first tangible evidence that such a temporary wooden structure existed. The repair and rebuilding activities associated with the fireplace, in this instance, brought a more detailed interpretation of the construction of Ferryland's principal 17th-century dwelling.

Planned excavation in 2022 focused on the remaining midden deposits and builder's trenches associated with a 1620s stone structure (Feature 217) located to 30m east of the original village and previously interpreted as an industrial or special purpose building (Gaulton and Bethune 2020; Gaulton 2021). The first operation targeted a 1m by 4m area northeast of the structure's door where previous excavation identified the location of the primary midden (Figure 3). Here, we continued to find a substantial number of artifacts dating from the 1620s-1640s including British coarse earthenware, German stoneware, case bottle glass, a crucible fragment or two, and several datable pipe bowls (Figure 4a-b). The newly excavated material did not alter our interpretation of this structure but rather, strengthened our previous theory on its range of occupation.

Work on the associated builder's trench deposits, along the eastern and southern edges of the structure, resulted in a similar outcome (Figure 5). Construction debris in the form of roof tile fragments and bits of shale/slate trimmed from wall rocks was expected and recorded; however, a dearth of other artifacts such as ceramics, glass and clay tobacco pipes suggest that the 23 by 23-foot stone-walled structure was built and roofed over within a short period. Whether this was a matter of weeks or months is uncertain (for a discussion on tradesmen

Figure 6: Early 17th-century pipe bowl found at the top of builder's trench on the south side of Feature 217.

Figure 7: 1m by 3m excavation in Area F, looking west.

Figure 8: 17th-century artifacts in lowest midden deposit. Top left: lead bale seal; top right: partial glass bottle seal; bottom left: iron door latch and lock fragment; bottom right: small fishhook.

working on this building see Spiwak 2020). An early 17th century pipe bowl fragment (Figure 6) found at the very top of the builder's trench on the south side of the building confirms this structure was erected during the Calvert era, likely sometime between 1623 — the year after the colony's governor Edward Wynne requested that masons, slaters, and other tradesmen be sent to Ferryland — and 1629, the year of the Calvert family's departure. Now that the structural remains of this building are fully uncovered and its associated deposits recorded, the artifact assemblage will be analyzed, interpreted, and incorporated into the corpus of knowledge on the operations of this early 17th-century English colony and the daily lives of its residents. More to follow in the coming years.

While the midden deposit and builder's trench were being investigated, a 1m by 3m excavation was also taking place at the west end of the site across from the old Colony Café (Figure 7). This is the same location where, in previous years, the field crew had uncovered additional segments of the 17th-century

Figure 9: Southern edge of 1620s cobblestone street and adjacent boulder, Area F, looking west.

cobblestone street (Gaulton and Hawkins 2015; Gaulton and Bethune 2020). In advance of construction of new pressure treated fencing along this part of the site, Neil Jordan led the excavation through a series of overlying deposits dating from the 20th century to the second half of the 17th century. The lowest cultural deposits from the 18th and 17th centuries were particularly rich. The former contained 18th-century wine bottle fragments, marked clay tobacco pipes from Barnstaple, German stoneware mug fragments from the Westerwald region, an iron padlock and a heavily worn copper and silver button with a floral motif. The latter and deeper 17th-century deposits contained notable objects such as a lead bale seal, a partial glass bottle seal, parts of an iron door lock, a door latch, and a very small (freshwater?) fishhook (Figure 8). The south edge of the 17th-century cobblestone street lay directly below this midden deposit.

There was nothing particularly notable about the additional 3m section of cobblestone pavement beyond what has been reported in previous years. The installation of water and septic lines in the 20th century continue to be the primary cause of disturbance in this area, and in several places the cobblestones have been dug up. What is of particular interest however is the massive boulder situated immediately south of the edge of the street (Figure 9). Excavation revealed that the cobblestone street was set directly against the boulder. Basically, the boulder was in situ when settlers were planning the overall direction and orientation of the street and therefore, given its size, likely impacted the eventual placement and positioning of Newfoundland and Labrador's first paved street here at Ferryland. Previous assumptions regarding the unusual curvature and positioning of the cobblestone street at Ferryland centered on the town's layout in relation to the Mansion House as its central hub (Bethune 2022). This new discovery, while not overturning earlier theories, could suggest that more mundane factors (such as this and other boulders) played an important part in the street's final positioning.

References

Bethune, Eileen
2022 Cobbling Together the Past: Investigations into Ferryland's "Prettie Streete". MA thesis, Department of Archaeology, Memorial University.
Gaulton, Barry
2015 How much can a big hole in the ground tell you?: Preliminary investigations into the 1620s builder's trench associated with Lord Baltimore's Mansion House at Ferryland, Newfoundland. Paper presented at the Canadian Archaeological Association conference in St. John's, Newfoundland. May 2015.
Gaulton, Barry and Eileen Bethune

2020 Archaeology at Ferryland 2019. Provincial Archaeology Office 2019 Annual Archaeology Review. Stephen Hull and Delphina Mercer eds. Department of Tourism, Culture, Industry and Innovation. Volume 18: 73–79.

Gaulton, Barry and Catherine Hawkins

2017 Archaeology at Ferryland, Newfoundland 2016. Provincial Archaeology Office 2016 Annual Archaeology Review. Stephen Hull and Delphina Mercer eds. Department of Tourism, Culture, Industry and Innovation. Volume 15: 59–63.

2016 Archaeology at Ferryland, Newfoundland 2015. Provincial Archaeology Office 2015 Archaeology Review. Stephen Hull and Delphina Mercer eds. Department of Tourism Culture and Recreation. Volume 14: 48–53.

2015 Archaeology at Ferryland, Newfoundland 2014. Provincial Archaeology Office 2014 Archaeology Review. Stephen Hull and Delphina Mercer eds. Department of Tourism Culture and Recreation. Volume 13:54–59.

Spiwak, Alexa

2020 "A slator or two": Exploring the 17th-century slate industry at Ferryland. MA thesis, Department of Archaeology, Memorial University.

A Report on a Stage 1 Historic Resources Overview Assessment Conducted at the North End of Dildo Pond, Trinity Bay, October 14 to 31, 2022

William Gilbert
Baccalieu Trail Heritage Corporation

Figure 1: Linear hearth located 22 m northwest of Dildo Pond on the north side of the woods road.

In 2017 a Stage One Historic Resources Overview Assessment was conducted on a 4.45 hectare (11 acre) section of property bordering the northwest shore of Dildo Pond, Trinity Bay. No evidence of an Indigenous or early European occupation was found within the boundaries of the survey area. However, a prehistoric site, Dildo Pond 1 (CjAj-11), was discovered on the property immediately to the north. During 2018, 2019 & 2020, the Baccalieu Trail Heritage Corporation (BTHC) archaeology crew spent a number of days surveying and conducting some initial excavations at this site under my direction. This work revealed lithic material scattered along a roughly 46 metre section of beach and an Indigenous linear hearth 22m northwest of the pond on the northern edge of a woods road that extends down to the beach (Figures 1 & 2). Analysis of the material recovered from the beach indicates both a Maritime Archaic and Recent Peoples (Cow Head, Little Passage, Beothuk) presence, while the hearth, which was uncovered, photographed and reburied, appears to have been utilized by both Cow Head and Little Pas-

Figure 2: Maritime Archaic spear point found where the woods road opens up on to the beach.

sage/Beothuk people (Gilbert 2017, 2018, 2019, 2020, 2021).

In the spring of 2022, I was contacted to conduct an Overview Assessment of a 3.5 acre parcel of land immediately north of the 2017 survey area which includes the Dildo Pond 1 site and which the proponent plans to develop into four cottage lots (Lots 1, 2, 3 & 4). Part of this proposed development would include several single-lane gravel drives providing access to the beach from the cottages planned to be erected on the high ground to the northwest of the beach. Between October 14 and October 31 five days were spent surveying the area within these four lots; on two of these days, I was assisted by members of the BTHC archaeology crew.

Background

Research conducted over the past thirty years has revealed that human activity in the southern part of Trinity Bay extends back at least 4500 years. In 1990, a Maritime Archaic site, dating to about 2500 BC, was discovered at Collier Bay roughly 14 km northwest of Dildo Pond and in 1993 another Archaic site was found at Anderson's Cove, 8 km north of Dildo Pond. Groswater Pre-Inuit material, dating to perhaps as early as 800 BC, has been found on Dildo Island, roughly 6.5 km northwest of Dildo Pond, and the island also is home to a substantial Dorset Pre-Inuit site dating to between circa AD 1 and AD 700. Significant Recent Peoples sites have been found both on Dildo Island and at Russell's Point, located on Dildo Pond roughly 2 km south of the proposed development. The Beothuk site on Dildo Island is probably the camp visited by Henry Crout in July 1613 and the site at Russell's Point is undoubtedly the Beothuk camp visited by John Guy and Henry Crout on October 26, 1612. Radiocarbon dates from Russell's Point indicate the occupation there extended back to as early as AD 970, while radiocarbon dates from Dildo Island indicate an occupation by Cow Head people extending back to about AD 800.

Documentary evidence tells us that there was a substantial Beothuk presence in this area in the early 17th century. In addition to the camps at Russell's Point and Dildo Island, John Guy and Henry Crout reported seeing a Beothuk camp consisting of "sundry houses" in "Savage Harbour" (South Dildo) at the bottom of Dildo Arm in late October 1612. A Recent Period spear point, discovered by the Salmon Pool in South Dildo in the 1990s, tells us the Recent Peoples presence there extended back well into the first millennium AD. Documentary evidence also tells us that, at least by the early 17th century, and probably for centuries before, the Beothuk had trails running between South Dildo and Dildo Pond. Both John Guy and Henry Crout record finding and following one such "great path through the woods" from South Dildo to Dildo Pond on October 26, 1612. While it is now clear that the "great path" recorded by Guy and Crout followed much the same route as the section of Highway 80 running between South Dildo and Blaketown today, the discovery of Dildo Pond 1 indicates that the Beothuk, and earlier Indigenous people, also had another overland route from Dildo Arm to Dildo Pond (Figure 3). Dildo Pond 1 is located at the terminus of the shortest route between these two bodies of water and it seems the site has served as a temporary camp, or way station, for people following this route for at least the past 3500 years. (Gilbert and Reynolds 1989; Rutherford and Gilbert 1992, Gilbert

Figure 3: Looking west along an undisturbed section of the trail leading from South Dildo to Dildo Pond 1.

1994, 1996b, 2002, 2003, 2006a, 2006b, 2007, 2009, 2010, 2017, 2018, 2019, 2020, 2021; LeBlanc 1997, 1998, 1999, 2003).

The Study Area

Lot 1 extends along the beach for approximately 30 m and northwest for about 70 m to a rough gravel road that runs south from Lakeside Drive (Figure 4). This lot encompasses the woods road on which the Indigenous hearth was found and much of the section of beach on which lithic material has been discovered. Most of Lot 1 beyond the beach consists of low, boggy ground but north of the woods road the land begins to rise steeply and is dry. The northern boundary of Lot 1 is located on this slope about 12 m northeast of the Indigenous hearth and about 4 m up the slope from it. Bordering on Lot 1, Lot 2 also extends along a roughly 30 m long section of beach and runs northwest to the gravel road for a maximum distance of about 120 m. The land just north of Lot 2's southern boundary continues to rise up from Lot 1 for about another 14 m to a level terrace that is roughly 35 m long, north to south, by 14 m wide, east to west. East of this terrace, the land slopes down about 5m to another, lower terrace where Lot 2 ends and Lot 3 begins. The land drops away steeply to the northwest and southeast from the terrace at the top of Lot 2: to the northwest, the land slopes down to the road, while to the southeast it slopes down to a low terrace, averaging about 9 m wide, that rises about 1.20 m above the beach and extends northeast from the woods road and parallel to the beach, for about 50 m. Most of this terrace is contained within the boundaries of Lots 1 and 2 but the north-easternmost portion extends onto Lot 3 for roughly 10 m. Lot 3 continues along the beach for about 38 m and northwest for a maximum of about 120 m. Lot 4 borders Lot 3 to the east, extending along the beach for about 38 m and northwest for about 95 m. To the east, Lot 4 slopes steeply down to a section of marshy ground, the edge of which marks its eastern limit. To the south, beyond the low terrace, both Lots 3 and 4 drop steeply down to the beach.

The Survey

Because of our previous work, we had a good understanding of the archaeological resources contained within Lot 1. However, we did not know how far to the north and east of Lot 1 this material extended. As part of the overall survey, a walking survey of the beach fronting the four properties was conducted. Not all that surprisingly, given the amount of lithic material already uncovered in this area, this produced another artifact: a large, notched grey-chert biface fragment that appears to be of either Maritime Archaic or Recent Peoples origin, 19.65 m south of the woods road (Figure 5). More surprisingly, our walking survey also produced a grey-chert biface tip on the beach, near the edge of the bank, 23 m north of the woods road (Figure 6). This is 19 m north of the previously identified area of lithic scatter and about halfway along the low terrace that runs parallel to the beach north of the woods road.

This dry, level terrace, covered in a mixture of spruce and fir trees interspersed by the occasional birch, is by far the most likely location within the survey area for any type of Indigenous camp. Roughly 5

Figure 4: The survey area showing the four building lots.

Figure 5: Notched biface fragment found on the beach 19.65m south of the woods road.

Figure 6: Biface tip found on the beach 23m north of the woods road.

m northwest of the beach, a trail, about 1.2 m wide, extends northeast from the woods road along this terrace for about 20 m and opens up into a small clearing roughly 5 m long, northeast to southwest, by 3 m wide. The appeal of this area as a camp site is attested to by the fact that, over the last few years, local people have created a small campground in this clearing including a rock-lined hearth and wooden bench. At one time this area was partly covered in a blue tarp, fragments of which still can be seen in the trees around the hearth. A foot path extends northeast beyond this clearing for about 8 m before turning southeast and opening up onto the beach. Beyond this, the remainder of the terrace is densely wooded. A series of test pits were dug along this terrace extending northeast from the woods road for about 28 m (Figure 7). These revealed a number of small flakes, a few fire-cracked rocks, and a fragment of red slate on the terrace about 18 m northeast of the woods road, 4 m west of the beach, and 5 m southwest of the biface tip found on the beach during our walking survey. Most of the flakes recovered from this area are patinated white but one is of purple rhyolite identical to the Cow Head material found around the linear hearth about 24 m to the west (Figure 8).

Figure 7: Digging test pits on the terrace above the beach.

A series of test pits were dug on the two higher terraces that make up the bulk of Lots 2, 3 and 4 and tree falls, and other areas where the underlying

Figure 8: Purple-rhyolite flake found on the terrace 18 m northeast of the woods road.

soil was exposed were also examined for any evidence of cultural material. While these higher terraces provide good views to the south along Dildo Pond, and may sometimes have served as lookouts, they seem unlikely locations for any type of Indigenous occupation and no material older than the 20th century was uncovered in this area. Several test pits also were dug south of the woods road and west of the beach in the boggy ground that makes up the bulk of Lot 1. These revealed only a thick deposit of wet peat extending down for more than 50 cm and produced no cultural material.

Conclusions and Recommendations

Dildo Pond 1 (CjAj-11) is an important multi-component Indigenous site. Located at the terminus of the shortest route between Dildo Arm and the north end of Dildo Pond, it has been used as a camp and way station by people traveling between these two bodies of water for at least 3500 years. Expanding on our work over the past five years, work this season confirmed that the site extends northeast along the low terrace above the beach for at least another 18 m and northeast along the beach for at least another 23 m (Figure 9). The discovery of lithic debris in association with fire-cracked rock on the terrace suggests the presence of another Indigenous hearth and it is clear that this terrace would have been the best location for any type of camp or temporary shelter. Both linear hearths and smaller elliptical hearths can be extremely difficult to locate by digging test pits and any further work on this terrace will probably require opening up a larger area to get a better idea of what actually lies beneath the surface. Given the amount of lithic material recovered from it, there can be little doubt that the beach itself is a significant component of the site. Composed of gravel and sand and gradually sloping into the water, it would have been ideal for launching and hauling up canoes and other vessels and it seems likely that, at least on days when the weather was fine and the water low, it would have been the centre of many other activities, not least monitoring the movement of caribou and other game both in and around the shores of the lake. Our work this season shows that lithic material is scattered along at least a 55m long section of this beach.

As mentioned above, the terrace north of the woods road is, on average, about 9 m wide and, given how steeply the land rises beyond the terrace, it seems unlikely much in the way of cultural material will be found on the slope. However, the woods road itself skirts along the edge of this slope and significant cultural material, including Maritime Archaic, Cow Head and Little Passage/Beothuk artifacts, and a linear hearth, have been uncovered, extending northwest from the beach for at least 26m, both directly in the road and on the north side of it. As we have seen, much of the land beyond the beach to the south of the woods road is marshy and, in its present state, unsuitable for any type of human habitation. The very nature of the land here makes it difficult to test using normal methods. It may be that this ground has been wet since before Dildo Pond was first visited by Indigenous people over three millennia ago and that the cultural material in this part of the site is largely restricted to the beach. On the other hand, it is possible that, at some time during the occupation of the site, this area was dry and utilized by one or more of the Indigenous groups visiting the area. It should also be remembered that wet ground can provide an ideal environment for the preservation of organic material.

Given the significance of the Dildo Pond 1 site, every effort should be made to preserve it, and it

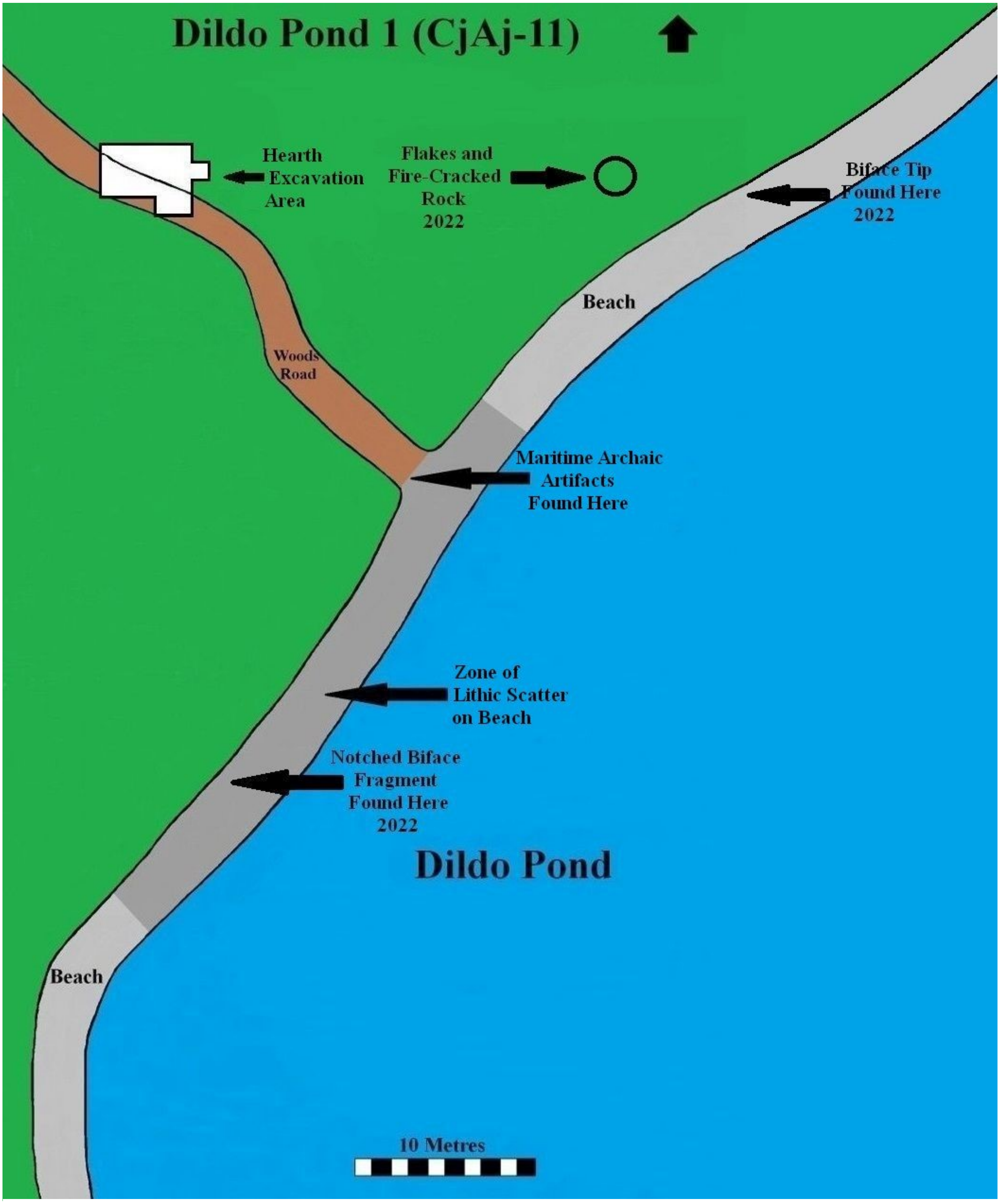


Figure 9: Map of Dildo Pond 1 (CjAj-11) showing the location of the linear hearth and the distribution of lithic material.

is possible that site preservation and land development both can proceed and even complement each other. The fact that the area scheduled for development includes a multi-component Indigenous site dating back at least 3500 years, and part of an ancient trackway, cannot help but enhance the appeal of the area and it is even possible that the site could someday become an historic park within the area of the development. Work, both this past season and over the previous five years, has revealed that significant cultural material is concentrated along, and to the north of, a roughly 26 m long section of woods road that runs down to the beach; over a roughly 55 m long section of beach to either side of the terminus of the woods road; and for at least 18 m along a low terrace that rises above the beach to the northeast of the woods road. Much of this area, including the woods road, hearth and roughly half the beach, are contained within the boundaries of Lot 1 of the proposed development, while most of the terrace and the remainder of the beach, and are contained within Lot 2.

It has been recommended that a protected zone be established along the section of beach where cultural material has been uncovered and extend northwest on to the land beyond the beach for twelve metres. It has also been recommended that this protected zone be extended northwest along the woods road, and for six metres to either side of it, for a distance of forty metres. We believe that development of the four lots can safely proceed beyond this protected zone without fear of any damage to the archaeological resources. It has also been recommended that any driveways constructed should remain outside the protected zone and any necessary construction near the protected zone, and within twelve metres of the beach, should be confined to infilling so as not to disturb any underlying deposits.

References

Gilbert, William

1990 " 'Divers Places': The Beothuk Indians and John Guy's Voyage into Trinity Bay in 1612". *Newfoundland Studies* 4(2):147-167.

1992 "'great good Done': Beothuk/European Relations in Trinity Bay, 1612 to 1622". *Newfoundland Quarterly* 87(3): 2-10.

1994 "Russell's Point 1995: Unpublished Report Prepared for the Baccalieu Trail Heritage Corporation." On file Provincial Archaeology Office. St. John's, NL.

1996a "The Baccalieu Trail Archaeology Project, 1995, Phase 4: Anderson's Cove". On file Provincial Archaeology Office. St. John's, NL.

1996b "The Baccalieu Trail Archaeology Project, 1995, Phase 2: Russell's Point." On file Provincial Archaeology Office. St. John's, NL.

2002 *Russell's Point (CiAj-1): A Little Passage/Beothuk Site at the Bottom of Trinity Bay*. MA Thesis, Memorial University of Newfoundland.

2003 "A Report on the Archaeological Excavations Conducted at the Recent Indian Site on Dildo Island during 2001 and 2002." On file Provincial Archaeology Office. St. John's, NL.

2006a "A Preliminary Report on the Excavations Conducted at the Russell's Point Beothuk Site (CiAj-1) between June 10th and July 19th, 1996". On file Provincial Archaeology Office. St. John's, NL.

2006b "A Report on the Archaeological Excavations Conducted at the Recent Indian Site on Dildo Island during 2004". On file Provincial Archaeology Office. St. John's, NL.

2007 "Baccalieu Trail Archaeology Project 2007: A Preliminary Report on Excavations at Hant's Harbour, Dildo Island, New Perlican and Cupids". On file Provincial Archaeology Office. St. John's, NL.

2009 "A Report on the Baccalieu Trail Archaeology Project 2008". On file Provincial Archaeology Office. St. John's, NL.

2010 "A Report on the Baccalieu Trail Archaeology Project 2009". On file Provincial Archaeology Office. St. John's, NL.

2017 "Stage One Historic Resources Overview Assessment Report: Crimson Ridge, Dildo Pond, Trinity Bay". On file Provincial Archaeology Office. St. John's, NL.

2018 "Excavations at the Cupids Cove Plantation Provincial Historic Site and Survey Work at Dildo Pond , 2017" in *Provincial Archaeology Office Annual Review , 2017,* pp. 127-130.

2019 "A Report on Archaeological Survey Work Conducted at South Dildo and Dildo Pond, October – November 2018" in *Provincial Archaeology Office Annual Review, 2018,* pp. 129-134.

2020 "A Report on Archaeological Work Conducted at Dildo Pond 1 ((CjAj-11) Between September 4 and November 15, 2019" in *Provincial Archaeology Office Annual Review, 2019,* pp. 80-85.

2021 "Archaeological Excavations at Dildo Pond 1 (CjAj-11) and Survey Work on Dildo Pond, 2020" in *Provincial Archaeology Office Annual Review, 2020,* pp. 95-99.

Gilbert, William and Ken Reynolds

1989 "A Report on an Archaeological Survey: The Come By Chance River and Dildo Pond". On file Provincial Archaeology Office. St. John's, NL.

LeBlanc, Sylvie

1997 "Dildo Island Archaeology Project: The Dorset Occupation of Dildo Island Preliminary Field Report, 1996". On file Provincial Archaeology Office. St. John's, NL.

1998 "Dildo Island 1997 Field Season Interim Report". On file Provincial Archaeology Office. St. John's, NL.

1999 "Dildo Island 1998: Summary of Field Activities". On file Provincial Archaeology Office. St. John's, NL.

2003 "A Middle Dorset Dwelling in Trinity Bay, Newfoundland". *Études/Inuit/ Studies,* 27 (1-2):493-513.

Rutherford, Douglas and William Gilbert

1992 "An Archaeological Reconnaissance of Dildo Arm and Collier Bay, Trinity Bay, Newfound land." On file Provincial Archaeology Office. St. John's, NL.

Excavations at the Cupids Cove Plantation Provincial Historic Site (CjAh-13), 2022

William Gilbert
Baccalieu Trail Heritage Corporation

Figure 1: One of the postholes for the northeast flanker to the north (right) with part of the trench for the east wall extending south from it and traces of what may be a parapet step to the west. August 10, 2021.

In 2022, the Cupids Cove Plantation Provincial Historic Site (PHS) opened to visitors on 21 May and remained open until 7 October. Most of our time during May and June was taken up with site preparation, maintenance work and tours. Visitor numbers were up considerably from the previous year and our full crew was not in place until 27 June. Excavations at the site began on 30 June and continued for twelve weeks until 26 September. As has been the case over the past three seasons, our efforts focused on defining the boundaries of the 90 ft. x 120 ft. enclosure erected around the original settlement by John Guy's men in the autumn of 1610 (Gilbert 2020, 2021, 2022). Fortunately, despite damage caused by the construction of Samuel Spracklin's house and cellar in about 1813, the installation of Garland Baker's well and waterline in the early 1970s, the installation of William Norman's well, waterline and trailer in 1979, and extensive ploughing over much of the site, eight postholes from the north wall of the enclosure, four dug to hold the corner posts of the northeast flanker, part of a trench dug to accommodate the palings for the east wall of the enclosure, and what appears to be the remains of a parapet step running along part of the east wall were all clearly visible beneath the overlying cultural deposits and extending down into the sterile orange subsoil (Figure 1). Excavations conducted in 2014 (Operation 78), 2019 (Operation 134) and 2020 (Operation 140) had revealed three other postholes extending south from the northwest corner of the enclosure for 26 ft., 49 ft. and 89 ft. respectively. These three postholes were

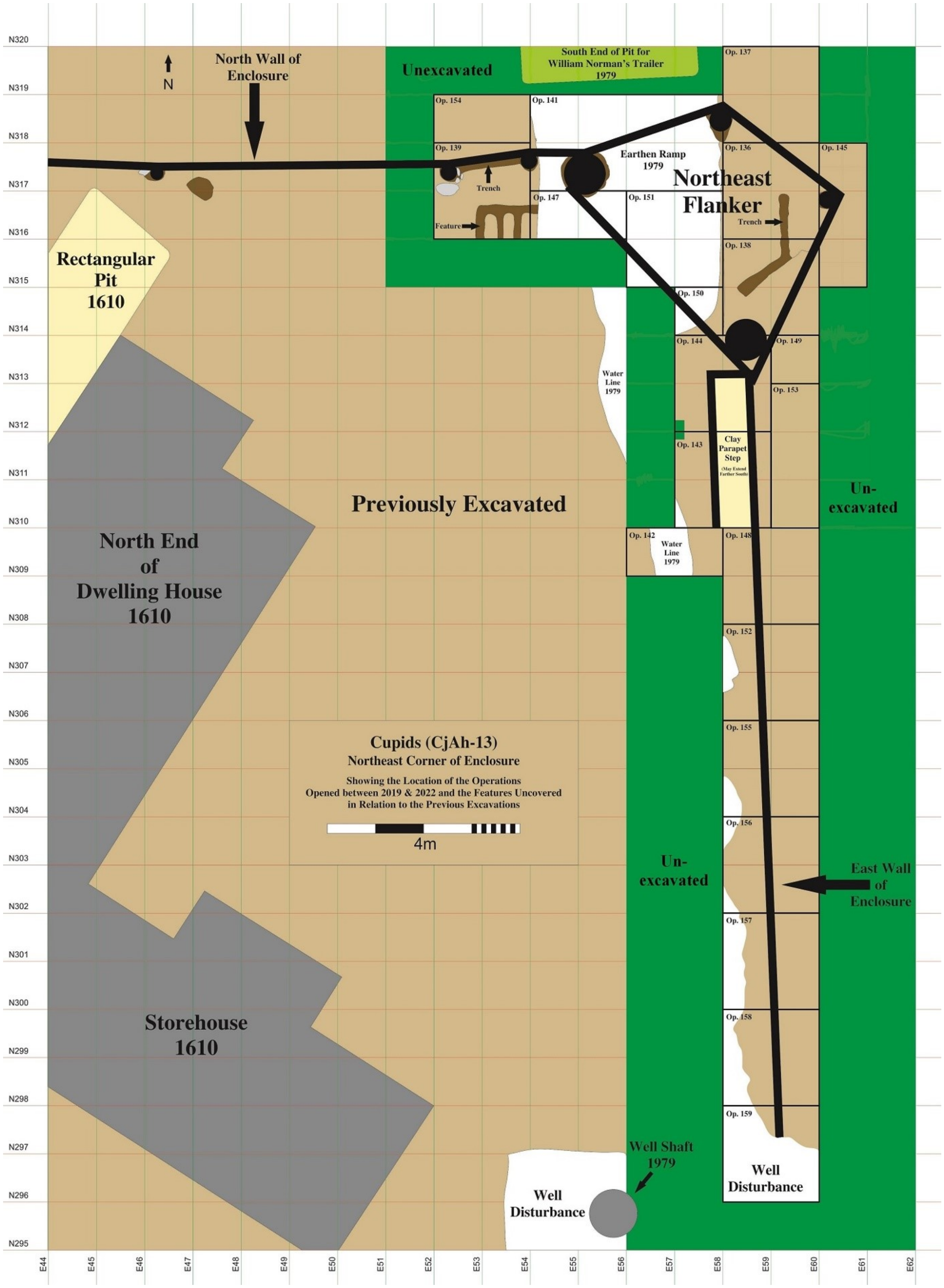


Figure 2: Map of the northeast corner of the enclosure showing the lines of the north and east walls and northeast flanker in relation to the 1610 dwelling house and storehouse, and the disturbance caused by the well, waterline and trailer excavations.

Figure 3: Looking north along Ops. 157, 158 & 159. The sod has just been removed from Op. 159 in the foreground. The line of the east-wall trench can be seen extending north along Ops. 157 & 158. The boards laid down farther north follow the outline of the east wall and flanker. August 30, 2022.

almost certainly dug to accommodate posts for the west wall of the enclosure and the most southerly of them probably held the southwest corner post. Traces of what appeared to be a trench also could be seen extending east from the southernmost posthole and what appeared to be the remains of another, narrower trench extending south from it.

East Wall of the Enclosure (Operations 157,158 & 159)

Since all our crewmembers also work as interpreters, the increase in visitors meant we had less time to dig than we had over the previous two years. Still, five operations, consisting of 20 square metres, were excavated during the 2022 season. By the end of the 2021 season, a total of six 2m x 2m units (Ops. 144, 143, 148, 152, 155 & 156) had been opened following the line of the east wall south from the northeast flanker and exposing 37 ½ ft. (11.4m) of the trench dug to accommodate that wall. In 2022 another three 2m x 2m units (Ops. 157, 158 & 159) were dug, extending the excavation south by another 6m (Figure 2). The main cause of subsurface disturbance in this part of the site was the installation of William Norman's trailer, well and waterline in 1979. Fortunately, the south end of the trailer was located just outside the 1610 enclosure, about 1m north of it. However, Mr. Norman not only had dug a rectangular pit to accommodate the trailer but also had dug into the areas immediately north and south of the pit to create sloping-earthen ramps so the trailer could be hauled into position and the vehicle hauling it could exit from the other end. The southern ramp for the trailer extended south into our excavation for about 5m and cut into several of the postholes from the north wall of the enclosure and the northeast flanker. His well was dug roughly 23m south of the trailer and his waterline ran from the well to the trailer. The southern ramp for the trailer extended south into our excavation for about 5m and nearly obliterated several of the postholes from the north wall of the enclosure and the northeast flanker. As we dug farther south into Operations 157, 158 and 159, it soon became clear how lucky we were that the trench for the east wall had survived at all. While the outline of that trench could clearly be seen extending north to south across Operations 157 and 158, even more obvious was the cut for Mr. Norman's waterline which ran almost parallel to it along the western half of these two units. If the edge of the waterline had extended just another 60cm to the east, any trace of this section of the wall trench, and probably more of it farther to the north, would have been totally obliterated.

Operations 157 and 158 were opened first and, once we had established the line of the wall within these two units, we opened Operation 159, extending the excavation south for another 2m (Figure 3). Unfortunately, it was here that our luck ran out: the line of the east wall extended south into Operation 159 for just another 60cm and then disappeared. The southern boundary of Operation 159 is located 1.80 m east of the well shaft sunk in 1979, and much of the area contained within Operation 159 had been disturbed by digging at that time. While it may be that more of the wall trench has survived farther south, it is also possible that the remainder has been totally destroyed. A 2m x 2m unit (Operation 146) opened 5m south of Operation 159 in 2021 in an attempt to locate the posthole for the enclosure's southeast corner post, revealed that the soil matrix in this area also had experienced major disturbance in 1979 (Gilbert 2022). During the 2023 season, we plan to open one or more 2m x 2m units between Operations 159 and 146 to determine if any more of the trench for the east wall has survived. However, even if the rest of this trench has been destroyed, it should still be possible to determine the location of the enclosure's southeast corner.

South Wall of the Enclosure (Operations 140, 160 & 161)

As mentioned above, units excavated along the western edge of the enclosure in 2014 and 2019 (Operations 78 & 134) uncovered postholes that almost certainly were dug to accommodate posts for the west wall of the 1610 enclosure, and a unit opened in 2020 (Operation 140) uncovered both a posthole that seems to have held the enclosure's southwest corner post and what appeared to be a trench extending east from that posthole. Given our experience along the east wall of the enclosure, it seemed likely that, if this was a trench, it probably had been dug to hold the palings for the south wall of the enclosure. With this in mind, in 2022 we opened two more 2m x 2m units: Operation 160, adjoining and extending east from the eastern boundary of Operation 140, and Operation 161, adjoining and extending east from the eastern boundary of Operation 160. These units revealed that this feature was indeed a trench averaging about 35cm wide and extending east from the posthole. Two bands of dark brown silt, that could be either narrow trenches or the remnants of decayed timbers, were also uncovered extending down into the sterile subsoil and south from this trench.

To date, 16 ½ ft. (5m) of this trench have been exposed running east from the southwest corner post to the eastern edge of the current excavation in Operation 161 (Figures 4 & 5). However, the trench clearly extends east beyond this and possibly could extend east for the total 120 ft. length of the enclosure. Even if not all the trench for the south wall has survived, if we assume it continued east in a straight line, we already have enough of it to determine the course it would have taken, the point at which the east and south walls would have intersected, and where the southeast corner post would have been located. Although we cannot say for certain at this time, it may be that the trench extending south from the southwest corner post and the stains extending south from the trench for the south wall are part of the southwest flanker or some other structure that adjoined, and extended south from, the southwest corner of the enclosure.

Figure 4: Operations 140, 160 & 161 showing the posthole for the southwest corner post and the trench for the south wall extending east from it. The partially reconstructed dwelling house and storehouse can be seen in the distance to the northeast. October 6, 2022.

Building the Enclosure

Given the amount of digging, ploughing, and other activities that have taken place on the terrace where John Guy erected his enclosure over the past 412 years, we are extremely fortunate that any trace of

Figure 5: Wrought iron nail recovered from the east end of the south-wall trench in Operation 161. August 23, 2022.

the enclosure walls have survived. However, as we have seen, enough has survived, and been uncovered to date, to allow us to trace the outline of these walls and the northeast flanker. It is perhaps not so surprising that the lower sections of the postholes outside areas of major construction or disturbance have survived, since they would have to have been dug to a sufficient depth to support the substantial posts mounted in them. It is more surprising that the trenches, and even some of the stains left behind by decayed timbers, have survived, even in those areas that have undergone intensive ploughing over the last few centuries. In many cases, only someone with a trained eye and years of experience has the necessary skills to undertake this type of careful excavation.

Although more work will be necessary to uncover the remaining traces of the south and west walls, it is possible to reach some basic conclusions about how the enclosure was constructed based on what we have found so far. It is clear from John Guy's letters that the terrace on which the enclosure was built was heavily wooded when the colonists arrived and that they quickly set to work removing the trees. Guy states that one of the first things the colonists did was dig "a saw- pit hard by the sea side, and put a timber house over it covered with pine boards" so they could saw the trees they cut down into "good and large boards" and that the ship on which they arrived returned to England that fall laden with a cargo of "trees and spars" (Cell 1982: 61). No doubt, many of Guy's "good and large boards" were used to build the enclosure walls.

When we first arrived at the site in 1995, I used a theodolite and compass to establish our site grid as close to magnetic north as possible and, it seems, John Guy took a similar approach in 1610. It is almost certainly no coincidence that the lines of the north and west walls of the enclosure are just a few degrees off from the east-west and north-south lines of our grid. The northwest corner of the enclosure is located close to the western edge of the terrace and it seems that Guy, or some other colonist with the necessary skills, walked up onto the edge of the terrace, set up on that point, ran a line south to establish the line of the west wall, and then turned 90 degrees to the east and ran a second line to establish the line of the north wall. We know from our excavations that the line of the west wall drifts slightly to the west of the north-south line of our site grid as it extends south, while the line of the north wall drifts slightly to the south of our grid as it extends east for the first 96 ft. Beyond this, the north wall veers slightly to the north of our site grid for another 9 ft and connects with the northwest corner of the northeast flanker. This slight variation from our site grid makes perfect sense when we realize that magnetic north has drifted to the west over the past four centuries and would have been several degrees farther east four hundred years ago.

As we know, Guy states that the enclosure measured 90 ft. x 120 ft. and, although he may have rounded off his measurements a little, this corresponds well with what we have found archaeologically. Our excavations indicate that the west wall of the enclosure extended south from the northeast corner post for 89 ft. and the north wall, including the northeast flanker, extended east from that post for 120 ½ ft.. Once these two lines had been established, the colonists would have had a good idea of the area they needed to clear to accommodate the dwelling house, storehouse and other buildings. Unlike the west and north walls, the lines of the east and south walls were not as precisely aligned. The east wall veers slightly to the east of 90 degrees, extending south at a 94.6 degree angle from the line of the north wall and the south wall veers slightly to the south of 90 degrees, extending east from the line of the west wall at a 96 degree angle. This lack of symmetry could have been the result of less care on the part of the builders or may have served a more practical purpose. Most likely, by the time the east and south walls were being erected, the dwelling house, storehouse and other structures were also under construction and the colonists may have found they needed to adjust the angles of the south and east walls to allow for sufficient room around those buildings.

As mentioned in my previous reports (Gilbert 2021, 2022) it is now clear that the north wall of the enclosure and the northeast flanker were of post and rail construction, while the east wall was of slot-trench construction. In the former method, large posts were positioned along the line of the wall (in the case of the north wall of Guy's enclosure most of these were at 12 ft. intervals), rails were run horizontally between the posts to create a frame and long boards, or "palings", possibly sharpened at the top, were nailed vertically to the frame to form a solid wall. In the latter method, a narrow trench, perhaps 2 or 3 ft deep, was dug and circular, split or sawn timbers were placed vertically side-by-side in it. These timbers were held in place by soil packed around them in the trench and more soil also may have been banked up against the timbers to provide further support. In some cases slot-trench walls were buttressed by posts placed at regular intervals inside the wall with horizontal rails running between them (Noël Hume 1979: 221-223 & 235). It now seems clear that the west wall of the enclosure was also of post-and-rail construction, while at least that section of the south wall uncovered to date was of slot-trench construction. We probably will never know exactly why these two different methods were used in building the Cupids Cove Plantation enclosure walls. However, it seems likely that the north and west walls were erected first and the east and south walls were erected after the area had been cleared and construction on the buildings inside it had begun. It may be that, with the winter closing in (Guy says the dwelling house was finished "about the first of December"), slot-trench construction was the quicker option and the plan was to reinforce, or rebuild, these more-hastily constructed walls in the spring of 1611(Quinn 1979: 147).

References

Cell, Gillian T., 1982 . *Newfoundland Discovered: English Attempts at Colonisation, 1610-1630.* London: Hakluyt Society.

Gilbert, William, 2020. "Excavations at the Cupids Cove Plantation Provincial Historic Site (CjAh-13), 2019" *Provincial Archaeology Office Annual Review 2019*, Vol. 18. St. John's: Provincial Archaeology Office, Department of Tourism, Culture, Arts & Recreation, Government of Newfoundland and Labrador, pp. 85-89.

Gilbert, William, 2021. "Excavations at the Cupids Cove Plantation Provincial Historic Site (CjAh-13), 2020", Provincial *Archaeology Office Annual Review 2020*, Vol. 19. St. John's: Provincial Archaeology Office, Department of Tourism, Culture, Arts & Recreation, Government of Newfoundland and Labrador, pp. 89-95.

Gilbert, William, 2022. "Excavations at the Cupids Cove Plantation Provincial Historic Site (CjAh-13), 2020", Provincial *Archaeology Office Annual Review 2020*, Vol. 20. St. John's: Provincial Archaeology Office, Department of Tourism, Culture, Arts & Recreation, Government of Newfoundland and Labrador, pp. 98-109.

Noël Hume, Ivor, 1979. *Martin's Hundred: The Discovery of a lost Colonial Virginia Settlement*. New York: Dell Publishing Company.

Quinn, David B. (editor with Alison M. Quinn and Susan Hillier), 1979. *Newfoundland from Fishery to Colony. Northwest Passages Searches*. Vol. 4 of *New American World: A Documentary History of North America to 1612*. New York: Arno Press and Hector Bye.

History and Archaeology at Uviluktok

Emma Gilheany
PhD Candidate, University of Chicago

Figure 1: Archaeological research assistants Cole Dicker, Cadence Winters, and Laura Winters record tent rings.

Introduction

In the summer of 2022, Hopedale archaeological research assistants Cadence Winters, Cole Dicker, and Laura Winters conducted a pedestrian surface survey on Uviluktok (also known as Double Island or Mussel Island) with me (Figure 1). Zeke Lucy was our boat driver, bear guard, and heritage consultant. This research was undertaken out of community interest and as part of my dissertation project on the recent history of Hopedale. I will use this space in the PAO Review to chart the more recent history of the island, question the prevailing narrative of Uviluktok, and present the nascent findings of the survey and point out more perplexing features. We anticipate future collaborative fieldwork and would be thrilled for your perspective on this research. Please feel free to get in touch!

Historical Context

Uviluktok is a group of two islands southeast of Hopedale, one of which has the remains of a small church on it. The site has a long and complex history, which I first became interested in after conversations and archival research in Hopedale in 2017. Uviluktok was one of many islands Inuit used as a summer fishing place. Community members, including Fran Williams and David Igloliorte, remember spending most or all of their summers there as children. Williams recalled fishing there when she was small with her Frieda grandparents. She emphasized that her family only went in the summertime—that it was specifically a "place for cod," whereas other places closer to Hopedale or in the bays were resource-full year-round. Williams also says it is important to note that "cod fishing season didn't last that long—[we] blamed the Newfoundlanders for fishing all our cod."

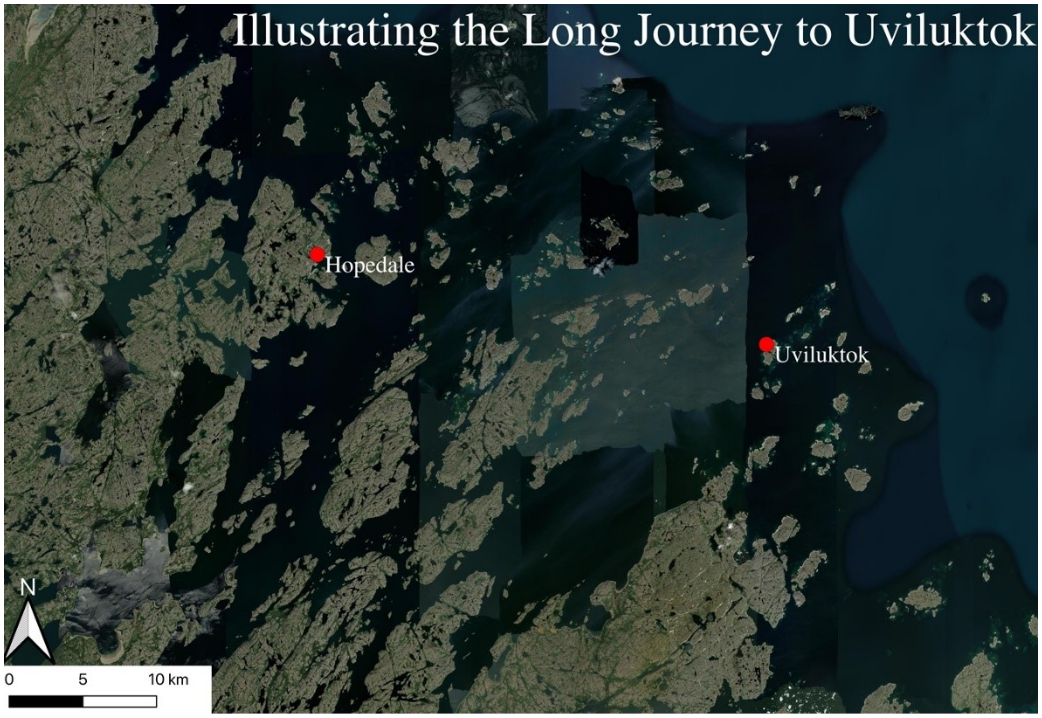


Figure 2: Map showing the distance and difficulty in traveling from Hopedale to Uviluktok.

In 1903, Inuit built a church on the island, which remained standing until as recently as the mid-1990s. Williams' grandfather used to hold the church service on the island. She said it could take four hours to get to Uviluktok from Hopedale (Figure 2). David Igloliorte recalls six to eight families living out there in the summers when he was a child and that his family lived on the island that the church was not on. He remembers two fishing stages—one on each island. Igloliorte said the Inuit church elders asked the ministers if they could build the Uviluktok chapel to have services, and the ministers agreed and said, "if you build a church, then we'll give you a church bell." A large photo of the opening of the church on Uviluktok graces the wall of the entrance to the active church in Hopedale. David said that before building the church, Inuit would return to Hopedale late Saturday evening or early Sunday morning, and then travel back to the outer islands the same Sunday. This was a lot of time, money, and labour to attend mass to remain in good stead with the Moravians, who controlled access to many of the goods and services in northern Labrador.

Moravians extensively documented what they heard about the building of the church, though it seems they did not directly witness the process (Figure 3). In December 1903 *Periodical Accounts Relating to the Moravian Missions,* they wrote "our last letter to you contained an account of the laying of the foundation-stone of the little church at Uviluktok or 'Double Island'—probably the first piece of work of the kind undertaken by the [Inuit] in Labrador. We are pleased to be able to write you by this post that progress has been made with the building, and though much remains to be done still it is so far advanced that we now use it for worship. A great amount of enthusiasm has been shown in the cause, especially by our chapel servant

Figure 3: The Chapel at Uviluktok,
a photo which appeared in the Moravian Periodical Accounts.

Figure 4: Laura Winters records the remains of the church.

as proof of evangelization, and as confirmation that the European missionaries had successfully converted indigenous peoples to "labour for their faith." At the same time, Moravians noted that the Hopedale congregation was decreasing in numbers—though this was not emphasized in public-facing accounts. They cited the building of a small chapel on "Uviluktok, a fishing place frequented by our Hopedale members, where regular Sunday services are held by native helpers" as an event to make widely known and cheer. Indeed,

Manasseh Pijogge, who has been master of ceremonies and has been indefatigable both in the work and in urging his fellow men to united and constant effort. On stormy days, when it was not possible to go out in the boats fishing, it was he who proposed work at the church, and as stormy days were rather frequent his delight at seeing the progress made was almost unbounded. On August 16th, after the celebration of the Holy Communion here in Hopedale, we intimated to him that it was our intention, if possible, that all three of us brethren would go out to the opening ceremony. This again whetted his enthusiasm, and he again hurried matters as much as possible, so that it should be ready for the opening before the autumn winds got too heavy—when boat sailing would have lost its pleasures—and before the fish should be dry—when it would not be as easy for Br. Lenz, our storekeeper, to go away and lock up the store for two or three days…" (The Society for the Furtherance of the Gospel, 1903). According to Hans Rollmann, Manasseh Pijogge "also led prayers on August 30, 1903, during opening ceremonies in which the Hopedale brass band played several hymns" (Rollman, 2015). All Moravian accounts stress that the building of the church should be entirely credited to Inuit-. The founding of the church on the outer islands was written in Moravian accounts

Uviluktok appears many times in Moravian accounts as a triumph. The excitement of Moravians was not limited to outward-facing publications. During the opening ceremony of the chapel, Br. Perrett likened the importance of the chapel at Uviluktok to the construction of King Solomon's temple.

During the opening ceremony, those present also documented the architectural specifics. The zest for documentation is helpful for archaeologists—exterior and interior photos were taken, and it was noted that "the decorations were all done by the [Inuit]; the reading desk was made by Br. Hettasch. Dr. Grenfell has very kindly promised to send them 1,000 ft. of board towards the inner covering for the walls; the remainder that is necessary they will saw next winter. They wish to thank 'S.F.G.' very heartily for giving them the necessary nails for the building….The little church is 24 ft. by 17 ft. but is sufficiently large for the purpose for which it has been erected." (The Society for the Furtherance of the Gospel, 1903)'. I also note that in 1995, Dale Jarvis visited and wrote about the architectural importance of the church, which he saw as heralding a change in Moravian architecture in Labrador. Notably, the use of balloon framing, instead of half-timber framing like earlier churches, the single entranceway, and the use of a steeple rather than a cupola, were marked contrasts (Jarvis, Dale Gilbert, 2001) (Figure 4).

These detailed recollections in the *Periodical Accounts*, the quarterly journal published by the United Brethren, provided reports from missionaries posted around the world. In addition to discussing the particulars of mission-work, they read almost like *National Geographic*-style travel-writing, with notes on cultural differences, as well as photos and illustrations of exotic ecologies, communities, and people from around the world. Beginning in the eighteenth century, every major Protestant missionary society published a dedicated missionary periodical to help broadly publicize and fund their work. The building of Uviluktok then, as a central triumphant narrative in the turn-of-the-century periodical accounts, made readers feel as if their efforts (as purchasing the text went towards the mission-work they were reading about) were making a difference.

Archaeology with and Against the Archive

The narrative of Uviluktok in turn-of-the-century Labrador Moravian documents seemed a one-sided story. We wondered how an alternative history of Uviluktok might be written. What parts of history were actually silenced by this extensive documentation, made unthinkable or unknowable (Trouillot, 1995)? How did it serve Indigenous and/or non-Moravian interests to build a church on the outer islands? What did building a church at Uviluktok allow Inuit? How was Moravian surveillance and documentation of Inuit curtailed or evaded by avoiding the travel back to Hopedale for weeks or months? What cultural, social, and political meaning did the decision to remain at Uviluktok through the summer provide? (Figure 5)

Archaeological research is often used to complicate historical narratives and can illuminate a manifold experience via material culture. We hoped to reconsider the history of the island from a more critical perspective, better understand how this island was occupied beyond the church, and differently interpret the decision to build a church on the outer islands. Can this narrative of evangelization and triumph be complicated? How can we use archaeology to do so?

Figure 5: Recent Inuksuk greeting us as we drive up to the island.

Figure 6: Map illustrating the 2022 survey showing routes walked and artifacts recorded.

Given the extensive ways that Inuit were surveilled by missionaries within Hopedale and near the mission and admonished or even outcast if they break Moravian rules, the ability to stay away from Hopedale and conduct their own church services also meant more control over their own access to resources. It could be interpreted as a decision to regain sovereign power over their day-to-day lives and negate Moravian control. Though the church has been historically considered a "Moravian" structure, it helped facilitate a separateness from the Moravians, thus making it an indigenous space and political apparatus. Beginning our research from a critical perspective of prevailing narratives, we hoped to gain a fuller understanding of the way the island was used through time by Inuit (Figure 6).

Site Description and Nascent Results

The site is located 31 km southeast of Hopedale (102 degrees), about an hour-long trip by speedboat. You will need an experienced guide like Zeke Lucy to take you, as there are many shoals. Uviluktok consists of two islands, the easternmost of which (where the Moravian church remains are) was surveyed. Each island is approximately 1 kilometer across. The islands appear almost as mirror images, hence "double" island. It is customary to enter Uviluktok from the north and tie the boat up in the middle of the two islands. The island surveyed (henceforth "Uviluktok," though it is one of two islands by this name) has varied terrain with several ponds. There are flat gneiss beaches, boggy fields, and steep hills. The vegetation includes (mostly) grass, and lichens, as well as redberries, bakeapples, and rhubarb (environmental artifacts of Moravian presence). The island is now most often used for goose hunting, and there are several recently constructed hunting gages.

We (Zeke Lucy, Cadence Winters, Laura Winters, Cole Dicker, and Emma Gilheany) conducted a pedestrian survey on the island on July 6, July 15, July 17, August 3, and August 8. The material culture on the island is plentiful and varied. Please see the Table 1 for a selected overview of the survey results. Canvas and skin tent rings were recorded, and there are two flat grassy fields with the particularly dense concentrations. Both areas of dense tent ring concentrations are on the southern portion of the island and are visible as one drives up to Uviluktok by boat. The chapel is also in the southern portion of the island, and we note most tent rings do not appear to be in the sightline of the chapel. There are also tent rings on the easternmost portion of the island, which have axial or possible mid-passage components, which have some small bird bones in the center, as well as fire-cracked rocks. We note the presence of a polar bear bed and polar bear droppings on the eastern side of the island by these tent rings. Based on photos of Uviluktok, we know that several historic homes were located near the church. Much of the wood remaining on the island seems to have been painted red, and likely comes from the now-felled church. There are no signs of the fishing stage—Lucy informed us that most of the wood from the houses and stage would likely have

Figure 7: Very clear tent ring on eastern side of the island, opposite where the chapel is located.

Figure 8: Historic wall or foundation? Wall of communal house?
Being measured by Cadence Winters and Cole Dicker.

Figure 9: Elliptical tent ring with several nodes, each about 1m across, jutting out of it. We are hoping to capture this with drone photography next summer.

Figure 10: Large unknown rock structure. Possible cache? Quartz placed underneath overhang.

Dwelling	Lithic/Rocks	Subsistence	Miscellaneous
Rectilinear—likely historic (10)	Micaceous rock moved from source (2)	Cache (12)	Lead musket ball (1)
Depression from dwelling (2)	Quartz rock moved from source (2)	Bone (17)	Cod net (1)
Tent rings (32)	Lithic (4)	Firepit (9)	Metal Fragment (45)
	Unknown rock structure (5)	Gage (8)	Wood fragments (31)
	Inuksuk (8)		

Table 1: Selected overview of the Survey Results.

been taken for firewood. The metal fragments found are almost all portions of (at least three) wood stoves, a reminder that the church would not have been the only place to warm up. There is also a large barrel that would have been used to dye cod nets using bark. The use and location of quartz on the island were also of note—a huge slab of quartz was found in a small, secluded chasm, clearly moved from its source. Further, there was a small piece of quartz located within a puzzling rock structure (possibly a cache).

Observations and Future Directions

Based on the extensive number of tent rings, dwellings, and house structures present in the survey, we all agreed that the Inuit narrative of the island should be foregrounded. The church represents one dwelling, one place of meeting. The large number and different styles of tent rings (elliptical, round, and rectilinear), the historic dwelling foundations, and the different metal fragments from multiple wood stoves are a reminder that there were many places for social activities beyond the church. The archaeological research assistants (and I!) were very interested in better understanding the history of quartz use in Nunatsiavummiut past, be it for lithics or otherwise. Please reach out if you have reading suggestions regarding quartz use!

I am in the process of associating different tent ring styles with Labrador tent ring chronologies to better chart the history of Uviluktok's occupation. Originally, I had wondered if some of the rectilinear structures could be Dorset. As this was a short field season in a very rainy July with several days of archaeology cut short due to wind conditions, we are hoping to continue research in the coming years and continue the analysis of this year's survey.

Acknowledgements

I am in lifelong debt and have endless gratitude to the community of Hopedale for your generosity, kindness and for allowing us to conduct this research. Thank you so much to Nicholas, Reuben and Val Flowers for your unmatched hospitality and friendship. Thank you to Marjorie Flowers and the HICG for your support of student work and research, and to all interviewees. In addition, I am grateful for the support and research assistance from David Igloliorte, Hans Rollmann, Nathaniel Winters, Ryan Winters, Martha Winters-Abel, Dawn Winters, Tabea Onalik, Christine Foltz-Vincent, Jimmy Tuttauk, Fran Williams, Curtis Oliver, Levi Nochasak

Figure 11: Aerial view of unknown rock structure in Figure 10.

Figure 12: Large quartz slab, measuring 25cm in height. Located in chasm.

and Hulda Pijogge. Thank you to the families of Cole Dicker, Laura Winters, and Cadence Winters for your patience and enthusiasm for this work. Thank you to the NG Research Council and NG Archaeology office. This research would not have been possible without funding from the Nunatsiavut Education Division, the SSRC-IDRF, the National Institute of Social Sciences Dissertation Grant Program, and the NSF-GRFP.

References

Jarvis, Dale Gilbert. (2001). Architectural Change and Architectural Meaning in Moravian Labrador [Master of Arts]. Memorial University of Newfoundland.

Rollman, H. (2015). The Little Church on Uviluktok (Double Island), near Hopedale. Them Days, 39(4), 32–25.

The Society for the Furtherance of the Gospel. (1903, December). Hopedale: Opening of Chapel at Uviluktok, or Double Island. Periodical Accounts Relating to Moravian Missions, V(56).

Trouillot, M.-R. (1995). Silencing the Past: Power and the Production of History (2nd Revised Edition). Beacon Press.

Multi-Methodological Survey at the USAF Radar Base in Hopedale

Emma Gilheany[1], James Williamson[2], Cadence Winters[3], Cole Dicker[3] & Laura Winters[3]
[1.] University of Chicago, [2.] Nunatsiavut Government/MUN, [3.] Amos Comenius Memorial School

Figure 1: Ryan Winters taking drone photography at the Hopedale BMEWS site in August 2022.

Introduction

In the summer of 2022, we undertook an archaeological survey of the United States Air Force (USAF) radar station in Hopedale, Nunatsiavut led by Emma Gilheany. Hopedale high school students Cadence Winters, Cole Dicker, and Laura Winters worked as archaeological and historical research assistants. Ryan Winters took drone photography of the site of his own curatorial accord. NG GIS Specialist James Williamson led a 3D drone-mapping project of the USAF radar site. This multi-methodological project included examining physical and digital archives and photos, interviews with Hopedale residents, interviews with veterans, and a pedestrian survey to illuminate the history and impact of the US military presence.

Historical Context

The Hopedale radar base was one of 44 sites along the Pinetree Line, a fence of Cold War radar sites spread out across the US and Canada to protect citizens at lower latitudes and ensure that the US would have time to send retaliatory missiles if the USSR attacked. The Pinetree Line was the earliest radar "fence," followed by the Mid-Canada Line and the DEW Line, which were placed at higher latitudes. Coordinating these radar sites required cooperation between the Canadian and US governments. The Hopedale site was staffed and controlled by the

USAF with civilian workers from NL and nearby provinces.

The construction of the base started in 1951 and it became operational on June 13, 1953. The initial intense construction period (about 6 years) brought in people from along the coast, as well as Newfoundlanders looking for steady wages. Hopedale's population increased dramatically in the early 1950s. The base was only operational for 15 years and 18 days—it was closed on June 30, 1968 (*Historical Record 923rd AC&W Squadron Hopedale, Labrador 1 April 1968 to 30 June 1968*.). After the Americans left the base in 1968, several companies including Marconi, ITT, and Total Eastcan, a French-Canadian oil company conducting offshore explorations, leased it.

USAF servicemen were typically stationed in Hopedale for a year. Many of the radar technicians were young, between the ages of 17and 20. These men often did not have college degrees but were trained in the latest radar and computer technologies. Some joined the Air Force for fear of being drafted to the Army and sent to fight in Vietnam. While the base was operational, there were rapid technological advancements. Increasingly efficient radars were built and put to use, leaving the defunct radomes in place. All the buildings on the base were connected by a series of halls and doors so one would not have to go outside. According to an account from veteran Paul Coutu in 1953, he remembers stuffing toilet paper in the building cracks to stop the cold air from blowing in ("Memories of Hopedale").

The base had vibrant entertainment options beyond searching the skies for enemy aircraft. There was a bowling alley, a movie theatre, two different clubs, and a gymnasium. We know from the Missionary Diaries that the Moravians would go up to the American base to conduct service on Sunday, and they remark on it often being ill attended. Moravians did not approve of community members going up the hill and interacting with the Americans that were stationed there. People in the town disregarded the church's opinion and many of them had relationships with the Americans. Community members remember seeing movies (like *The Good, the Bad and the Ugly*), buying hamburgers and root beer from the commissary, and being paid $1 to reset bowling pins. Women from Hopedale were employed to clean the barracks.

Directly overlooking the community are concrete foundations—tall columns especially visible when one enters Hopedale from the harbor in the north. The only architectural remains are the metal and concrete foundations that stand tall on the hill. The station was virtually abandoned overnight, leaving behind decaying batteries, equipment, and infrastructure. Today, spending time at the base is a popular activity, with people tagging the structures with graffiti, as well as climbing the hills for a better vantage point to see the sea ice freeze up or break up, northern lights, and sunsets.

Selected Anthropological Literature Review

This project is motivated by community interest and a desire to document contemporary and historical Inuit experiences of the USAF occupation. Cold War military sites in the Canadian circumpolar north have not been a site of concentrated archaeological inquiry, with existing literature biographic, historical, or environmental in nature (Hird, 2016; McElroy, 2012; Spohr, 2013). In order to shed light on these sites, this project draws on investigations of military violence as a symptom of colonial and capitalist modernities and its imprint on contemporary landscapes (González-Ruibal, 2008). This project also builds on archaeological studies of the Cold War, which have focused on questions of heritage and military material phenomena (Schofield & Cocroft, 2016), the affect and architecture of the bunker (Bennett, 2020), and how the Cold War changed quotidian material practices (Hanson, 2016). This research contributes to current archaeological research on the Cold War by widening the scope of its actors to include Inuit and privileging Inuit experience of American military presence. Further, this project considers the Cold War beyond threats of US-Soviet conflict, parsing out the relationship between warfare infrastructures and slow violence upon Inuit and landscapes (Ahman, 2018; Nixon, 2011).

Site Overview

The site consists of the remains of the United States Radar Base, which are spread across several hilltops directly west and north of the community of Hopedale. The remains of the radar site directly overlook the community and are located approximately 1.12 kilometers from the "village" neighborhood of Hopedale. To access the site, you can follow American Road (created by the USAF) up past DJ's to ascend the steep hill. About 1 km up along the road, there is a large, glaciated valley. To the south, (on your left) is a road leading to the BMEWS (Ballistic Missile Early Warning System) portion of the site, which is at the top of the hill. To the north (your right), you can continue to the Main Base site, which includes the area where barracks, radomes, and recreation infrastructures were. Our survey also uncovered an American-era dumpsite, located just beyond the fork in the road in this valley, behind a low and long boulder. We also uncovered a post-American-era dumpsite located past the main base, on the northern side of the road.

Most ruins are concentrated on hilltops—as there are inuksuit visible on almost all hilltops surrounding the bases. We believe that prior to the American occupation, there were Inuit markers on the now ruin-topped hills as well. Our survey also revealed a pinnacle nearby, evidence of Inuit hilltop practices much before the USAF occupation.

The southernmost site, the BMEWS ruins, consists of large concrete pillars, which held up communication towers used to send information to bases at Saglek and Cartwright. When operating, the towers were 60 feet (southern tower) and 120 feet (northern tower) tall, and many people from the community have positive associations with seeing BMEWS from far away while traveling.

On the northern portion of the site, there are ruins that we can place based on USAF archives. We examined historical maps and aerial photos to determine what remains in this densely concentrated area. The barracks are no longer visible and are covered by thick willows in summer. Concrete foundations for the four radomes, the heating, cooling, and power plants, the garage, the POL tanks, and tropospheric scatter antennae are visible. Community members informed us that some of the concrete used for foundations was made with local sand from the shores of Aniuvattogâluk Island (Big Island). On the island, overlooking the area where the sand for concrete was taken, Americans wrote "Daytona Beach" in huge letters with yellow paint, which is still visible today.

Pedestrian Survey Methodology

The archaeological pedestrian survey was conducted primarily at the Main Base Area, where the barracks, radomes, and daily military life were concentrated. We also surveyed along the road up to the base (American Road), from the road to the contemporary NavCan towers, and the remains of BMEWS.

We began by conducting a systematic transect survey at the center of the Main Base Area site, which is frequented by bikes and cars. This area was chosen because of the ease of seeing artifacts on the surface (as we decided not to touch artifacts, and to measure them in situ), its location adjacent to the barracks (we thought there might be a greater chance of finding personal effects), and its centrality in contemporary base-use. After several days, we realized that the density of artifacts was too great to continue this way, and it would not allow us to get a representative understanding of the material culture left behind. The number of industrial metal fragments with seemingly impossible-to-place-provenance was overwhelming. We decided to record all artifacts in a 70m by 30m area on this highly trafficked road to get an idea of a representative density and assemblage (as so much of the site is covered in willows or not as easily accessible). After a group discussion, we decided that going forward we would conduct a selective survey on the rest of the site. As Williamson was mapping the site aerially, and R. Winters was taking aerial photographs over the course of 2022-2023, we decided to focus on documenting discrete artifacts, rather than mapping existing architectural features. C. Winters also took extensive photography of the architectural remains from a pedestrian perspective.

Drone and GIS Theory & Background

The more technical aspects of the project are also theoretically grounded. The GIS theory in the processing assumes that accuracy must be the most important factor, followed by ethical software choices. As a result, we used closed-source or commercial software to process the photogrammetric analysis and prepare the drone flight, as these two operations have specific problems or requirements. However, we chose to use QGIS for mapping purposes. Open-source tools are preferable but closed-source tools must be used when necessary. Open-source tools allow archaeologists to examine the source code (Orengo, 2015). Open-source code means the software can be copied and recompiled; therefore, it is impossible to impose cost barriers to use the same way as closed software.

We flew the drone using Drone Harmony (Drone Harmony, n.d.). DH is a closed-source software because there are almost no free and open-source choices for flying DJI drones. The drone software was chosen for its ease of use because safety is the primary concern when flying a drone. However, as these softwares are almost universally closed source, a closed-source tool, Drone Harmony, was used. We chose it because it is the most accurate tool (Jaud et al., 2016; Probst et al., 2018) while allowing some choice over algorithmic settings, even though it is exceptionally closed that they only hint at the underlying calculations (Agisoft LLC, 2022). As soon we find a suitable open-source alternative, we will stop using Agisoft. The biggest problem with this software is the need for more control over each step and the fact that the algorithm must remain a secret for commercial reasons.

The one clear choice that must be made for ethical reasons is QGIS over ArcGIS (Gieseking, 2018). QGIS was chosen over ArcGIS because ArcGIS is unstable (Cook, 2008) and predatory, while QGIS is open source and has advanced capabilities (Sherman, 2012).

GIS Methodology

During this fieldwork, our aim was to prepare a high-resolution map of the site for mapping purposes. We used a drone-based photogrammetric method for this purpose. The drone was a DJI Mavic Mini, a micro-drone with a 12-megapixel camera. The camera on this drone is similar to the Phantom 3 Pro, which archaeologists have used at other sites (Meyer et al., 2016). We took the photos on June 13, 2022, at 10 am; however, as the flight was going on, there were several occasions on which the drone landed due to birds and other nearby events. Drone Harmony was used to plan a flight at 30 m altitude over the site, flown at 5m/s, with a camera angle of -75 degrees and a coverage of 75% per photo (Drone Harmony, n.d.). The ground resolution of each pixel was 1.09 cm2. We used this app to plan and fly the drone in two perpendicular grids to capture the site details. In total, we took 380 photos of the site.

We took four georeferencing points using an RTK GPS at markers. We took these points with an Emlid RS+ by leaving the base station in position for 6+ hours. We used the Precise Point Positioning (PPP) (*Precise Point Positioning*, n.d.) method to correct the RTK readings. The RTK base station log was analyzed using the Natural Resources Canada PPP system, which outputs an accurate position. The difference between the PPP analyzed point and the RTK base station was used to move the points to the correct location.

We used Agisoft Metashape to produce a DEM and Orthophoto for later use (Agisoft LLC, 2022). The software carries out the photogrammetric method processing method in stages: producing a tie point cloud, producing a dense point cloud, processing a mesh, georeferencing the model, preparing a digital elevation model, and then preparing an orthophoto. The last two steps are linked, but both produce output data for use in a GIS to prepare maps.

The tie point cloud, dense cloud, and mesh were all produced at high-quality options to prepare a decent model. This meant that while the software does not use the complete data, the 3D model works well enough to produce the DEM and visualize the site. There was also a balance between the level of computer power necessary and quality.

We then georeferenced the model according to the adjusted RTK points. The georeferenced model generated a DEM based on the mesh and an Orthophoto (using the DEM for rectification).

The software generated a report to view the quality of the 3D model. While there are some defects in the model, such as within buildings, the goal was to create an overview of the site. These defects can be seen as areas of limited overlap. This fieldwork aimed to produce a model for analyzing the site, and this level of detail was acceptable to view a broad visualization of the site and examine details of the site. If necessary, better data on specific features can be applied. The DEM and the Orthophoto were opened and inspected in QGIS (QGIS.org, 2020), and then we reprojected them from ESPG 4327 to ESPG 3857.

Findings and Observations

The pedestrian survey, aerial mapping, and aerial photography all revealed the extent to which the USAF base has not yet been cleaned up (despite several federal and provincial clean-up projects since the 1970s, continuing into the 2010s) and persists materially into the present. The aerial methodologies did not emphasize present-day Inuit use, but the pedestrian survey documented hundreds of graffiti tags and more contemporary artifacts. Additionally, we often had visitors up to the site who went up the hill for the

Figure 2: An orthophoto mosaic of the main radar base.

Figure 3: Hillshade of the main radar base.

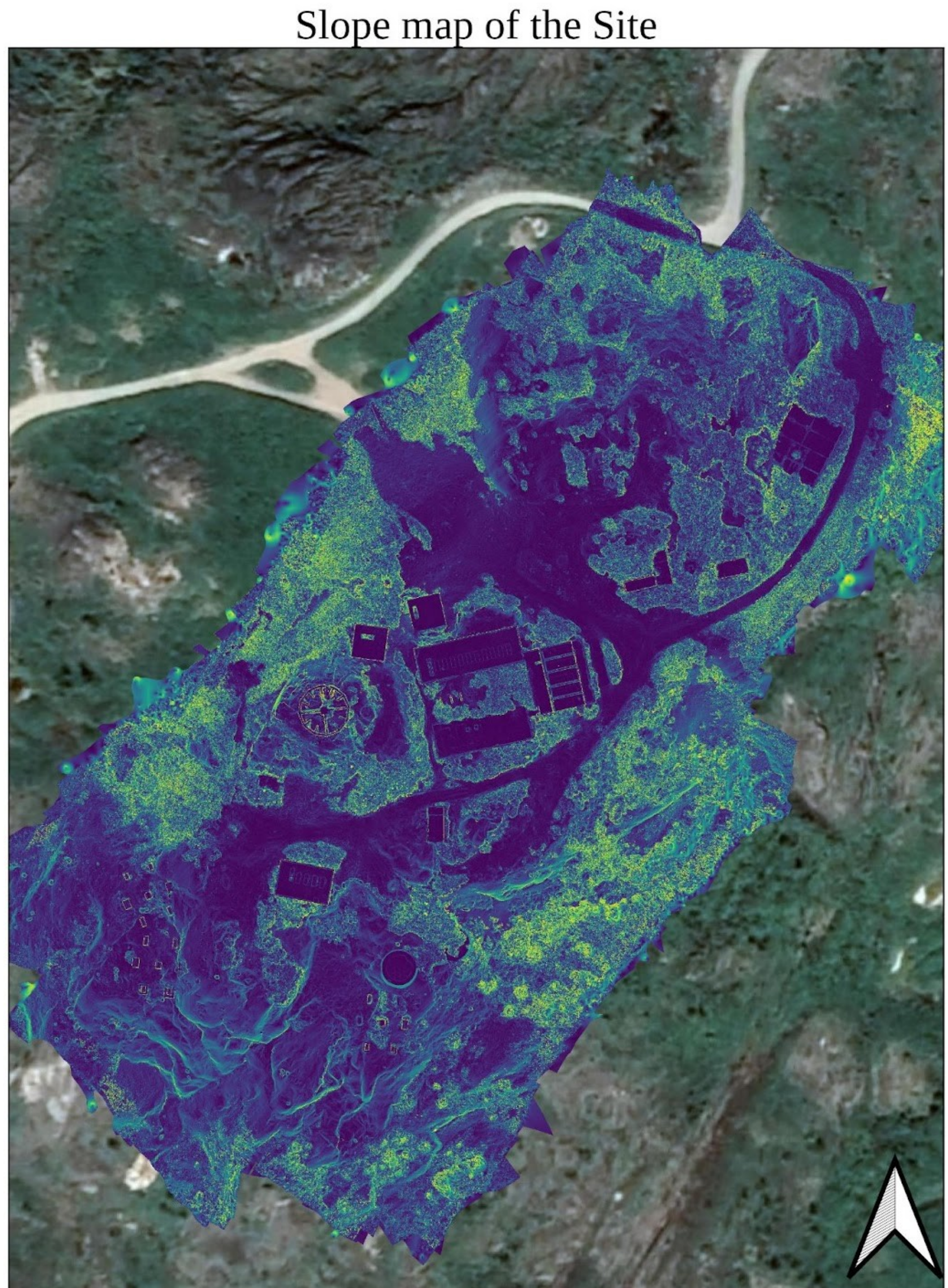


Figure 4: Slope map of the main radar base.

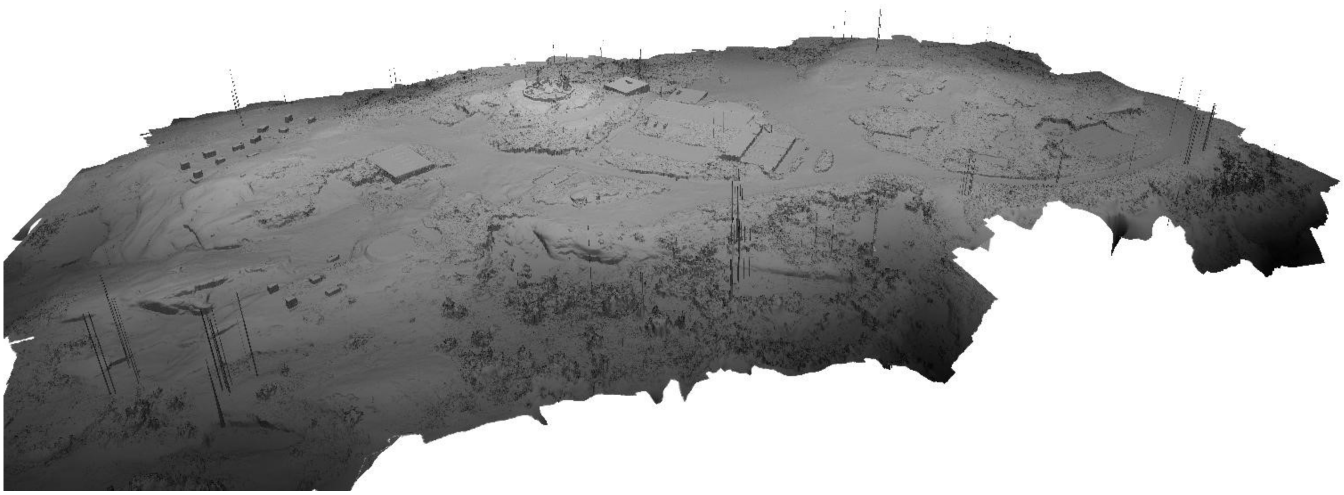


Figure 5: QGIS View of the features of the main radar base.

Figure 6: Agisoft view of the features from the southeast.

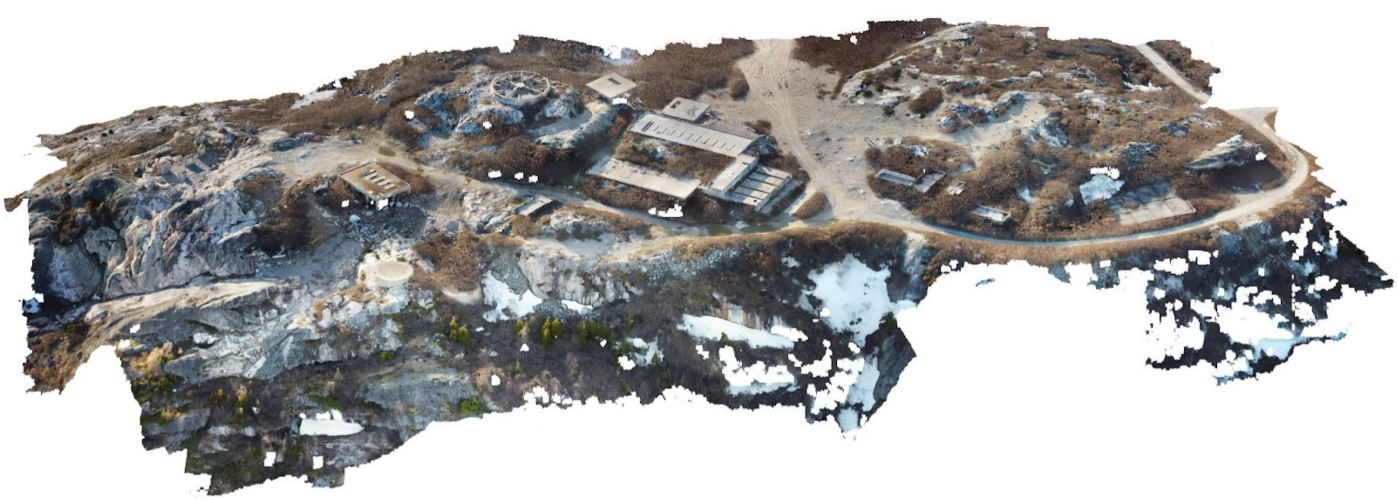


Figure 7: rocks building up a natural outcrop, functioning as a gage over the former helicopter pad.

view. Contemporary use of the site is difficult to capture without the use of interviews and ethnographic research, the results of which will be published in Gilheany's dissertation.

The orthophoto mosaic of the site in early summer reveals the extensive and varied concrete architectural features which remain. C. Winters, Dicker, L. Winters, and Gilheany had many discussions about the fact that it is almost poetic that in some ways, what remains most visible (the architecture) was made from materials taken from Hopedale harbour. It is difficult to see the extent of the remains from a pedestrian perspective, and these photos allowed us to see the multitude of concrete foundations, and then cross-reference them with archives and conversations with veterans stationed at Hopedale, to determine exactly which portions of the base are still standing. Interestingly, we know by comparing the aerial photos (taken over the spring, summer, and fall) and the orthophoto mosaic (taken in early summer) that the willows obscure a fair amount of the foundations and architectural remains. This leaves us with questions as to the utility of long-term archaeological observations in a site with such overgrowth. The orthophoto mosaic also allowed us to see remains in areas that are unsafe for pedestrians, particularly the perilous western edge of the site, where the foundations of former tropospheric scatter antennae are located. These aerial methodologies also reveal the range of the architectural remains on the hilltops—the base was quite spread out.

The pedestrian survey was useful for better understanding the everyday material culture of the USAF radar base. We will point out some of the more interesting finds. Along the road up to the base, a gage that looked over the former helicopter pad, which is the site of intensive PCB presence, was found. Archaeological research assistants C. Winters, Dicker, and L. Winters were particularly concerned about this, as it indicates possible recent hunting in a space with high levels of toxicity. Figure 7

During the systematic survey to get a representative density/assemblage in the center of the American base, we found two different porcelain sherds with maker's marks. Though the first sherd was difficult to determine, the second one could be made out, and we were able to determine that they were from toilets that were made in Trenton, NJ, likely prior to 1940. We wonder if these toilets were taken from a different USAF installation, and then moved to Hopedale. Many of the earliest servicemen coming to Hopedale for construction and set-up were routed through Camp Kilmer, in central New Jersey, and came via ship. It is likely that toilets were high on the priority list for the USAF and note that the rest of Hopedale did not have indoor plumbing until decades after the USAF left. What money and resources were spent for the comfort of the military, which did not materialize for the community? Figure 8

Figure 8: Sherd with maker's mark from a factory in Trenton producing vitreous China.

The "American Dump Site" was found during selective survey and was a very exciting day for the pedestrian survey crew. We were hoping to find objects that might have been discarded on the way to or from the base, and so we were walking in transects along American Road. Behind a long low-lying boulder, we saw hundreds of scraps of rusty metal that appear similar to present-day metal from shipping pallets. Within and next to this metal, we counted at least 50 rusty cans of varying sizes (some of which looked to be paint cans) and at least eight visible coca cola bottles. These bottles were dated to 1956-1958, based on the script size and type of "Coca-Cola", the patent language, and inscriptions on the bottoms of the bottles. This is around when construction likely would have tapered off on the USAF site. We wonder if this dumpsite might date to the very end of construction, or if it represents materials leftover from shipping construction goods (and beverages to be consumed during or after the construction process). Additionally, we found foodstuff containers, including one lid from a can of "Walter Baker's Breakfast Cocoa." These artifacts give us insight into the food that was served on the base and help us consider the way that consumer goods like a single Coke bottle moves across the continent and up to Hopedale. What was worth spending the shipping costs on? What remained unspoiled for the journey? Figure 9

Figure 9: Three Coca-Cola bottles dating to 1956-58.

On the road up to BMEWS, our survey uncovered a small firepit with a lot of lichen and overgrowth on the rocks—this was particularly of note because a base of a drum was used in the center of the firepit. As we know from historical photography and interviews that the Americans had plentiful drums, and that they were the ones with the machine power to bring them up the hill; we wonder if this firepit could date to the American occupation. Who might have warmed themselves by this fire? Could this indicate a space where Inuit traveled up to the base? A space where USAF servicemen went to get away from the surveillance of the higher-ups? We note that this firepit is not far from the current first reservoir in Hopedale. Figure 10

At BMEWs, beneath the tall concrete foundations, we found the cover of a thermostat, specifically a "Fenwal Thermoswitch" manufac-

Figure 10: Firepit with metal drum lid underneath lichen and rocks.

Figure 11: Thermostat found at the BMEWS site.

tured in Ashland Massachusetts. Though we are in the process of dating it, we are fairly certain that the same junction box was in production as late as 1985. This artifact was a reminder of the lengths that the USAF had to go to make the hilltop bases livable for servicemen coming from a milder American climate. We know from archives that being cold was a regular complaint of US Servicemen while in Hopedale. Figure 11

On the road north of the Main base site, we found a dumpsite that we are calling the "post-American" dumpsite. As the radar base was rented out to several different corporations after the US left in 1968, we are unsure who might have left these items. At this dumpsite, we counted at least 40 Fanta soda cans, and an even greater number of short brown glass beer bottles. The Fanta cans appear to have been labelled in Canada and manufactured sometime in the early-mid 1970s. Within this assemblage are multiple artifacts related to shaving (razors, shaving cream), a whipped dessert container, and a package of American-sourced ground beef. This assemblage speaks to the continued flow of commercial and consumer foodstuffs for those occupying the USAF infrastructures after USAF departure. Figure 12

This archaeological survey will be written up in detail in Gilheany's dissertation, with more ethnographic, photographic, archival, and interview-based context.

Acknowledgments

Thank you to the community of Hopedale for your generosity, kindness and for allowing us to conduct this research. Thank you to Marjorie Flowers and the HICG for your support of student work and research. We are grateful for the participation of all interviewees. Thank you to Ryan Winters for your participation in this project and photographic leadership. In addition, we are grateful for the support and research assistance from David Igloliorte, Nathaniel Winters, Martha Winters-Abel, Dawn Winters, Tabea Onalik, Christine Foltz-Vincent, Jimmy Tuttauk, Fran Williams, Curtis Oliver, Levi Nochasak and Hulda

Figure 12: Metal, glass, and plastic in situ at the post-American dumpsite.

Pijogge. Thank you to the families of Cole Dicker, Laura Winters, and Cadence Winters for your patience and enthusiasm for this work. Thank you to the NG Research Council and NG Archaeology office. This research would not have been possible without funding from the Nunatsiavut Education Division, the SSRC-IDRF, the National Institute of Social Sciences Dissertation Grant Program, and the NSF-GRFP.

References

Ahman, C. (2018). It's Exhausting to Create an Event out of Nothing": Slow Violence and the Agisoft LLC. (2022). *Agisoft Metashape User Manual, Professional Edition, Version 1.8*.

Ahman, C. (2018). It's Exhausting to Create an Event out of Nothing": Slow Violence and the Manipulation of Time. *Cultural Anthropology*, *33*(1), 142–171.

Bennett, L. (2020). The Bunker's After-Life: Cultural Production in the Ruins of the Cold War. *Journal of War & Culture Studies*, *13*(1), 1-10. https://doi.org/10.1080/17526272.2019.1698845

Cook, J. (2008). "Dear ESRI, it's not me, it's you", Open Source Computing and GIS in the U.K. [Https://archaeogeek.com]. *Archaeogeek*. https://archaeogeek.com/blog/2008/03/12/dear-esri-its-not-me-its-you/

Drone Harmony. (n.d.). *Drone Harmony*. Retrieved January 1, 2023, from https://droneharmony.com/docs/the-flight-planning-workflow/

Gieseking, J. J. (2018). Operating anew: Queering GIS with good enough software. *The Canadian Geographer*, *62* (1), 55–66. https://doi.org/10.1111/cag.12397

González-Ruibal, A. (2008). Time to Destroy: An Archaeology of Supermodernity. *Current Anthropology*, *49*(2), 247–279. https://doi.org/10.1086/526099

Hanson. (2016). *The Archaeology of the Cold War (The American Experience in Archaeological Perspective*. University Press of Florida.

Hird, M. (2016). The DEW Line and Canada's Arctic Waste: Legacy and Futurity. *The Northern Review*, *42*, 23–45.

Historical Record 923rd AC&W Squadron Hopedale, Labrador 1 April 1968 to 30 June 1968. (n.d.). USAF Air University Archives.

Jaud, M., Passot, S., Le Bivic, R., Delacourt, C., Grandjean, P., & Le Dantec, N. (2016). Assessing the Accuracy of High Resolution Digital Surface Models Computed by PhotoScan and MicMac in Sub-Optimal Survey Conditions. *Remote Sensing*, *8*(465).

McElroy, G. (2012). *Cold Comfort: Growing Up Cold War*. Talon Books.

Meyer, D., Lo, E., Afshari, S., Vaughan, A., Rissolo, D., & Kuester, F. (2016). Utility of Low-Cost drones to generate 3D models of archaeological sites from multisensor data. *The SAA Archaeological Record*, *16*(2), 22–24.

Nixon, R. (2011). *Slow Violence and the Environmentalism of the Poor*. Harvard University Press.

Orengo, H. (2015). Open Source GIS Geospatial Software for Archaeology: Towards its Integration into Everyday Archaeological Practice. In *Open Source Archaeology: Ethics and Practice* (pp. 64–82). DeGruyter Open Ltd.

Schofield, A. J., & Cocroft, W. (2016). *A fearsome heritage: Diverse legacies of the Cold War*. Routledge.

Sherman, G. (2012). *The Geospatial Desktop: Open Source GIS & Mapping*. Locate Press.

Spohr, A. (2013). The Militarization of the Arctic: Political, Economic and Climate Challenges. *UFRGS Model United Nations Journal*, *V1 2013*, 11–70.

"Hold Fast Newfoundland and Labrador" (and Graduate Students): Completing Master's Research Scrutinizing the Digital Representation of Indigenous Cultures at Two National Historic Sites During a Global Pandemic

Jared T. Hogan
Memorial University

Introduction

Thanks to the COVID-19 pandemic and research restrictions at Memorial University, my MA research plans changed (along with my department) in the 2021-2022 school year! In 2020, when I was preparing my application to Memorial's School of Graduate Studies, I planned on continuing my Honours research in the Department of Archaeology, focusing on Archaeoentomology. Long story short, the pandemic had other plans. I completed my MA in the Department of Anthropology, where I conducted research exploring the representation of Indigenous peoples in digital heritage at Red Bay National Historic Site, Labrador, and L'Anse aux Meadows, Newfoundland. This report briefly summarizes the project's origins, unusual archaeological "field sites," and the results and future research. More information can be found in my completed Master's Research Paper titled: *Marginalized Visibility: Scrutinizing the Digital Representation of Indigenous Peoples at Red Bay National Historic Site, Labrador, and L'Anse aux Meadows National Historic Site, Newfoundland.*

Project Origins and Background

As an alumnus of Memorial's undergraduate Archaeology and Psychology programs, I had heard about Anthropology before. However, upon starting my graduate coursework, I quickly learned that, despite my lack of specific knowledge, Anthropology had (and continues to have) a direct impact on the public's perception of Indigenous peoples, past and present. I learned of anthropologists' role in harming Indigenous communities in pursuing "Western science" in undergraduate studies. However, I did not fully realize the blatant link between anthropologists studying Indigenous cultures and how assimilation policy was (and is) executed through heritage initiatives that aim to pencil out Indigenous peoples in Euro-American society. Immediately, this connection brought back a memory of brief lessons in social studies class discussing Indigenous cultures in the province, including a field trip to The Rooms, where Indigenous peoples of the province were (and continue to be) placed alongside natural history exhibits. Further, irresponsible representation can be seen in the shared belief, taught in schools across the province for decades, that Ktaqmkuk Mi'kmaq were brought to Newfoundland by the French to fight the English and Beothuk (known as the Mercenary Myth) (Hiller, 2021; Martjin, 2003; Hanrahan, 2003; Reid, 2019; Reid, 2020; Wetzel, 1995). For context, my parents, born in rural Newfoundland in the 70s, recall learning about two things relating to Indigenous people in Newfoundland: 1) the Beothuk, who were "wiped out" by Europeans, and 2) the Mercenary Myth. Thankfully the Mercenary Myth is no longer taught in public schools. However, the myth's impact on de-legitimizing Indigenous histories was seen in my 2020 visit to the Demasduit Regional Museum (formerly known as the Mary March Museum) in Grand Falls-Windsor. At the museum, their timeline for human occupation on the Island of Newfoundland started with Europeans, followed by the Mi'kmaq. As such, my Master's research project exploring Indigenous representation was inspired by these experiences and conversations with Indigenous colleagues, while my virtual methods for fieldwork were inspired by "holding fast" as a new, first-generation graduate student during the COVID-19 pandemic.

Methods

This project focuses on the digital representation of Indigenous and settler occupants at Red Bay in Southern Labrador and L'Anse aux Meadows on Newfoundland's Great Northern Peninsula (Figure 1). I chose these sites due to their popularity and dual designation as National Historic Sites of Canada and UNESCO World Heritage Sites. Both sites also have similar mixed Indigenous and settler occupations, making them easier to compare directly. MAXQDA 2022, a qualitative and mixed methods software, was used to collect data on digital heritage at both sites, including webpages and documents provided in the public sphere (i.e., consultation reports, management plans, and applications) and academic and grey literature for each site. Digital heritage showing or neglecting to show Indigenous representation was primarily collected from stakeholders' websites, such as Parks Canada, UNESCO World Heritage Centre (UWHC), and Newfoundland and Labrador Tourism. My analysis of these documents is borrowed from frameworks used in Grimwood et al. (2019), de Bernardi (2019), Simpson (2009), Atalay (2006), and Phillips (2017), as explained below.

Figure 1: Map of Newfoundland and Labrador Marking the Locations of Red Bay and L'Anse aux Meadows (Figure by Molly Ingenmey).

I analyzed documents for mention of Indigenous heritage, including "Aboriginal," "Indigenous," and "Indian" as keywords, similar to Grimwood et al. (2019). As seen in de Bernardi (2019), a qualitative approach was conducted based on my training and experience in Indigenous Studies, borrowing from theoretical frameworks of restorative justice, community and Indigenous archaeology practices, and responsible exhibition (Atalay, 2006; Phillips, 2017; Simpson, 2009). Further, critical discourse analysis, used in Grimwood et al. (2019), was similarly applied to capture outdated and inaccurate terminology and statements throughout the websites and documents.

Critical discourse analysis helped show how the settler state uses language to influence national history and perpetuate colonial thinking.

Results

Despite the provincial government's acknowledgement of the five Indigenous governments (Qalipu First Nation, Miawpukek Mi'kamawey Mawi'omi, Innu Nation, Nunatsiavut Government, and Nunatukavut Community Council), digital media analysis showed that Red Bay and L'Anse aux Meadows neglect meaningful digital representation of Indigenous cultures. In this context, meaningful representation refers to the honest attempt at Indigenous representation based on the principles recommended by Phillips (2017) for responsible exhibition. Ten of the 26 web pages and associated documents for both sites mentioned Indigenous peoples in some historical context (International Council on Monuments and Sites [ICOMOS], 1978; ICOMOS, 2012; Parks Canada, 2011a; Parks Canada, 2011b; Parks Canada, 2019a; Parks Canada, 2019b; Parks Canada, 2019d; Parks Canada, 2021b; UWHC, 2012; UWHC, 2014). In these ten sources, Indigenous representation incorporated primarily flawed language, often discussing Indigenous peoples as "ancient Indians," "ancient Indian bands," "prehistoric peoples," and "paleoeskimos." As seen in Table 1, documents mentioned European groups seven times more than Indigenous groups at Red Bay and three times more than Indigenous groups at L'Anse aux Meadows.

It is important to note that neither site explicitly recognizes the contributions of Indigenous peoples to Canadian heritage. However, Red Bay and L'Anse aux Meadows both recognize the significance of Europeans to Canadian heritage (e.g., the Basque whaling station at Red Bay and the only known Viking settlement in the Americas at L'Anse aux Meadows). Yet, archival and archaeological records indicate multi-cultural Indigenous occupation before and after the Vikings at L'Anse aux Meadows and before, during, and after the Basque at Red Bay. Despite how the presence of Indigenous peoples at these sites is minimized in digital heritage, both sites note Indigenous occupation and history in their applications to UNESCO for World Heritage status (ICOMOS, 1978; ICOMOS, 2012; UWHC, 2012). Such notation of Indigenous occupation and history for World Heritage status encroaches on tokenism, falling short of responsible Indigenous exhibition in an online platform.

Future Work

Building from this pandemic-inspired project, my proposed doctoral research will incorporate digital methods for anthropological inquiry alongside exhibition analysis and stakeholder interviews to better understand the representation of Inuit, Innu, Mi'kmaq, and Indigenous ancestors in non-Indigenous led museums throughout Newfoundland and Labrador. I will compare these non-Indigenous-led facilities to Indigenous-led museums across the province to provide recommendations for better representing Indigenous cultures in heritage. In the spirit of "holding fast," this research will be adapted to an online format with digital media analysis and interviews via telecommunications software if restrictions to research return.

Acknowledgements

I want to thank my MA supervisors, Drs. Carolina Tytelman and Lincoln Addison, Department of Anthropology, Memorial University, for their support and guidance throughout this project. Likewise, I would like to thank my PhD supervisors, Drs. Barry Gaulton and Scott Neilsen, Department of Archaeology, Memorial University, for their ongoing support and guidance as I learn to navigate my new program. Finally, I thank my colleagues, Jordan Hollahan and Sarah Roberts, for their thoughts and for proofreading this short piece, and Molly Ingenmey for her GIS skills in creating Figure 1.

Table 1: Comparison Between Red Bay and L'Anse aux Meadows Digital Heritage for Mention of European and Indigenous Cultural Groups.

	Red Bay		L'Anse aux Meadows	
Website/Document	**Mention of European Groups I**	**Mention of Indigenous Groups ii**	**Mention of European Groups i**	**Mention of Indigenous Groups ii**
NL Tourism iii	3	0	1	0
UNESCO World Heritage Centre iv	603	31	40	8
Parks Canada v	150	76	101	37
Total Mentions	**756**	**107**	**142**	**45**

Notes:

iKeywords for European groups included: European(s), Basque, French, English, Norse, Vikings, and Dutch.
iiKeywords for Indigenous groups included: Indigenous, Aboriginal, Indian, Native, Inuit, Innu, Mi'kmaq, and First Nation(s).
iiiBased on Newfoundland and Labrador Tourism (n.d.-a; n.d.-b).
ivBased on ICOMOS (1978; 2012) and UWHC (2012; 2014; n.d.-a; n.d.-b).
vBased on Parks Canada (2011a; 2011b; 2017a; 2017b; 2018a; 2018b; 2018c; 2018d; 2018e; 2019a; 2019b; 2019c; 2019d; 2021a; 2021b; 2022) and Canada's Historic Places (n.d.-a; n.d.-b).

References

Atalay, S. (2006). Indigenous archaeology as decolonizing practice. *American Indian Quarterly*, *30*(3/4), 280-310. https://www.jstor.org/stable/4139016

Canada's Historic Places. (n.d.-a). *L'Anse aux Meadows national historic site of Canada*. https://www.historicplaces.ca/en/rep-reg/place-lieu.aspx?id=4219&pid=0

Canada's Historic Places. (n.d.-b). *Red Bay national historic site of Canada*. https://www.historicplaces.ca/en/rep-reg/place-lieu.aspx?id=14409&pid=0#

de Bernardi, C. (2019). Authenticity as a compromise: A critical discourse analysis of Sámi tourism websites. *Journal of Heritage Tourism*, *14*(3), 249-262. https://doi.org/10.1080/1743873X.2018.1527844

Grimwood, B. S. R., Muldoon, M. L., & Stevens, Z. M. (2019). Settler colonialism, Indigenous cultures, and the promotional landscape of tourism in Ontario, Canada's 'near North'. *Journal of Heritage Tourism*, *14*(3), 233-248. https://doi.org/10.1080/1743873X.2018.1527845

Hanrahan, M. (2003). *The last breach: The omission of Aboriginal people from the terms of union between Newfoundland and Canada and its ongoing impacts*. Royal Commission on Renewing and Strengthening Our Place in Canada. https://www.gov.nl.ca/publicat/royalcomm/research/Hanrahan.pdf

Hillier, B. (2021, June 21). *Mi'kmaq want help to undo damage from colonial history taught in school*. https://www.cbc.ca/news/canada/newfoundland-labrador/mi-kmaw-mercenary-myth-colonial-history-school-textbooks-1.607375

International Council on Monuments and Sites. (1978). *Advisory body evaluation: L'Anse aux Meadows national historic site*. https://whc.unesco.org/document/153380

International Council on Monuments and Sites. (2012, January 16). *Red Bay (Canada) no 1412*. https://whc.unesco.org/document/152605

Martijn, C. A. (2003). Early Mi'kmaq presence in southern Newfoundland: An ethnohistorical perspective, c. 1500-1763. *Newfoundland Studies*, *19*, 44-102. https://journals.lib.unb.ca/index.php/nflds/article/view/141/238

Newfoundland and Labrador Tourism. (n.d.-a). *Welcome to Red Bay national historic site*. https://www.newfoundlandlabrador.com/top-destinations/red-bay

Newfoundland and Labrador Tourism. (n.d.-b). *L'Anse aux Meadows national historic site of Canada*. https://www.newfoundlandlabrador.com/plan-and-book/attractions/211794

Parks Canada. (2011a). *Red Bay national historic site of Canada: Management plan 2011*. https://www.pc.gc.ca/en/lhn-nhs/nl/redbay/info/plan

Parks Canada. (2011b). *Red Bay national historic site of Canada: State of the site report 2011*. https://www.pc.gc.ca/en/lhn-nhs/nl/redbay/info/plan

Parks Canada. (2017a, March 30). *L'Anse aux Meadows national historic site: A saga of discovery*. https://www.pc.gc.ca/en/lhn-nhs/nl/meadows/decouvrir-discover/saga

Parks Canada. (2017b, November 9). *Red Bay national historic site: Archaeology of a sixteenth-century Basque whaling boat*. https://www.pc.gc.ca/en/lhn-nhs/nl/redbay/decouvrir-discover/basque

Parks Canada. (2018a, January 10). *Red Bay national historic site: Fact sheet: The Basque vessels of Red Bay*. https://www.pc.gc.ca/en/lhn-nhs/nl/redbay/decouvrir-discover/unesco/unesco5

Parks Canada. (2018b, January 10). *Red Bay national historic site: Backgrounder: Red Bay Basque whaling station, Labrador*. https://www.pc.gc.ca/en/lhn-nhs/nl/redbay/decouvrir-discover/unesco/unesco3

Parks Canada. (2018c, January 10). *News release: Canada welcomes 37th UNESCO world heritage site*. https://www.pc.gc.ca/en/lhn-nhs/nl/redbay/decouvrir-discover/unesco/unesco2

Parks Canada. (2018d, January 3). *Red Bay national historic site: Red Bay whaling station UNESCO world heritage site*. https://www.pc.gc.ca/en/lhn-nhs/nl/redbay/decouvrir-discover/unesco

Parks Canada. (2018e, August 15). *L'Anse aux Meadows national historic site: About*. https://www.pc.gc.ca/en/lhn-nhs/nl/meadows/info

Parks Canada. (2019a, October 16). *Red Bay national historic site: History*. https://www.pc.gc.ca/en/lhn-nhs/nl/redbay/decouvrir-discover/histo

Parks Canada. (2019b, May 3). *L'Anse aux Meadows national historic site: Aboriginal sites*. https://www.pc.gc.ca/en/lhn-nhs/nl/meadows/decouvrir-discover/sites

Parks Canada. (2019c, August 15). *L'Anse aux Meadows NHS and UNESCO world heritage site management plan public consultation report*. https://pcweb.azureedge.net/-/media/lhn-nhs/nl/meadows/pdf/LAM-CONSULTATION-REPORT-2018.pdf

Parks Canada. (2019d). *L'Anse aux Meadows national historic site of Canada: Management plan 2019*. https://pcweb.azureedge.net/-/media/lhn-nhs/nl/meadows/pdf/lanse-aux-meadows-management-plan-2019.pdf

Parks Canada. (2021a, February 19). *Red Bay national historic site: Fact sheet: Whale oil was a rare and highly prized commodity*. https://www.pc.gc.ca/en/lhn-nhs/nl/redbay/decouvrir-discover/unesco/unesco6

Parks Canada. (2021b, September 15). *L'Anse aux Meadows national historic site: Tours and programs*. https://www.pc.gc.ca/en/lhn-nhs/nl/meadows/activ/decouverte-tours

Parks Canada. (2022, February 9). *Red Bay national historic site*. https://www.pc.gc.ca/en/lhn-nhs/nl/redbay

Phillips, L. (2017, December). *Responsible exhibition & interpretation of Indigenous artifacts*. https://saskmuseums.org/files/WEB_-_Responsible_Exhibition_and_Interpretation_of_Indigenous_Artifacts_v_2.pdf

Reid, B. (2019). *Traditional knowledge and land use: Building research relationships with a rural Ktaqmkuk Mi'kmaw community* [Master's thesis, Memorial University of Newfoundland and Labrador]. https://doi.org/10.48336/YXXJ-0T74

Reid, B. (2020). Positionality and research: "Two-eyed seeing" with a rural Ktaqmkuk Mi'kmaw community. *International Journal of Qualitative Methods*, *19*, 1-12. https://doi.org/10.1177/1609406920910841

Simpson, M. (2009). Museums and restorative justice: Heritage, repatriation and cultural education. *Museum International*, *61*(1-2), 121-129. https://www.brown.edu/Departments/Joukowsky_Institute/courses/worldofmuseums09/files/9704876.pdf

UNESCO World Heritage Centre. (2012). *World heritage nomination for the Red Bay Basque whaling station*. https://whc.unesco.org/uploads/nominations/1412.pdf

UNESCO World Heritage Centre. (2014). *Periodic reporting cycle 2, section II: L'Anse aux Meadows national historic site*. https://whc.unesco.org/document/164072

UNESCO World Heritage Centre. (n.d.-a). *Red Bay Basque whaling station*. https://whc.unesco.org/en/list/1412/

UNESCO World Heritage Centre. (n.d.-b). *L'Anse aux Meadows national historic site*. http://whc.unesco.org/en/list/4

Wetzel, M. G. (1995). *Decolonizing Ktaqmkuk Mi'kmaw history* [Master's thesis, Dalhousie University]. ProQuest Information and Learning.

"Melting Paths and the 'Stratigraphy' of Marine Cut Terraces" On the Road to a different and more difficult World: Tshikapisk Research and other activities in 2022

Anthony Jenkinson
Tshikapisk Foundation

Figure 1: Skin of ice which formed over Kamestastin outlet narrows in the early morning of the longest day of the year June 21, 2022. Archaeological sites are located on both sides of these narrows.

Kamestastin
Mistanuk (GlCs-08)

I returned to the Mistanuk site in 2022 to open some units in the area between the Mistasuapi and Napanakapeu components. The purpose of this exercise was to attempt to clarify the relationship between the two occupations. Though the excavations did produce some further artefacts, at the moment it remains unclear whether or not the two occupations are coeval. They are on slightly different elevations with Mistasuapi being about a meter beneath the Napanakapeu terrace, Napanakapeu being located just beside the backing moraine to the west of it. We still do not have a calcined bone date on faunal material collected beside the Mistasuapi linear hearth feature but this is a function of poverty not lack of will or intention. In light of the affinity of the assemblages and features from the two components, the best guess is that they are closely related.

In spite of the tighter plus or minuses associated with calcined bone dates, the likelihood is that the clearest result that could be hoped for in this case would be to eliminate the possibility that the two occupations occurred over the same season. This at least could be deduced if the dates from the two components were sufficiently far apart, though one needs to appreciate that Napanakapeu is very likely a pal-

Figure 2: Proximal half of dark coloured projectile point found standing near vertically beside large ditch like combustion feature at the southern end of the Napanakapeu Component at the Mistanuk Site (GlCs-08), Kamestastin

impsest. All the dated samples from the Mistanuk site were of calcined bone (terrestrial large mammal, likely caribou) and all, bar one, returned dates between 6500 and 7000 calibrated years BP.

A feature located just to the south of the Mistasuapi component and excavated in June 2022, consisted of a charcoal and ash lined ditch beside which the proximal portion of a large stemmed projectile point had apparently been driven into the soil vertically (Figure 2). The sloping shouldered base of the point with its prominent stem first appeared protruding nearly vertically from the surface under excavation. It later became apparent that the distal portion was missing. If the piece had been intentionally driven into the ground, it had been so placed after the “business end” had been broken off, perhaps during lancing of caribou swimming across the narrows. It is just possible that frost heave or a well-placed caribou hoof could have positioned the projectile point in the unusual way in which it was found. However, in light of the fact that none of the numerous other points and point fragments excavated at the Mistanuk site were recovered in a vertical position with the proximal basal portion pointing skywards, or in anything approaching such a position, and taking into account that all of the Mistanuk site lies in the path of a major caribou thoroughfare and perhaps always has, there seems a greater likelihood that the vertical placement of this particular broken projectile point was anthropogenic and the result of a deliberate act by the human occupants of the Mistanuk Site. The morphology of the remaining half of this point recalls that of an intact example fashioned from black chert, found lying beside a medium sized boulder to the immediate west of the large fire pit at the northern end of the Napanakapeu component of the Mistanuk site. Another morphologically very similar one (though made of Ramah Chert) was surface collected on the coast near Nain at the Nukasusutok 5 site by Smithsonian Institution crew members in 1975 (Fitzhugh 1976).

Chris Wolff has reported apparently ceremonial disposal of large Ramah bifaces inside a boulder pit structure at White Point (IcCp-41) (Wolff 2008, 2022). In that case, two early style nipple based bifaces of Ramah Chert were first snapped in half and then the four fragments stabbed into an ochre filled depression in the ground (60 cm in diameter by 20 cm depth). The White Point exercise seems much less ambiguously an act of *Mantushiun* (the Innu word for shamanistic interaction with governing natural forces) than that at the caribou ambush site at Kamestastin outflow narrows. The case at Mistanuk involved no immediate involvement of ochre anywhere close to the projectile point and, as stated above, the distal end of the biface was missing. Nevertheless, it does appear that what happened with the bifacial object found standing vertically in the soil at the southern end of the Mistasuapi Component was unlikely to have occurred naturally. The physically close association of the deposition with a major combustion event in the ditch beside which it occurred may speak to a relationship between the two.

Figure 3: "Pencil Celt" from unit S2W12 lying close to the apparently "stabbed in the ground" projectile point beside the fire pit feature to the south of the Mistasuapi Component, Mistanuk Site (GlCs-08).

Figure 4: Ushikuesh Site (GlCs-57) unit 2022-1. "Ghost" bowl like object outlined in stained sand visible in SW quad and calcined bone depository and possible bone burning event in NE corner.

Lying at the northern end of the Mistasuapi component close to the projectile point described above was a small ground stone "pencil celt" with part of the hafting end broken off and missing. The one from Mistasuapi has the dimensions and appearance of a rather chunky carpenter's pencil. Fitzhugh reports another from Ballybrack 10, near Nain (Fitzhugh 1978) (Figure 3).

Ushikuesh (GlCs-57)

Ushikuesh is an occupation set off about 75 meters west from Mistanuk, though on the same terrace. The site is positioned above a sandy lakeshore beach beside a small brook and the gradient of the bank above, though steep, offers much easier access to the Mistanuk terrace than at the eastern end where the banks drop precipitously to the lake. Flakes of Ramah and one oval knife of the same material found amongst the sand and gravel of this small beach and the adjacent shallows may hint at its use as an unloading point and access location for a path to the high terrace above. Ushikuesh appears to have been occupied during different eras, and the archaeological remains there are clearly a palimpsest. This is attested to by the divergent dates obtained from two calcined bone samples and one of wood charcoal.

In 2022, several units at the bank side southern margins of Ushikuesh were either excavated from scratch or re-excavated because of doubts that they had originally been taken to the culturally sterile substrate. Ushikuesh sits about 75 meters to the west of the much larger Mistanuk site and like its neighbour looks across the water to the two principal caribou approaches to the Kamestastin outflow narrows. Its shares with Mistanuk the characteristic of possessing an assemblage heavily dominated by Ramah Chert, which is unusual amongst the suite of early sites at Kamestastin. Though three samples (two of calcined bone and one of wood charcoal) were submitted for radiocarbon dating, they produced widely divergent dates suggesting a palimpsest of occupations in this location of very poor soil development and likely mixing of the associated assemblages.

Apart from a number of flakes of Ramah Chert, most in association with a small combustion feature composed of a couple of small rocks, a deposit of calcined bone, a smear of carbonized material, the most notable item revealed in the small excavation of 2022 was a second rectangular "ghost object" very similar in proportions and appearance to the bowl like item revealed as a stained outline at the northern end of the Mistasuapi component of the nearby Mistanuk Site (Figure 4). The Mistanuk example was excavated by careful removal of the material which surrounded a brown envelope of stained sand. This exercise revealed an object with an opening in the top, a roughly rectangular upper face and rounded corners which in profile tapered slightly towards the base. The walls of the object became markedly thicker nearer the base producing a somewhat conical space within. The Ushikuesh example, although not fully excavated in 2022, presented very similarly after removal of the vegetated layer.

Though not originally considered of much significance, the role of two or three small rocks not-

Figure 5: Napeu Atik site (GlCs-21) excavation of pit feature May 2022.

ed as placed beside deposits of crushed bone, small Ramah Chert flake concentrations, red ochre stain, and carbonized material warrants comment. Evidence of these events have now been repeatedly recorded at the Ramah dominated sites of Mistanuk (GlCs-08) and Ushikuesh (GlCs-57). The elements are nearly always the same and apart from the bone mash fragments, the black carbonized smear, the very small Ramah flakes, and the ochre, the combustion event is almost always done in the company of one, two, or three small rocks. The latter are far smaller than those found on formal hearths and it seems unlikely that they would have a useful utilitarian heat radiating function. Elsewhere I have written that appearances of these features suggest burning of bone mash after grease rendering for consumption has been completed. What these possible bone-burning events signified is difficult to divine 7000 years later but the repetition of the elements of which they were constituted suggests something beyond random events. In belief systems (such as those governing most hunting societies) where little one encounters in life is considered purely secular, if there is a utilitarian explanation for these practices involving small rocks and the other participant objects, it would be surprising if there were not also a religious aspect as well.

Napeu Atik (GlCs-21)

GlCs-21 is a site discovered following test pitting conducted around a single piece of culturally modified white quartz (Figure 5). It was noted on the surface of a terrace attached to a prominent bluff overlooking a narrow section of the Tshumushumapeu valley in the "partage des eaux" where the water separates into northward and southward flowing streams. This occurs close to a small marshy pond beneath the Napeu Atik terrace. The testing revealed a spread of white quartz debitage buried about 20 cms beneath the modern surface. Subsequently we opened up six square meters in and around the positive test pits. The excavation brought to light a number of modestly sized combustion features, a small number of grey chert flakes, the base of an "early looking" biface with a nubbed stem (also of grey chert), profuse white quartz debitage and a scant amount of what was probably calcined bird bone. Additionally a trail of white quartz led to an area of disturbed ground where the rusty substrate was mixed with material from above it. The latter was interpreted as a pit feature. Abundant white quartz debris was noted on the surface of the pit fill and around its rim (Jenkinson 2011).

With the benefit of knowledge of the quartz pit at the Shak Selma site (GlCs-22) (Jenkinson 2020), we decided to investigate the apparently similar feature at Napeu Atik. In an area close to, but separate from, the Shak Selma occupation investigated in 2012 (Arbour et al. 2013), a small combustion feature with an associated concentration of white quartz debris had been noted in 2017. Upon excavation the following year, it revealed a quartz filled pit of approximately the dimensions and volume of a 5 gallon bucket. In addition to the quartz debris and tools, the pit also contained much smaller quantities of grey chert flakes, the distal portion of a tiny projectile point, also of grey chert, and some flakes of a very fine grained, glass-like purple material (referred to as smokey quartz elsewhere; Arbour et al. 2013). Similarly to the

Figure 6: Biface of white quartz (stained from the rusty red soil in which it lay for more than 7000 years) found with quartz debris within pitfill of Napeu Atik pit (GlCs-21) in May 2022, Kamestastin.

excavated quartz filled space at Shak Selma, at Napeu Atik a trail of quartz debris led to the rim of a pit, though one shaped differently from that at Shak Selma. The Napeu Atik example had a much wider rim and was shaped more like a large bowl than the narrower mouthed pit at Shak Selma. In other respects, the two pits had shared characteristics: both were close to small combustion features and the lithic assemblage in both was heavily dominated by white quartz. Both features contained small amounts of highly fragmented calcined bone, occasional wood charcoal fragments, and small quantities of grey chert. The Napeu Atik pit feature lacked the fine purple glassy material present in trace amounts at Shak Selma. Apart from small amounts of small grey chert flakes, the lithics inside the Napeu Atik pit consisted of white quartz debitage, one intact oblong shaped biface of white quartz and one bifacial fragment also of white quartz. Earlier excavation of six square meter units which took place in 2010 produced trace amounts of Ramah Chert. The Shak Selma site lacked Ramah Chert debitage and tools entirely (Figure 6).

A calcined bone sample collected in May 2022 from the Napeu Atik pit rim returned a date of 6200+/-30 RCYBP (BETA - 644564.) The date, once calibrated, was 7140-6995 calendric years BP (81.6% probability) being slightly younger than that obtained from two identically dated wood charcoal samples in and beside the quartz pit at GlCs-22, the Shak Selma site. The Shak Selma quartz pit charcoal samples both returned ages of 6380+/-30 RCYBP which when calibrated produced calendric dates of 7338-7259 cal BP (67.8% probability) and 7417-7352 cal BP (27.6% probability.)

Observations on an emerging picture of early occupations in the Kamestastin region

We are now approaching a quarter century of Tshikapisk investigations in the tundra and taiga regions of Kamestastin and the broader landscape in which it is set. Canoe borne surveys have been conducted in places as widely separated as Shapeiau, Kanahaskuanakanist, Uspuakanish, the Border Beacon to Chapiteau section of an Innu travel route going to Kauashekutakepenants/ "Whitegull Lake", and the system of lakes which flow north to south to the immediate east of Mushuaushipu/George River (the largest of which is Napeu Kainiut) and the waters of which empty into Mistanipi before flowing west towards Mushuau Nipi/Indian House Lake. However the bulk of the detailed archaeological work has been conducted at Kamestastin and the caribou ambush sites at its outflow narrows in particular. Most of the latter (but not all of them) belong to a suite of very early sites dating from c 6500 to 7400 calibrated yrs BP. It is now possible to discern some fairly clear differences amongst the excavated Kamestastin sites which belong to this period; sites dated very similarly can present with markedly different tool stone choices and thus the expectation that sites of identical or near identical ages would look the same has sometimes turned out to be mistaken. Broadly speaking, the early sites at Kamestastin East fall into three different categories in which the relative amounts of Ramah, white quartz, and grey chert are starkly dissimilar. The first category, restricted for the moment to the south side of Kamestastin outflow narrows and locations along the valley which is an overland route to the main lake, is that of heavily *quartz dominant with Ramah present* and includes the Tuamish GlCs-04, Tshetshuk GlCs-25, Tshumushumapeu GlCs-01, Natakameimupan GlCs-27 and Uitshitshemushish GlCs-26 sites. The second category, also on the south side of the narrows, is that of *abundant white quartz with minimal or absent Ramah Chert and limited quantities of grey chert* and is represented by the Shak Selma GlCs-22 and Napeu Atik GlCs-21 sites. These latter two sites are, to date, the oldest of our sites at Kamestastin (Shak Selma 6380 +/-30 RCYBP Beta 52280 on wood charcoal and Napeu Atik 6200 +/-30 RCYBP Beta 644564 on calcined bone – both dated samples were from pits associated with small combustion features.) The occupants of both of these earliest sites employed white quartz for the manufacture of finished formal tools and not simply as strike-a-lights or as expedient blades picked out from the debris of smashed quartz. A notable material present at Shak Selma but absent at Napeu Atik is a very fine purple tinged glass like material which may be a kind of smokey quartz (Arbour et al. 2013).

The third category is presently represented by Mistanuk GlCs-08 and Ushikuesh GlCs-57, two sites on the north side of the Kamestastin outflow narrows *where white quartz use continues in diminished quantity but where Ramah Chert massively predominates*. Other materials (eg. black chert and red quartzite) are present but only in very limited amounts.

The above data points to a record which is more complicated than a simple progression from an era without Ramah to one in which it becomes the dominant lithic choice. The two oldest Kamestastin sites discovered so far, and for which we have radiocarbon dates, have either only trace amounts of Ramah Chert (Napeu Atik) or none at all (Shak Selma.) The presence of grey chert may be diagnostic of this period and though it still has no radiocarbon date, the Pess site (GlCs-10) may belong with Shak Selma and Napeu Atik in the earliest category as Ramah is absent at the Pess site (Arbour et al. 2013). This potential is based on its quartz and grey chert dominated assemblage amongst which was a stylistically early nipple based point of dark chert; the nipple is practically embryonic with a poorly developed nub and shares stylistic affinities with the similar looking grey chert biface base recovered at Napeu Atik.

After this earliest period we have a number of slightly younger sites which, though they appear broadly coeval, fall into two separate groups very different from each other when it comes to usage/ choice of different tool stones. At the Kamestastin outflow narrows, the early sites with profuse Ramah are found only on the North side of the narrows. Apart from the dramatic difference in the amount of Ramah chert (from a light scattering on the south side sites to heavy consumption at the sites on the north side of equivalent age), groundstone use doesn't seem to be the same. Groundstone semilunar knives or ulus are present at all of the sites on the narrows south side that date to about 7000 to 6700 calibrated years BP. In spite of the presence of slate debris, perhaps broken off during the use of celts, ulus or ulu fragments were absent from those on the northside viz. Mistanuk and Ushikuesh. On the other hand a semilunar knife made from *Ramah* was recovered from the Mistasuapi component at the Mistanuk site.

The locations of the suite of early sites at the east end of Kamestastin also differ markedly. Ushikuesh, Mistanuk, and Shak Selma are set in high elevation locations with expansive views over the narrows and the crossing areas favoured by caribou. Napeu Atik sits on a high elevation terrace midway down the valley. The view would be suitable for monitoring arriving caribou as they descended from the mountains and before they had reached the waters or ice surface of the outflow narrows. One site (Tshumushumapeu) is set beside a cove on the south side of the narrows only a few meters from the spring high water mark and just above the sandy beach from where the valley begins which affords a short cut to the main lake. It would have been a good place to both launch and beach canoes. Two sites (Natakamaeimupan and Uitshitshemushish) are actually set inland about a kilometer from the main lake and are located beside a small brook on the valley floor. Visibility of the approaches used by caribou would have been limited but these locations are amongst the most sheltered and may indicate late season or even winter occupations. Finally, two sites (Tshetshuk and Tuamish) are set just above a sand and gravel beach on the main lake. Their exposed position suggests a mid to late summer occupation where breezes would have provided relief from black flies.

Sheshatshit

FjCa-51

Activities undertaken in Sheshatshit in the later summer and fall of 2022 included participation in the crew conducting excavation of the remaining 2 housing lots in Area 3, north of Masseuk Road. Masseuk is the thoroughfare which crosses the very large FjCa-51 site. FjCa-51 is located on a terrace series on the southward facing portion of what was at the time of the occupations a point upon an island.

A full account of the results of this work, for which Scott Neilsen was the permit holder, will follow at a later date. I will therefore restrict myself to making brief allusion to two subjects: the first is a remarkable feature on and below a bank which lies at the fringe of remaining forest cover on the north side

Figure 7: Perforator made from local quartzite, sourced from cobble bank above FjCa-51 2022 excavation area.

of this part of FjCa-51. This seemed from the evidence of the profuse quartzite and rhyolite debitage strewn amongst large cobble fragments to be a location where lithic raw materials had been sourced and worked from what had likely once been an exposed cobble bank. Among the hundreds of flakes and shatter were a number of bifaces, mostly knives and points but including an interesting bifacial piece which probably served as a boring tool or perforator, perhaps for working wood or bone objects (Figure 7).

Unfortunately the lithic sourcing area fell just outside of the gridded area, just a little too close to the point where the bank stepped up to the next terrace. It was thus discovered very late in the 2022 excavation activity at FjCa-51 and was initially revealed by a swipe from a bulldozer blade during grubbing undertaken prior to housing construction. Fortunately most of the area where the lithic material was concentrated escaped the disturbance caused by the grubbing and was subsequently taped off to protect it from further impacts. In some places, the amount of material covered the surface entirely and so was plotted by 10 centimeter square using a drawing frame. The drawing frame was also employed in the disturbed area where it was used to conduct a controlled collection of material some of which may have been moved from where it was originally deposited.

The second item (or rather items as there were two) consisted of a pair of claws lying on ground lightly stained with red ochre in association with a charcoal concentration and a number of small flakes of blue chert in Area 17 of FjCa-51. Area 17 was mainly excavated during the 2022 field season (Figure 8). They appear to be Lynx claws but the items await further analysis and dating. To say the least, the appearance of these organic items was unexpected and raises questions as to whether they are much younger than the presumed age of the context in which they were found (an occupation associated with tools and debitage of "Saunders" Chert) and whether they could have been transported from nearer the surface to the leached grey sand level by processes for the moment undetermined (e.g. burrowing

Figure 8: Probable Lynx claws from FjCa-51 Area 17, Sheshatshit, August 2022.

Figure 9: Heavy excavator knocking down trees for access way for geotechnical drilling rig across Sheshatshit high terraces in July 2022.

small mammals.) The answer to whether or not the claws do belong to the same period as the lithics they were found with must await a radiocarbon date.

Geotechnical test pitting

While excavation of the remaining housing lots in FjCa-51 was underway, I was asked on a couple of days to monitor geotechnical drilling. The drilling was being conducted in the still forested areas to the south of the excavated part of FjCa-51 south of Masseuk Road. This happened "late in the day" and in a less than perfect context as I only became aware of the activity once the heavy machinery was already on site. None of the access paths had been cut over and were actually created by a heavy excavator pushing down trees, some of them of a substantial size, and forcing a way in. Though by no means a recommended approach, where the trees snapped off at or close to the surface there did not seem to be disturbance to the leached grey sand and cultural materials bearing layer. Where the root systems were torn up, which did happen (though less often), disturbance of the leached grey sand layer occurred. The actual geotechnical drilling to obtain cores (rather than the operation to create an access path for the rig) caused minimal destruction of the grey sand stratum. In the FjCa-51 area, the leached grey sand is habitually the layer where pre-contact cultural remains occur. However were the drilling to happen in a location where cultural features and lithics were present, this does not guarantee that there would be no damage to historic resources (Figures 9 & 10).

Figure 10: Tree knocked over with root system torn out by excavator, on Sheshatshit top terrace, during creation of access for geotechnical drill rig in July 2022. Note the leached grey sand adhering to some of the tree roots. In Sheshatshit it is habitually on and within this grey sand layer that pre-contact cultural materials occur.

Figure 11: FjCa-79, Shukapesh 3 October 2022: in foreground a pit feature with charcoal and quartzite; at top centre right is the quartzite and grey chert lithic workshop feature.

In the episode of drilling that happened in the summer of 2022, and which I was on site for part of, I did not see any cultural material in the very limited material drawn out as cores. The purpose of the drilling exercise was to answer questions relating to the suitability of locations for housing construction and not ones relating to the presence of historic resources. The cores themselves were quite small, approximately 10 cm in diameter, and usually only one was extracted from each testing spot. It cannot therefore be deduced from the preceding that no such resources are present.

A separate episode of geotechnical drilling took place several months later when more disturbance occurred by the same means and without any precutting of forest cover, nor notice to local archaeologists that it would happen (The area being cored for geotechnical reasons has been slated as a new housing sub-division). By this time, the ground was frozen and partly snow covered. This may have somewhat mitigated the level of subsurface disturbance but this will not be known for certain until the ground thaws and its snow cover melts. In this latter case, large trees were once again knocked over with tracked heavy excavators to make paths for a drill rig to conduct geotechnical coring on the three highest terraces in the Sheshatshit series. It is important to stress that though a limited test pitting exercise occurred in 2016 on what I will here refer to as the Shukapesh terrace, only a relatively small portion of this top terrace was methodically and systematically tested and that portion produced three separate concentrations of cultural material later designated as Shukapesh 1, 2, and 3. The top terrace is the same one which hosts FjCa-79 and FjCa-60, and the important archaic period components Shukapesh 1, 2, and 3.

The next substantial terrace down from the Shukapesh terrace is the one on which components dating to the “Rattler's Bight” period [3450 RCYBP

+/-30 (3830 to 3635 calibrated yrs BP) BETA 43313] were discovered in August 2009. Unfortunately, the fire pit feature from which the dated calcined bone sample, quartzite debitage, and, the probably associated, celt and gouge fragments were obtained, only came to light fortuitously after grubbing. Unfortunately, the feature fell equidistantly between 4 test pits set on a 5 meter grid and was therefore missed by the testing conducted earlier in 2009 in the cut over portion of the terrace. A previously undisturbed and still forested section of the terrace on which sat the FjCa-71 firepit and associated materials lies beneath the Shukapesh terrace. Beyond that, there is first another terrace section which appears on the lidar image of this part of Sheshatshit, and finally a previously undisturbed section of the same principal landform occupied by FjCa-51 south of Masseuk Street. None of the undisturbed portions of the latter terraces of high/known potential have been subjected to archaeological testing. It bears noting however that a householder has removed a portion of the organic overburden on the lowest of these four terraces and trees have been removed from another location on the same terrace. In both of these areas quartzite and chert lithic debitage and tools are visible and, in the larger grubbed area, cultural features including a linear hearth. Debitage is visible in the bank of material pushed up on the west side of the area which the householder grubbed, so the likelihood that the occupations recorded in the excavated portions of FjCa-51 continue in the still forested parts of the terrace is extremely high.

It goes without saying that archaeologically speaking Sheshatshit is an exceptional place. As post glacial isostatic rebound occurred it combined with the effects of marine cut terracing and the ecological attractions of the "Great Outflow" (which is the meaning of the Innu toponym) to create the staircase of occupations which chronicle ancestral Innu history in this place. It is unfortunate that such an archaeologically rich place should now have to face competing and concurrent demands for both housing space and for the documenting of the history which lies buried on these terraces. Each year more of the story is lost. It is not certain that through every period the changing land and waterscapes made the Sheshatshit terraces attractive enough for a complete record to be laid down, but the evidence which has emerged so far suggests that most of it is represented. Terraces with the potential to illuminate one of the most intriguing periods, the transition between the Tshiash Innu (Archaic) and Shashish Innu (Intermediate) have already been impacted by road building, installation of water and sewerage and house construction (most recently last summer) and other higher and older terraces are under immediate threat. It is to be hoped that at some point the dimensions of the reserve will be increased. Present boundaries are likely untenable

Figure 12: Artefacts from October 2022 excavation of Shukapesh 3 component L to R banded rhyolite core; biface fragment of grey cherty material ; biface fragment of grey chert; biface blank of grey chert; quartzite object modified on both lateral edges.

Figure 13: Shukapesh 1 hearth prior to excavation in October 2022.

in the face of a growing population and the fact that substantial acreage is rendered unsuitable for housing by pug/clay and overly wet conditions.

FjCa-79

The fall of 2022 marked a return to the Shukapesh terrace to follow up on a series of positive test pits clustering to the southwest of the linear hearth feature excavated in October 2020 (Jenkinson et al. 2021). This component we referred to as Shukapesh 3. Excavation produced an assemblage dominated by quartzite and a whitish grey lithic material which may be a lower quality chert. There was little to suggest any habitation structure and apart from one pit with charcoal and quartzite debitage there was only one other coherent feature; that consisted of a mass of quartzite and chert debitage including larger chunks and cobble fragments. It seems to represent a lithic reduction workshop (Figure 11). Together with the pit, the latter workshop was the only location at Shukapesh 3 where a concentration of lithic debris suggested something more than a dispersed scatter, what one might actually call an 'event.' For the moment, it may just be that Shukapesh 3, as excavated, stands alone as an area of the terrace where an activities occurred. Perhaps it is associated with the apparent structure at Shukapesh 2, and Shukapesh 3 may therefore be a place where assorted outdoor tasks took place. On the other hand, it remains possible that another living space with a formal hearth and perhaps a living structure is nearby but was missed during the work in 2022. The few artefacts were limited to unfinished crudely made bifaces or biface blanks and blank fragments, as well as a core of banded rhyolite and a cortical flake of quartzite modified on both lateral edges and apparently abandoned when a piece of the distal portion broke during production (Figure 12). All these tools or tool fragments were found with the debitage and cobble pieces around the lithic workshop feature in S8W7 and apart from the lack of the light grey chert like material at Shukapesh 3 (where quartzite dominates) they are strongly reminiscent of the assemblage at nearby Shukapesh 2 (Figure 13).

Before closing down for the approaching cold weather season, we returned to Shukapesh 1 where in 2016 we located a modestly sized linear hearth with two formal tools, quartzite, slate, quartz debitage, charcoal and red ochre (Jenkinson 2017). The tools were a roughly made oblong white quartz biface at the western end of the hearth and lying nearby to the

Figure 14: Western portion of Shukapesh 1 hearth sectioned to show construction atop low sand mound.

eastern end a large ground stone celt of off-white slate (Figure 14). At the time, no calcined bone was noted but two samples of wood charcoal were collected for radiocarbon dating. The latter produced divergent dates though they were taken from opposite ends of the same Shukapesh 1 hearth. An excavation of this hearth was conducted in the fall of 2022. In view of the quite sparse lithic remains around the hearth (mainly quartz chips, slate fragments, and scant quartzite) it was half expected that the combustion feature would contain more in the way of lithics. This proved not to be the case but near the base of the hearth two small pieces of calcined bone were recovered. At time of writing, it is not certain that these cremated bone samples contain enough bone apatite to produce a more reliable date than those two widely divergent dates previously generated on wood charcoal samples (Figure 15).

Figure 15: One of two calcined bone fragments recovered from the Shukapesh 1 hearth during the fall 2022 excavation close to where the charcoal sample (in association with red ochre) was collected in 2016.That charcoal produced a date of 4410+/-30 RCYBP. Once calibrated it gave a date of 5055 -4866 calendric years BP (90.3% probability. BETA 522803.)

Acknowledgements

Thanks are due to the following Napes Ashini, Apatet Andrew, Richard Nuna, Chelsee Arbour, Jodie Ashini, Stephen Loring, Jean-Yves Pintal, Scott Neilsen, Chris Wolff, Gilles Samson, Marcel Ashini, Robert Jenkinson and the people at Borealis and to many others who we apologize for not naming here.

References

Arbour, C., A. Jenkinson, and S. Loring. 2013 Caribou paths and stone hearths: Archaeological fieldwork at Kamestastan, spring 2012. *Provincial Archaeology Office of Newfoundland and Labrador annual reports* 11: 7-23.

Arbour, C., N. Ashini, A. Jenkinson, and S. Loring. 2018 Pour ramener l'ete: A la recherche d'une concordance entre l'histoire innue at l'archeologie. *Recherches Amérindiennes au Québec*: *L'archeologie autochtone: des approaches communautaires et collaboratives* XLVIII (3): 31-44.

Fitzhugh, W. 1976. Preliminary culture history of Nain, Labrador: Smithsonian fieldwork, 1975. *Journal of Field Archaeology* 3(2): 123-142.

---. 1978 Maritime Archaic cultures of the central and northern Labrador coast. *Arctic Anthropology* 15(2): 61-95.

Jenkinson, A. 2011 Summary of Tshikapisk excavations at Kamestastin 2008 to 2010. *Department of Tourism, Culture and Recreation, Provincial Archaeology Office 2012 archaeology review* 9: 81-90.

--. 2017 Tshikapisk activities in 2016: Two Tshiash Innu (archaic) occupations in Sheshatshit and at Kamestastin and some other items of interest. *Department of Tourism, Culture and Recreation, Provincial Archaeology Office 2016 archaeology review* 15: 111-122.

---. 2020 "In the shadow of a great absence": Tshikapisk archaeological research in a period of vanished caribou at two Tshiashinnu caribou ambush sites, Kamestastin 2019. *Department of Tourism, Culture and Recreation, Provincial Archaeology Office 2019 archaeology review* 18: 140-151.

Jenkinson, A., S. Loring, & C. Arbour. 2021. Tshiash Innut at Kamestastin and Sheshatshit. Tshikapisk Archaeology 2020 Research. *Department of Tourism, Culture and Recreation, Provincial Archaeology Office 2021 archaeology review* 19: 140-151.

Wolff, C. B. 2008. *A study of the evolution of Maritime Archaic households in northern Labrador*. Unpublished Ph.D. dissertation, Southern Methodist College, Dallas.

---. 2022. The Longhouses of the Maritime Archaic: Increasing Complexity or Regional Resistance. In More Than Shelter from the Storm: Hunter-Gatherer Houses and the Built Environment, p. 218-242. Edited by Danielle Macdonald and Brian Andrews. University of Florida Press, Gainesville, FL.

Excavating a Semi-Subterranean Dorset House at Skull Island 1 (HcCg-04)

Patrick Jolicoeur
University of Toronto

Figure 1: Skull Island 1, view to the southwest.

There have been a number of advancements in Arctic archaeological research over the past few decades but some basic questions regarding the culture history and chronology of past peoples remain incompletely understood. One issue that has remained unresolved in particular is the archaeological timing of both the Dorset disappearance and the arrival of the earliest Inuit (e.g. Friesen 2020; Park 2016). Furthermore, the southernmost boundary of the Late Dorset along the Nunatsiavut and Labrador coasts remains unclear. These datasets underpin a wide variety of potential research questions, such as the existence and character of Dorset-Inuit interaction, the causes of Late Dorset disappearance, how Dorset exchange networks changed between Middle and Late Dorset "periods", and the relatedness and interactions between the Nunatsiavut Dorset and other Dorset groups in Newfoundland, Nunavik, and the Arctic Archipelago.

In order to address some of these questions, Skull Island 1 (HcCg-04) was selected for intensive excavation during summer 2022 (Figure 1). The previous work at this site indicated a mixed Middle-Late Dorset occupation with the possibility of early Inuit presence as well (Fitzhugh 1981). Resolving questions as complex as how, when, and why a group of people arrived or disappeared from a broad region is not something that can be answered at a single site. Additionally, acquiring high quality and secure chronological data for any single site requires fairly intensive excavation and is more challenging to acquire with traditional survey or test-pitting methodologies. Therefore, Skull Island 1 is one piece of a complex puzzle.

Skull Island Background

Skull Island is vaguely u-shaped with its eastern and western lobes being connected by a small isthmus at the southern part of the island. Skull Island 1 is strategically located on a raised beach ridge in the middle of this narrow isthmus (Figure 2). This affords a great view north towards Dog Island, south towards Sandy Island, and west towards Ford Harbour of Paul Island. The hills on the island's western and eastern lobes slowly decrease in elevation towards the location of Skull Island 1, providing a good

Figure 2: Location of Skull Island 1.

amount of protection from the extreme wind during storms (something the excavation team received first-hand experience with) while also giving good access between the north and south shores of the island. The only challenging part about the location of Skull Island 1 is the extensive boulder shoals on the north and south approaches to the isthmus which makes it difficult to access with speedboats. This also makes it hard to offload field equipment which our team also had first-hand experience with during this fieldwork.

During this project, we excavated for 3 weeks at Skull Island 1. Skull Island itself has a number of interesting archaeological sites. While our team spent most of our days at Skull Island 1, we did take a couple hikes around the island on off-days to observe the other sites. The lack of excavation at most sites makes it hard to fully understand the scope of human presence at the island but it seems to range from Pre-Dorset or Maritime Archaic at some sites (e.g. HcCg-06) to Dorset (e.g. HcCg-15) at others. There are a number of significant Inuit sites as well with the largest found on the western part of the island (e.g. HcCg-09). Skull Island is still visited today by berry pickers and hunters (with snowmobile tracks crisscrossing the beaches surrounding Skull Island 1). What's most impressive about the island is the sheer quantity of artifacts and flakes found in the various sandy blow-outs near its beaches and shoreline throughout the island.

Erosion and Long-Term Stability

Many parts of the raised beach upon which Skull Island 1 sits is experiencing slumping and wind-blown erosion. While sandy blow-outs are common places targeted by surveying archaeologists, it represents, in some cases, a symptom of climate change. Our total station datum noticeably (albeit slowly) slumped while we did our work over the summer. The leading edge of that slumping is currently eroding into the exterior middens of all archaeological features of Skull Island 1 and has the potential to be a significant threat to its stability over the course of the next few decades. While much attention has been given recently to the threat of coastal erosion to archaeological sites, the (admittedly much slower) impact of increasing soil temperature/aridity and the destabilization of beach soil matrices combined with wind-blown erosion partially caused by increased storminess should not be overlooked.

Previous Work at Skull Island 1

This is a site that was initially surveyed by Fitzhugh (1981) and was later briefly test-pitted by Kaplan and Nagle (Kaplan 1989; Nagle 1985). Despite the relatively small amount of excavation, this previous work raised a number of significant questions regarding the site. Fitzhugh (1981) identified two clear house depressions along with a number of surrounding features that might relate to both warm and cold season activity. The previous test pits, two from the interior of House 1 and one from the exterior of House 2, produced mainly Dorset lithic material culture with some flakes of slate material suggesting a possible later Inuit occupation. Fitzhugh largely inter-

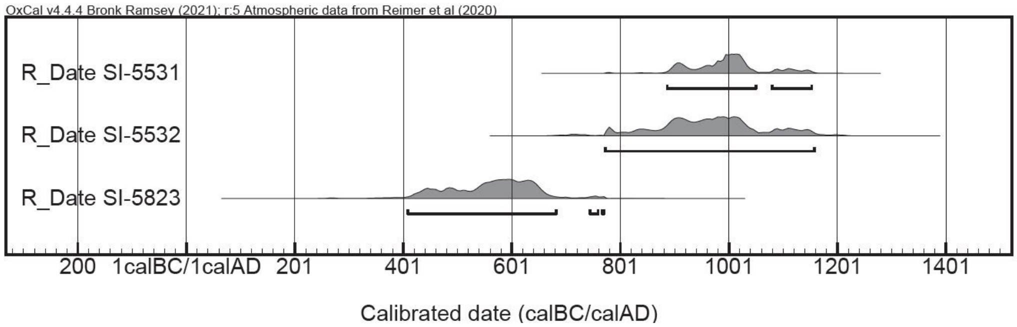


Figure 3: Previous dates collected by Fitzhugh from Skull Island 1. Calibrated with Oxcal 4.4 using Intcal20.

preted the site as most likely Middle Dorset in terms of timing. Kaplan (1989:8) cautions, based on experience at Komaktorvik 1, that despite test pitting results suggesting a primarily Dorset occupation, the house depressions might actually be constructed by later Inuit, integrating material from previous Dorset occupation into their habitation, which is fairly common at many Inuit archaeological sites.

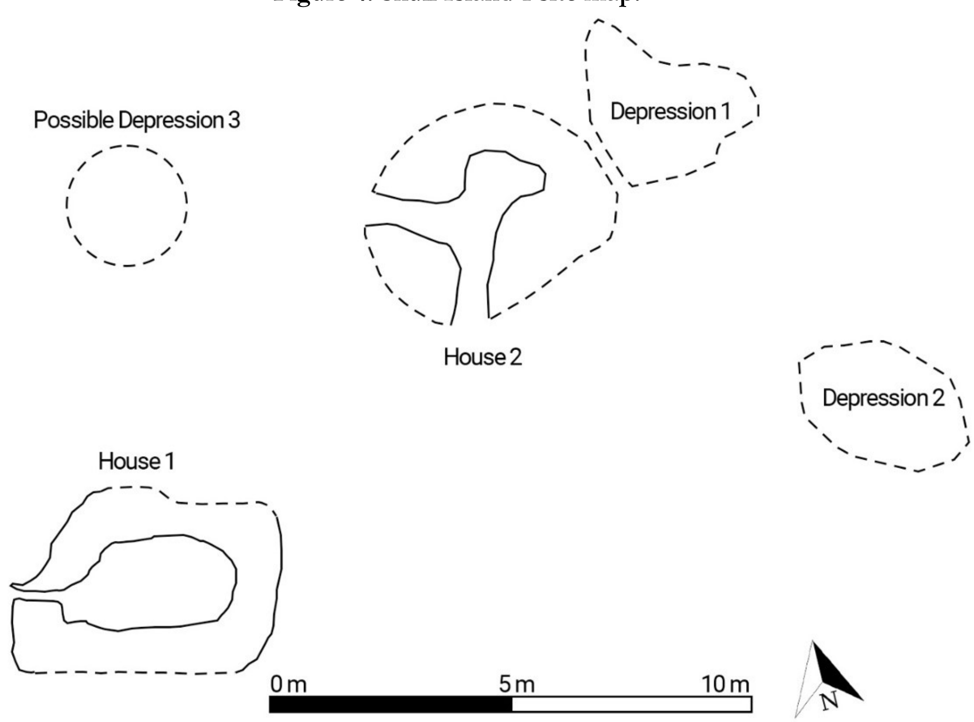
The radiocarbon dates produced from this previous work, however, situates the site at an interesting time period. As seen in Figure 3, the calibrated dates effectively fall between AD 400 to 1200. In terms of known Dorset periods, this is squarely in the Late Dorset period. Organic preservation is generally poor at the site (which was also the case for the 2022 excavation) and most of the previous dates were run on charcoal which might produce older than expected dates depending on the source of the wood that was burned. The existing chronological data is simply insufficient to fully understand who lived at Skull Island 1, when they lived at the site, and how this changed through time.

With this in mind, undertaking an excavation at Skull Island 1 was selected to specifically clarify the chronology at the site, understand whether it was mainly a Middle Dorset occupation or if there is a Late Dorset component, and assess the Inuit presence at the site. This can potentially address questions regarding the Middle-Late Dorset transition, Late Dorset presence around Nain, early Inuit occupation around Nain, and even the presence of any Dorset-Inuit contact in the region depending on the outcomes of the excavation.

Skull Island 1

As it currently stands, Skull Island 1 consists of two deep depressions that can be interpreted as semi-subterranean houses. These were originally labelled as House 1 and House 2 by Fitzhugh. There are also three much more shallow depressions beside the two "houses" which might represent additional habitation areas, different types of domestic features, or simply poorly preserved semi-subterranean houses. Two of these were identified by Fitzhugh and labelled as Depressions 1 and 2. In 2022, we identified a third potential depression (Figure 4). There are a small number of boulder features (e.g. hearths and a tent

Figure 4: Skull Island 1 site map.



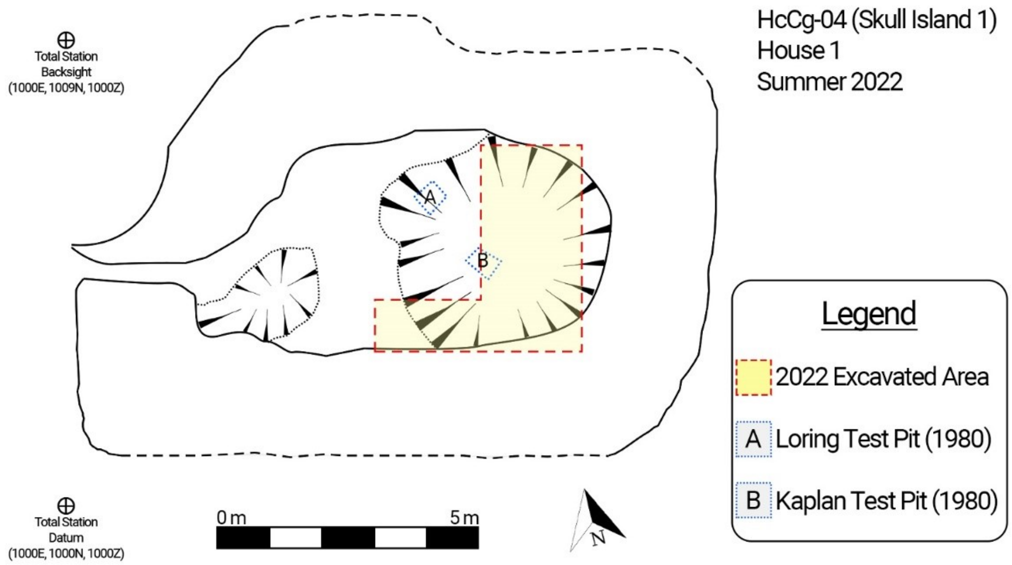


Figure 5: House 1 map.

apex of the walls are effectively the same elevation as the surrounding ground level. This might be because the walls surrounding the depression were never built up beyond ground level, the external middens developed to the same height of the external house walls, or, through some post-occupational process, the external walls were somehow truncated to the elevation of the existing ground surface.

House 1 Excavation

House 1 is aligned roughly east to west with the presumed entry passage facing the west (Figure 6). There is a fairly large berm that runs roughly north to south across the house and separates the supposed entry passage from the living area of the house. Prior to excavation it was unclear if this berm was intentionally built to separate the house into two areas, was the result of post-occupational processes (e.g. wind-blown sand), roof collapse, or due to secondary occupation rebuilding phases. This

ring) that surround the Skull Island 1 depressions as well but may relate to later or modern activity.

Based on surviving surficial features, the site is very complex, likely due to a series of occupations across multiple centuries and wind-blown sand dunes, which makes it hard to understand the contemporaneity or phasing of each of the two houses or the three depressions. Unlike “typical” Dorset or Inuit semi-subterranean features, there are only vague hints of internal features for Houses 1 and 2 (e.g. entry passages, sleeping platforms, etc.). This lack of more obvious internal features might be the result of a number of occupations or rebuild phases at each house. House 2 appears to be more complex than House 1 which is why the latter was selected for excavation in 2022 and will be the focus of this report (Figure 5).

While the internal depth and dimensions for each house are clearly seen, the exact external dimensions of each house is much more challenging to determine since the

Figure 6: Pre-Excavation photo of House 1 (view to west).

type of feature is not seen in House 2 which suggests it relates to post-primary occupation activity.

In total, 10m² were excavated from the house in summer 2022 with the excavation area being placed along the southern wall of the interior of the house (Figure 7). The goal was to hopefully identify internal features or collect material that relates to the occupational phases of the house. The trenches were placed to excavate through a portion of the southern wall as well as the eastern part of the central berm in order to better understand any observable construction phases. All material was excavated according to its stratigraphic layer with all artifacts being recorded by total station. Faunal material and lithic debitage were collected according to their stratigraphic layer and the 1m² unit quadrant they were found in and were plotted by hand. Environmental samples were collected opportunistically when a charcoal rich area was identified and were recorded similarly to the recovered artifacts. Roughly 20cm baulks were left between each 2m x 2m section. Profile drawings were done for each of the walls for the 2m x 2m sections. Photographs were also taken throughout the process. Stratigraphic layers in each unit were given its own ID number with excavation details for each layer being recorded on standardized forms. The occupational layers for the house were occasionally over 20cm thick. Those layers were separated into 10-15cm arbitrary levels with each level being recorded in the same fashion as all other stratigraphic units. All soil was sieved with 6mm mesh and, when possible, 3mm mesh.

Excavation Results

Post-excavation analysis is still ongoing and the results discussed here are just preliminary. Radiocarbon dates have not yet been analyzed which will help clarify a lot of the chronological issues relating to Skull Island 1, House 1.

The excavation revealed very thick occupational deposits that were roughly 1m in depth towards the walls and a little over 50cm in the centre of the house. While the stratigraphic layers were some-

Figure 7: Excavation at House 1 (view to south).

Figure 8: Antler handle preform (or sled runner?). Note the two roughly parallel incised lines on the bottom view.

times hard to discern, there was a clear, darker occupational layer that was underlying a lighter post-occupational layer. The excavation was able to identify in the southeast corner one clear wall cut that was made during the initial occupation of the site and a potentially secondary cut that occurred later. The central "berm" had a very similar stratigraphy to the rest of the site which suggests that it relates to a secondary occupation rather than just being the result of wind-blown sand dunes. Along with the radiocarbon dates, more work unpacking the stratigraphy from the site will clarify how often the house was rebuilt.

No clearly identifiable internal stone features were identified in House 1. There was no obvious stone slab paving and the larger stones recovered during excavation appeared to be more consistent with post-occupation roof or wall collapse. No stones seemed to be arranged as a hearth with no concentrations of charcoal being located around any of the larger stone slabs or boulders. Larger boulders were found in the upper layers that also suggests they relate to roof or wall collapse and not an internal hearth or paving. This was somewhat surprising but given the excavation did not fully excavate the interior of the house, hearths might be located elsewhere in the house. Likewise, given the site appears to have been occupied a number of times, it's not impossible that the stones used for House 1 were removed by subsequent activity at the site.

In total, 270 artifacts were recovered along with 50 faunal bags and 192 debitage bags. 21 individual environmental samples were taken for the purposes of additional radiocarbon dates. The density of material increased as the excavation progressed with the majority of the material being recovered from the darker, charcoal-rich occupation layers. All artifacts were stone except for two bone or antler artifacts. One of the organic artifacts is just a piece of worked bone while the other appears to be some sort of knife handle blank or sled runner (Figure 8). Both are poorly preserved which makes it hard to fully understand their intended use.

There was a good variety of lithic material recovered with Ramah chert being the most prevalent. However, nephrite, quartz crystal, and soapstone were all recovered in good quantities with slate, Mugford chert, and other, potentially exotic, lithic materials making up a minority. A good number of quartz

Figure 9: Ground slate points (first row) with chert and quartz crystal stemmed/notched points (bottom two rows).

Figure 10: Top row: corner-notched stone toggle (?) and a polished slate paddle (?). Bottom row: A large asymmetric sidescraper recovered from the bottom of the excavation just above the sterile sand. It is made from Ramah chert but heavily stained due to the orange sandy soil it was found in.

crystal and nephrite cores or chunks were recovered which seems, anecdotally, more common than what is typical of most Dorset sites.

Nearly all the lithic material culture can be assigned to Dorset with only a handful of material being associated with other traditions. Some relatively small Ramah chert and slate projectile points were recovered which does not resemble typical Dorset material and might relate to Recent Period, Pre-Dorset, or Inuit presence at the site (Figure 9). There was also an abnormally large sidescraper that was recovered towards the bottom of the excavation area which is unlike most Dorset material and might represent an earlier occupation (Maritime Archaic?) (Figure 10). Interestingly, there were also a handful of artifacts that are totally unlike what is typical for a Dorset site. A stone toggle of some sort was recovered which has corner notching that most closely resembles Recent Period flaking styles. Second, a smooth, polished stone "paddle" was also recovered towards the bottom of the occupation layers (Figure 10). I haven't been able to identify other examples of this type of object from other sites in Labrador. Further analysis is required to unpack the affiliations of these objects but given the known extent of human activity on the island, it's not impossible that these uncommon objects were collected or curated by the Dorset inhabitants of Skull Island 1 from the various other archaeological sites on the island.

The majority of the Dorset material culture most closely represents Middle Dorset material from Nunatsiavut and Labrador. Many, but not all, endblades recovered at the site were tip-fluted, suggesting a Middle or Early Dorset affiliation. One Dorset slate endblade was found but finished slate objects or slate debitage was very rare (Figure 11). Additionally, a small number of fragments of rectangular or square shaped soapstone vessels were also found which is somewhat more typical in Early/Middle Dorset rather than Late Dorset contexts (Figure 12). A number of other objects typical of a Dorset presence were

**Figure 11: Eight of the triangular endblades (left) and the one confirmed slate endblade (left) recovered during the excavation.
Note the gouged securing hole on the slate endblade.**

Figure 12: Articulating fragments of a sub-rectangular soapstone vessel recovered from House 1.

also recovered (e.g. endscrapers, microblades, and burin-like-tools) but more analysis is necessary to fully understand the scope of the material culture found at the site.

However, it is not yet possible to exclude the possibility of a Late Dorset presence at the site without radiocarbon dates. Given the very late dates from Fitzhugh's previous work, it might even be possible that some of the attributes associated with Middle Dorset (e.g. tip-fluted endblades) may have persisted in Labrador into what is typically considered the Late Dorset period (i.e. post-AD 500). Again, further analysis is required but the possibility of a late "Middle" Dorset site would contribute significantly to clarifying the poorly understood Middle-Late Dorset "transition".

The lack of any sort of Inuit material other than possibly those small ground slate projectile points (Figure 9) was somewhat surprising. Based on these results, which admittedly only cover a portion of House 1, it seems unlikely that an archaeological Inuit presence was present at the site or was a factor in its construction, despite the valid initial concerns by Kaplan (1989:7).

What is clear based on these preliminary results is that House 1 has a complex history of previous human habitation with a number of different traditions being present at the site. This is unsurprising given the complex nature of House 1's stratigraphy and the apparent scale of human activity around Skull Island more generally. While the surviving architectural features might be most likely the result of a Dorset presence, the site was likely used by a number of different groups across millennia.

A small amount of faunal material was recovered. Much of this material is poorly preserved with a large amount of heavily weathered material not being recoverable. Analysis is ongoing but there appears to be a mixture of terrestrial and marine mammals with some smaller animals, such as birds or rodents. As with the artifacts, density of faunal material increased with depth. Undoubtedly, excavations targeting the exterior of the house would produce a larger assemblage of faunal material.

Conclusion

Analysis of Skull Island 1 material is ongoing but the site has the potential to contribute to our understanding of the chronology of Dorset groups around Nain. Targeting the interior of the house has clarified some of its occupational phasing with additional radiocarbon dates helping resolve the timing of those phases. Further single-site excavation projects will be needed throughout Nunatsiavut in order to generate the data necessary for addressing important themes such as the Middle-Late Dorset transition, the disappearance of Late Dorset, and the archaeological evidence of Dorset-Inuit contact.

Acknowledgements

This work was supported by a Wenner-Gren Post-PhD Fieldwork grant along with a SSHRC Postdoctoral Fellowship. The excavation was undertaken by myself, Zoe Helleiner (MUN), and Max Goranson (University of Toronto). The Northern Scientific Training Program provided generous financial support for both Zoe and Max during the fieldwork. Zoe and Max are excellent archaeologists, never complained, and somehow still had energy at the end of the day to run up the hills of Skull Island. An immeasurable amount of gratitude is owed to Mike Pilgrim (Nain). He was our bear guard during the entire excavation but went above and beyond what was expected. His good humour and friendly demeanour (and strong back) made the challenges of getting to and staying on Skull Island much more bearable (no pun intended). Thanks must be also given to the Webb extended family more generally though who provided transport from the airport and came to see us during our time on the island. There is not enough space to express what the support from Mike and family meant to myself and this project. William Ikkusek facilitated the transport to the island which was greatly appreciated by the whole team. The support from Lena Onalik and team at the Nunatsiavut Archaeology Office was also very appreciated at every phase of the project. Finally, thank you to Bill Fitzhugh for providing past excavation notes and thoughts about Skull Island 1.

References

Fitzhugh, William. 1981. Smithsonian Archaeological Surveys, Central and Northern Labrador, 1980. Archaeology in Newfoundland and Labrador 1980, Annual Report 1: 26-47.

Friesen, Max. 2020. Radiocarbon Evidence for Fourteenth-Century Dorset Occupation in the Eastern North American Arctic. American Antiquity 85(2): 222-240.

Kaplan, Susan. 1989. The 1987 Charles L. Stewart Expedition: A Preliminary Report.

Nagle, Christopher. 1985. Lithic Raw Materials Resource Studies in Newfoundland and Labrador: A Progress Report. Archaeology in Newfoundland and Labrador, 1984, Annual Report Number 5: 86-121.

Park, Robert. 2016. The Dorset-Thule Transition. In The Oxford Handbook of the Prehistoric Arctic. Friesen, M. and Mason, O., eds. Pp.807-826. Oxford: Oxford University Press.

Twin Falls Soil Analysis and Drone Imagery Updates

Fink Raymond Juhl[1], Steffen Tjøtta Bakke[1], Johan Eilertsen Arntzen[1], James Williamson[2] & Anatolijs Venovcevs[1]
[1]UiT: The Arctic University of Norway
[2]Memorial University of Newfoundland and Labrador/Nunatsiavut Government

Introduction

In 2021, Anatolijs Venovcevs and James Williamson conducted a one-week survey at the mothballed hydroelectric plant and associated community at Twin Falls, Labrador (Venovcevs and Williamson 2022) (Figure 1). The fieldwork provided detailed documentation on the industrial and settlement areas of the site through a UAV survey and surface documentation of visible remains while producing promising results from limited photogrammetry and test pitting. However, a few vital issues remained unresolved – namely a proper colour correction of the drone imagery, the original function of the remaining buildings, and the results of the soil samples collected from two test pits near Building 1. This report is meant to tie up those loose ends.

The history, geography, and conditions of Twin Falls have been discussed previously and will not be repeated here (see Venovcevs and Williamson 2022). Suffice to say, Twin Falls represents a significant contemporary heritage site of a former hydroelectric community and associated industrial facility dating from 1959 with the start of construction to 1972 when the community was demolished and the plant perpetually mothballed. Despite the rapid rise and fall of one of Labrador's first industrial towns, a dispersed community of former residents and their descendants continues to exist with ties and memories of the place.

Figure 1: Location of Twin Falls within Labrador (map by Anatolijs Venovcevs).

Colour Correction

The 2021 report offered only preliminary drone imagery of the work camp, settlement area, the power plant, and the dams (see Venovcevs and Williamson 2022:261-264 for details on how these were collected and georeferenced). While the images produced were sufficient for the subsequent publication, the automatic light settings used to mitigate the effects of moving clouds over the surveyed areas, nevertheless produced colour balancing issues that could not accommodate for the variations. These variations caused some photos to appear in different shades showing overlapping areas. A programmatic solution was necessary as we had to edit each photo.

Over the previous year, James Williamson used R Studio to standardize the images by applying histogram equalization using the base R and jpeg packages (R Core Team 2013; Urbanek 2021). Histogram equalizations have been regularly used to improve imagery by re-balancing pixel value counts towards mid-values (Richards & Jia 2006).

Afterwards, he used Agisoft Metashape to prepare the 3D models for the features (Agisoft LLC 2022). The models were processed at a "High Quality" through every option. He then placed the control markers on the appropriate points in the model and checked to ensure they were correct. The models had an average spatial error of less than five centimetres. The next step was to create the export rasters: a DEM and an orthophoto mosaic were generated. These options were all set within a batch process.

The rasters were exported to QGIS, which James used to reproject the data from the original WGS 84 coordinates to the Pseudo-Mercator Projection (QGIS.org 2020).

One thing to note about the new colour corrected imagery is that there is a difference between the colour of alders in the former settlement (greying-purple) and those in the former reservoir (greenish-yellow) (Figure 2 and Figure 3). The difference might be from the relative nutrient levels in the soil leading to differential periods of leaf growth in early June. Photographs from the Twin Falls settlement when it was occupied shows the area as grubbed off and covered with gravel whereas the reservoir was simply filled with water – leaving behind the original nutrient layer.

Building Identification

Since the time of the initial investigation, members of the former Twin Falls community have been engaged to identify the remaining and absent buildings at the former settlement. Namely, Sharon Montague, Joan MacLean, Stan Baikie, Frank Hennebury, Tom Frost, and the rest of the "Twin Falls, Labrador" Facebook page were instrumental at having the buildings identified. These can be seen in Figure 2 and Figure 3 on the new colour corrected imagery. The correlation of field designations for buildings (Venovcevs and Williamson 2022, 267) to the buildings' original functions are summarized in Table 1.

From this, it can now be said that the test pits excavated in 2021 were adjacent to the Recreational Centre. Test Pit 1 was excavated by the door in the southwest corner of the building and Test Pit 2 was excavated within the former greenhouse alcove in the southeast corner (Figure 4). The identification of the former greenhouse would explain why Test Pit 2 produced architectural remains in the form of wood and asbestos (Venovcevs and Williamson 2022, 271).

Methods

On June 8, 2021, Anatolijs Venovcevs and James Williamson collected five soil samples from test pits – two from Test Pit 1 and three from Test Pit 2. In Test Pit 1, the soil samples were taken from the east profile at 18 cm and 38 cm (Figure 5). In Test Pit 2, the soil samples were taken from the east profile at 12 cm, 29 cm, and 52 cm (Figure 6). These were sent to the archaeological laboratory at UiT: The Arctic University of Norway and analysed by Steffen Tjøtta Bakke and Fink Raymond Juhl as part of the course "Introduction to laboratory archaeology and soil chemical analysis" supervised by Johan Eilertsen Arntzen. While these soil samples are too few to provide any definitive knowledge on function and distribution of activity areas at Twin Falls, they may offer an idea of what can be expected if a larger excavation and/or soil sampling survey were to take place at the site.

Table 1: Structural Remains at Twin Falls.

Designation	Foundation	Size in feet	Surface features	Function
Building 1	Concrete	100 x 40	Tile and wall outlines, utilities	Recreational Centre with greenhouse attachment
Building 2	Concrete	70 x 30	Tile and wall outlines, utilities	Arch Goudie School
Building 3	Concrete	100 x 25	Tile and wall outlines, utilities	Grocery Store
Building 4	Concrete	140 x 40	Utilities, machine pit, few pieces of hardware	Garage
Building 5	Concrete	85 x 20	Many pieces of hardware, pull tabs and bottle cans	Carpentry Shop
Building 6	Concrete	20 x 16	Nails, melted lead, glass, charcoal, large pieces of machinery	Pump House
Building 7	Concrete	115 x 40	Wooden supports, couple pieces of hardware	Fuel Storage and Garages
Building 8	Asphalt	95 x 40	Empty	Office
Building 9	Asphalt	(135 x 40) in three parts	Couple pieces of hardware	Mess Hall

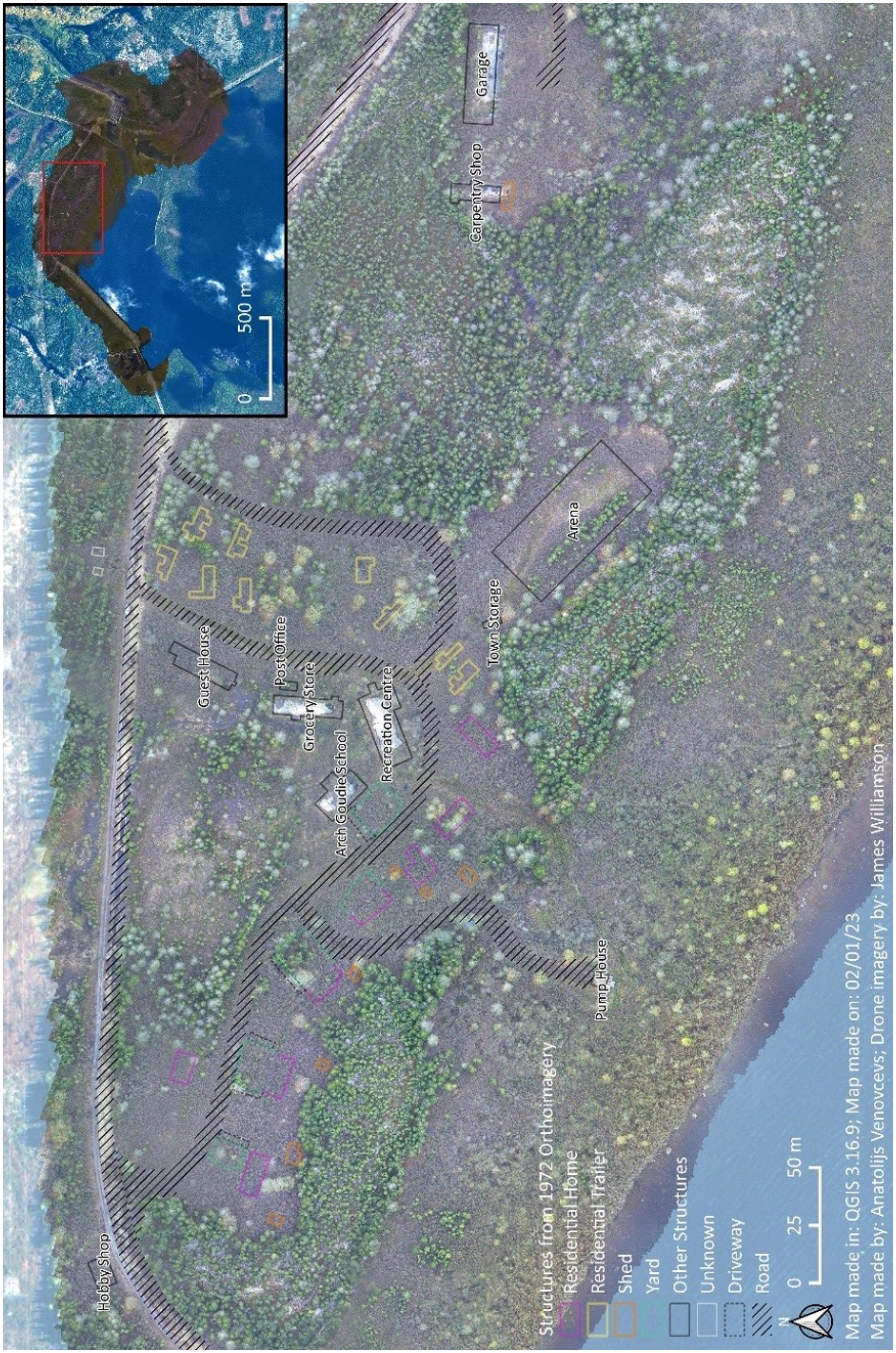


Figure 2: Twin Falls settlement area (map by Anatolijs Venovcevs, colour balanced imagery by James Williamson, structure identification by Twin Falls descendant community).

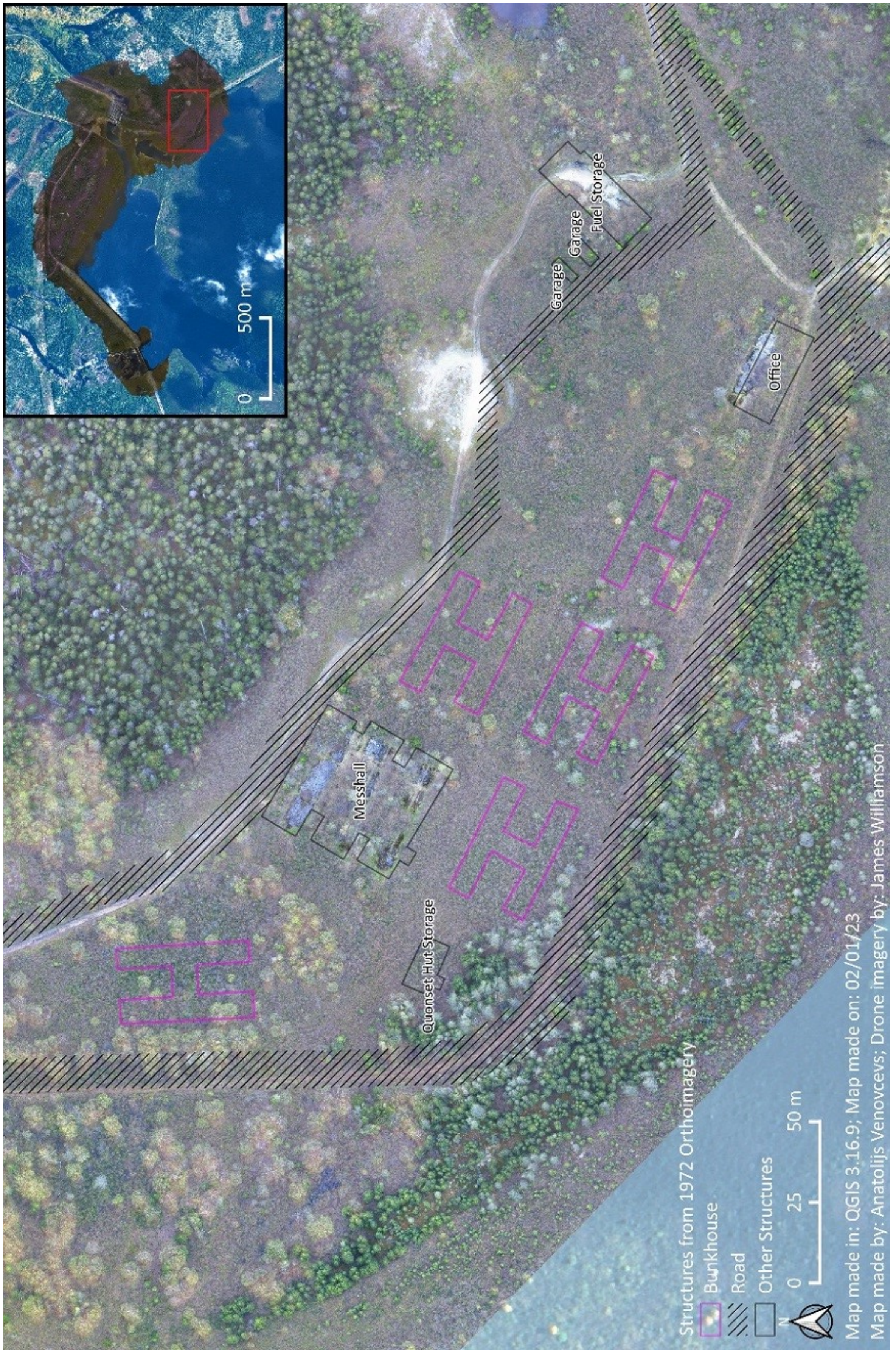


Figure 3: Twin Falls work camp (map by Anatolijs Venovcevs, colour balanced imagery by James Williamson, structure identification by Twin Falls descendant community).

Figure 4: Location of Test Pit 1 and Test Pit 2 by Building 1 – the Recreational Centre (map by Anatolijs Venovcevs, imagery by James Williamson).

Prior to analysis all samples have been dried to constant weight at room temperature, visually described, homogenized, and finally passed through a 1.25 mm sieve. The analytical procedures undertaken were as follows.

First the soil pH was analysed which is indicative of the preservation conditions for archaeological artifacts, like for example bone, shell, and iron. Analysing the pH is also important to evaluate the applicability of different soil analysis procedures.

The soil pH was determined by weighing up 10 g of homogenized soil from each sample in separate beakers. A 0.1 M potassium chloride solution was added to each sample with a ½ soil to solution ratio. The beakers were then moved to an orbital shaker for 30 min and left to settle for another 30 min. The soil pH was measured using a five-point-calibrated glass electrode. This procedure was the same for each soil sample, except sample nr. 2 which had a high proportion of organic material. Because of this the sample had to be centrifuged at 2800 RPM for 5 additional minutes prior to the PH measurement.

To get the soil phosphate levels we used the Olsen soil sample test for plant available P by sodium bicarbonate extraction (Olsen et al. 1954, Olsen 1982). The first step was to measure up 1 g of homogenized soil into a 40-ml Erlenmeyer flask, then adding 20 ml of a 0.5 N sodium bicarbonate extraction solution. The flasks are then covered and moved to an orbital shaker for 30 min. It is important that the ambient temperature is stable at 20 C for all steps of the procedure. After 30 min the liquid is moved to test tubes and centrifuged for 5 min at 2800 rpm. 1 ml of mixture was then transferred to medicine cups using a pipet, then 9 ml of deionized water is added. Afterwards 0.125 ml of a 4M sulfuric acid solution was added. The lids were placed on each cup, and they got three shakes before being left alone to develop CO_2. Next, 0.4 ml of an ascorbic-acid solution and 0.4 ml potassium antimony tartrate solution are added. Afterwards the samples were all placed on the

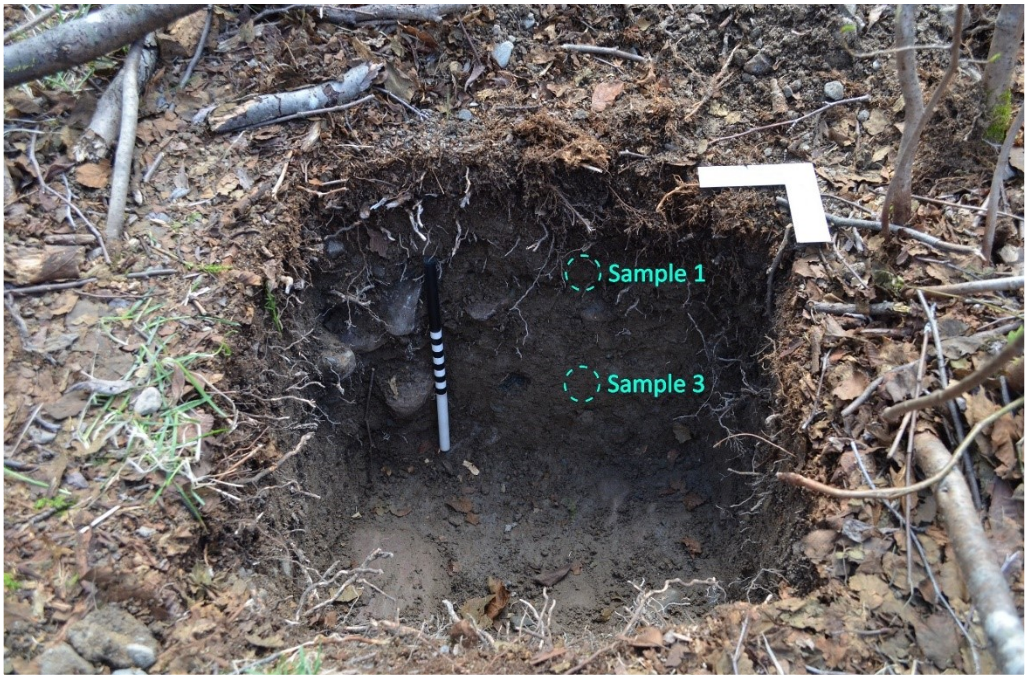


Figure 5: Sample 1 and Sample 3 within Test Pit 1 (photo by James Williamson, figure by Anatolijs Venovcevs).

orbital shaker for 10 min, after the shaking they got to stand still for 20 min to develop colour by molybdenum blue reaction. Phosphate content was determined using a standard solution made up from dihydrogen phosphate and 0.1 M sulphuric acid solution. The readings were done using a spectrophotometer operating at a wavelength of 880 nm. The Olsen method recommends using 5 g of soil, but we only used 1 g, this might give somewhat poorer repeatability.

Magnetic susceptibility is the act of measuring how 'magnetisable' different materials are. Different materials, like minerals and/or crystals, all have varying levels of attractions with magnetism, and when these materials get interacted their susceptibility also gets affected. For instance, human actions, like burning and waterlogging, will change how magnetizable these materials are. MS levels in anthropogenic soils are influenced by past human activities and have the potential to explain and delimit specific types of activities or events, especially those connected to the use of fire and heat (Dearing 1999).

For the analysis we used a Bartington MS3 meter and a MS2B laboratory sensor (Dearing 1999). To get accurate data 10 g of homogenized soil was put in individual plastic containers before being analysed one by one. To get the correct MS value one must account for the different masses and shapes the samples have. Identical 10 CC sample cups were therefore used. The reading time for each sample was 1 second, and the instrumental drift between each sample was corrected. When using the calculations described by Dearing (1999) this then give a mass specific MS result of (χlf 10–8 m3 kg–1) SI units per 10 g soil.

Loss on ignition (%LOI) is used to determine the amount of organic material contra mineral within a sample. This is done by comparing the weight of each sample before and after controlled incineration. This way the total amount of organic carbon (OC) lost under the treatment can be calculated (Reitz and Shackley 2012).

Figure 6: Samples 2, 4, and 5 within Test Pit 2 (photo and figure by Anatolijs Venovcevs).

Porcelain crucibles were weighed and filled with 5-10 grams of soil then placed in an oven at 50 C to dry overnight. When the samples reached room temperature, they were weighed with an accuracy of 0.001 grams. They were then placed in a muffle furnace for 1 hour at 250 C, then 3 hours at 550 C. When the time had gone by the door stood open for 15 min to cool down the samples. They were then moved to a desiccator for further cooling and to ensure that the risk of moisture absorption was minimal. After the cooldown they were again weighed to compare the weight before and after.

A Portable X-Ray Fluorescence Spectroscopy (pXRF) can analyse different elemental compounds of a material. This makes it possible for archaeologists to map out areas based on chemical compounds in soil. Human activity can increase the organic content in soil and modify the concentrations of elements such as sulphur and phosphate, which are linked to waste management practices. Industrial activities can also lead to increased levels of heavy metals such as lead or mercury. Analysing these elements can for example be used before excavations to get a better understanding of what might be underneath the ground (Williams, Taylor, and Orr 2020). A pXRF analysis can also be used to support data gathered from magnetic susceptibility by identifying the magnetizable compounds.

The analysis was done using the Thermo Niton XL3t GOLDD+ analyser. The soil was mounted in prolene-film covered sample cups prior to analysis. The pXRF instrument is mounted in a lead covered table stand and controlled remotely by a computer to increase safety and secure identical analytical conditions for each sample. Each of the samples were analysed twice with two different modes, Mining Mode and Soils Mode. The reading time for Mining Mode was 120 sec and the reading time for Soils Mode was 90 sec.

Results

The different samples have all been run through the same process. The results are presented in Table 2. The position of the test pits are shown on Figure 4. Figures 5 and 6 show the stratigraphy and placement of the different samples.

Test Pit 1 had been placed by the remains of a door in the southern corner of Building 1 (Recreational Centre), this test pit was dug to a depth of approximately 44 cm. The first 10 cm of the test pit was made up of organic material followed by a yellow greying layer, 25 cm thick, of very wet sand mixed with some gravel. Under this there was a layer of assumed construction sand. Some artifacts were found in the layers, a nail, 4 pieces of unidentified wood, 2 pieces of metal, 1 tin foil wrapping and 1 fragment of an outdoor lamp (Venovcevs and Williamson 2021, 271).

Test Pit 2 was placed inside a small addition (a former greenhouse) along the southeast of the remains of Building 1. This pit was dug to a depth of approximately 76 cm. The interesting bit about this test pit was that directly under the organic layer,

Table 2: Soil Sample Data.

Lab nr.	Field nr.	Weight (g)	Soil type	Colour	Observations	Weight, dry	LOI (%)	MS	P	pH
1	TP1 SSI 18 cm E Wall	71.85	Medium sand, Gravel	Light Brown, with greytones	Nail found in the soil bag. Some roots in the soil	17.089	4.842	2394.55	2.334	5.58
2	TP2 SSI 12 cm E Wall	35.68	Fine, sand		Flakes of white paint, bigger pieces of asbesthos. Small pieces of foil	16.867	32.551	477.60	2.537	8.4
3	TP1 SS2 38 cm E Wall	135.8	Medium Silt	Light Brown	Traces of small roots, potentional coal flake	17.161	1.565	2512.25	2.219	5.93
4	TP2 SS2 29 cm E Wall	82.98	Silt to small gravel	Light beige	Specks of small gravel with a few bigger pieces	15.065	2.646	2951.37	2.199	7.13
5	TP2 SS3 52 cm E Wall	124.91	Silt, gravel	Light Beige	Some gravel, traces of small roots, white paint flake	17.088	1.563	2884.05	2.275	7.214

where there was a 4 cm thick wooden layer, this was interpreted as a possible floor. This layer contained a wet and compressed layer of asbestos, approximately 2-7 cm thick right underneath it. Under this layer there was a layer of brown thick sand with bits of gravel, this was interpreted as construction fill. The artifacts pulled out of this test pit were 11 pieces of bathroom ceramic, 6 pieces of wood (one was laminated), 1 piece of floor tile (this tile was suspected to also contain asbestos), and 1 metal 11 cm disk with asbestos corroded onto it (Venovcevs and Williamson 2021, 271).

The 5 soil samples all consisted of medium to fine sand. The colour of the samples varied from a light brown to a greyish colour. Most of the samples also contained some traces of other material than just sand. The 5 samples were taken at different depths varying from approximately 20 cm to 50 cm, in two different test pits. The samples were therefore divided into two sections with the field nr. TP1 and TP2. TP1 has samples 1 and 3, whilst TP2 has samples 2, 4 and 5.

Sample 1 (TP1 SSI) was taken at a depth of 18 cm, from the south wall in Test Pit 1. Sample 1 contained medium sand with some traces of medium gravel, the colour was light brown with some grey tones. The sample's weight was 71.85 grams before the drying process and analysis. The sample contained the remains of a corroded nail; small iron nail fragments can have affected the magnetic susceptibility levels. The magnetic susceptibility of each sample will be discussed further in later paragraphs of the results section. Besides the nail, the sample also contained small root fragments.

Sample 2 (TP2 SSI) was taken at a depth of 12 cm, from the east wall in Test Pit 2. It weighed in at 35.68 grams before drying and analysis. The contents were of fine sand with the same colour tone as previous samples. In the sample foreign objects besides dirt were found. Some of the material were flakes of what seems to be white paint, some bigger pieces of asbestos and the remains of what seems to be some sort of foil.

Sample 3 (TP1 SS2) was taken at a depth of 38 cm on the east wall. Its weight before drying was 135.8 grams. The sample's content was medium silt with a light brown colour. Besides small charcoal fragments, no other contamination was noted. Sample 4 (TP2 SS2) also came from a depth of 29 cm at the east wall. Its weight before the drying process was 82.98 grams. The soil properties of the sample was determined to be silt with some small gravel inclusions. The colour of the sample was light brown with a greyish tone.

Sample 5 (TP2 SS3) was taken at a depth of 52 cm by the eastern wall. The sample's weight before the drying process was 124.91 grams. The colour of the sample material was determined as a light brown colour. Root fragments, gravel and white paint flakes, as seen in Sample 2, were noted (TP2 SSI).

The soil samples that were taken during the preliminary survey at Twin Falls all vary in levels of pH from 5.6-8.4. With Sample 1 (TP1 SSI) having the lowest value of 5.6 and Sample 2 (TP2 SSI) having the highest value of 8.4. This high pH level in Sample 2 could be explained by the higher levels of calcium documented by pXRF (Mining Mode) analysis. Sample 1 and 3 had lower pH than the other making them more acidic than the rest. Samples 4 and 5 had a more neutral pH level close to 7, Sample 5 was a little higher than 4. It is worth mentioning that the Olsen P extraction method used is not suitable for acidic soils (pH<5.6). The high pH level in Sample 2 (TP2 SSI) could be influenced by the contamination of foreign material in the sample (asbestos and paint flakes) that was noted during the homogenization process.

The addition of organic matter to most forms of soils will, in some way or another, significantly alter the forms, interactions and redistributions of phosphorus (Holliday & Gardner 2006). The organic material found in the samples varies between 1-5% besides Sample 2 which had a percentage close to 33%. Sample 1 (TP1 SSI) had a LOI percentage of 4.8%. Sample 2 (TP2 SSI) had a LOI percentage of exactly 32.5%. Sample 3 (TP1 SS2) had a LOI percentage of 1.5%. Sample 4 (TP2 SS2) had a LOI percentage of 2.6% and lastly sample 5 (TP2 SS3) had a LOI percentage of 1.5%.

The amount of soil phosphorus is a significant indicator of past human activity among not only agricultural and pre-agricultural societies but also within contemporary archaeology (Grabowski 2012; Grabowski et. al. 2014, 7-13; Figenschau and Arntzen 2019, 134-148), which is why using it as a method to measure the level of activity in the area around Twin Falls can lead to a more detailed understanding of different human activities during the time of settlement. Many chemical elements deposited in the soil caused by human activity are volatile and more ubiquitous than phosphorus, which remains relatively stable over time. Therefore, the means of detecting phosphorus becomes important in identifying former activity areas during archaeological investigations.

The samples from Twin Falls yielded very low traces of phosphorus. Most of the samples contained levels of phosphorus under 3 mg, with the highest level being Sample 2 (TP2 SSI) with a level of 2.53 mg. These results are verified using pXRF and can therefore not be attributed to methodological errors in the laboratory process.

The results with magnetic susceptibility range between 2400-2900, besides Sample 2 (TP2 SSI) which has a much lower MS value. With a low value of 478, this may be a result of its high organic content as explained in the organic matter section of the results. The organic material is diamagnetic and will therefore result in a low MS value when run through magnetic susceptibility tests. The higher MS values, however, may indicate that the soil has been subjected to heat and/or fire. But seeing as we again had very little samples and a lack of reference samples this claim becomes uncertain.

Since there are only 5 samples, a statistical treatment of the results is unnecessary. Even though we had few samples, some interesting results were documented during this series of analysis. As stated above, Sample 2 (TP2 SSI) has a higher proportion of organic material and a lower MS level than the other samples. The pXRF results from the mining mode calibration show high levels of sulphur (3640 PPM), high levels of calcium, titanium, and c. 200 PPM of lead (Table 3). Burning may have taken place during the abandonment process – while this conclusion is tenuous at best this is not inconsistent with what has been observed at other buildings at Twin Falls (Venovcevs and Williamson 2022, 269).

Finally, the pXRF soils mode results are optimized towards smaller concentrations of trace elements (Table 4). By putting the samples through this process, we were able to confirm the lead (Pb) contents of Sample 2 (TP2 SSI), which had a PPM of 287. This is a higher level than what is present in the other samples. Sample 1 (TP1 SSI) had a lead level of 44 PPM, the last three samples (3-5) had levels between 14-15 PPM. This high level of lead in Sample 2 could be because of the lead paint flakes present in the sample.

It is worth mentioning the presence of mercury (Hg) in Sample 2 (TP2 SSi) (7.24 PPM +- 3.7). The burning and disposal of certain materials that contain mercury (oil, wood and coal) at the site could have made the mercury airborne. The airborne mercury could have been deposited into the ground in some ways like for example by rain or in the form of dust. The levels that were detected were extremely low and were not detected in any of the other four samples. Which could mean this was not a regular place for deposit, at least not of material containing high levels of mercury.

The results of Sample 2 (TP2 SSI) also detected some small levels of uranium (U) at a level of 6.01 PPM. The other four samples did not detect any levels of uranium. In comparison to the other four samples, Sample 2 (TP2 SSI) also detected significantly higher levels of titanium (Ti). Sample 2 (TP2 SSI) measured in at 20731 PPM, while the other four samples varied between 3611 PPM-4807 PPM. Sample 2 (TP2 SSI) also detected higher levels of zinc (Zn) than the other samples with a level of 1690 PPM. The lowest level detected came from Sample 3 (TP2 SS2) and detected a level of 39 PPM. Sample 5 (TP2 SS3) had a zinc level of 59 PPM and Sample 4 (TP2 SS2) had 89 PPM. Sample 1 (TP1 SS1) had the second highest level of zinc (Zn) with a 472 PPM.

Conclusions

In summary, the last year of work surrounding Twin Falls remained productive in that the drone imagery has been colour corrected while the buildings at the settlement and the work camp have been identified (Figures 2 and 3, Table 1). Meanwhile, the results of the preliminary soil survey show that this methodology can be relevant at this archaeological site. The low levels of phosphorus suggest contemporary waste management practices surrounding the investigated buildings in line with a modern industrial community – the first in western Labrador. Sample 2, taken from Test Pit 2 in the former greenhouse alcove, has a unique chemical profile. Elevated levels of lead, sulphur, high organic content and the presence of asbestos and paint show that both the use phase and the abandonment phase of the site lead to modified soil properties. However, this analysis is preliminary and incomplete given the very small sample – going forward a more comprehensive soil sampling strategy will be needed to employ the potential utility of soil chemical analysis at Twin Falls. One sampling strategy would be to cover large portions of the site with evenly spaced sampling points of 5 – 10 meters using a soil auger. Analysing a large dataset covering a larger area would likely uncover areas of interest where a denser sampling grid could be applicable. It is important to also include sampling points where little or no human activity is to be expected, to get a reference of the natural soil chemical baseline.

At the same time, the results of the preliminary soil survey provide room for serious reflections. As highlighted at the conclusion of last year's report (Venovcevs and Williamson 2022, 274-275), Twin Falls is both a unique and significant heritage site with an interested and active community of living descendants as well as a place with a heavy legacy of contamination that include chemicals and compounds such as lead, asbestos, and PCBs. As such, it serves as

Table 3: pXRF (Mining Mode) Measurements in PPM.

SAMPLE	Al	Al Error	Bal	Bal Error	Si	Si Error	P	P Error	S	S Error
1	25007.53	803.96	684614.44	1461.63	208966.48	1344.08	1352.76	202.82	807.42	62.41
2	19138.14	837.2	714128.44	1244.19	138006.3	1166.3	1802.29	213.19	3640.39	111.53
3	25057.11	825.87	659255.81	1544.48	249517.44	1500.83	1411.77	227.61	153.82	54.18
4	28732.69	892.81	674561.44	1528.26	206570.59	1368.95	1699.02	213.15	414.47	59.49
5	29588.83	855.6	677010.63	1505.65	218119.95	1379.27	1312.16	205.44	215.85	53.01
SAMPLE	Cl	Cl Error	K	K Error	Ca	Ca Error	Ti	Ti Error	V	V Error
1	<LOD	44.37	12059.38	230.06	19675.03	438.89	3219.49	70.97	134.27	34.69
2	429.83	33.27	8945.81	198.72	66302.88	741.38	16170.81	159.53	200.48	59.22
3	51.62	26.92	13004.03	229.64	16109.06	386.42	3032.21	66.28	120.34	32.47
4	407.73	30.5	12381.72	245.94	22639.72	494.25	2989.46	74.36	162.89	37.35
5	<LOD	53.03	13975.61	245.98	19181.94	434.07	2822.34	66.75	116.44	32.98
SAMPLE	Cr	Cr Error	Mn	Mn Error	Fe	Fe Error	Co	Co Error	Ni	Ni Error
1	122.45	25.75	394.5	74.58	37270.73	319.08	<LOD	118.49	<LOD	39.43
2	92.57	26.75	1113.71	82.49	21751.19	221.62	<LOD	86.55	<LOD	33.49
3	102.12	24.28	351.64	75.85	30518.66	288.6	<LOD	111.73	<LOD	39.45
4	169.03	27.75	586.36	80.75	45318.14	367.39	<LOD	132.27	<LOD	56.53
5	146.69	25.4	489.08	78.5	32958.48	300.33	<LOD	113.62	<LOD	40.41
SAMPLE	Cu	Cu Error	Zn	Zn Error	As	As Error	Se	Se Error	Rb	Rb Error
1	<LOD	24.04	603.93	22.06	<LOD	7.57	<LOD	2.76	41.55	1.82
2	<LOD	21.85	1472.66	30.77	14.45	7.95	<LOD	2.44	27.99	1.41
3	<LOD	34.42	29.01	9.24	<LOD	7.93	<LOD	2.77	37.69	1.75
4	<LOD	24.76	119.04	12.41	<LOD	7.58	<LOD	2.7	48.14	2
5	<LOD	24.16	60.88	10.25	<LOD	7.65	<LOD	2.49	44.48	1.88
SAMPLE	Sr	Sr Error	Zr	Zr Error	Nb	Nb Error	Mo	Mo Error	Pd	Pd Error
1	286.32	5.13	129.62	3.72	18.63	2.24	<LOD	1.75	<LOD	3.31
2	205.03	3.93	107.03	3.08	12.93	1.97	<LOD	1.97	<LOD	4.06
3	284.96	5.14	223.6	4.63	14.53	2.19	<LOD	1.89	<LOD	3.19
4	349.53	5.9	162.51	4.25	17.02	2.28	<LOD	1.89	<LOD	3.27
5	333.45	5.6	84.68	3.33	9.96	2.1	<LOD	1.67	<LOD	3.15
SAMPLE	Ag	Ag Error	Cd	Cd Error	Sn	Sn Error	Sb	Sb Error	Ba	Ba Error
1	<LOD	3.23	<LOD	6.7	<LOD	12.22	<LOD	13.29	630.74	37.85
2	<LOD	3.96	7.96	4.98	<LOD	11.21	<LOD	13.29	189.75	31.7
3	<LOD	3.11	<LOD	6.59	<LOD	12.23	<LOD	13.06	709.69	37.89
4	<LOD	3.14	<LOD	6.98	<LOD	12.65	<LOD	13.76	787.55	40.07
5	<LOD	3.37	<LOD	6.61	<LOD	12.22	<LOD	12.98	786.73	38.31
SAMPLE	Bi	Bi Error	W	W Error	Mg	Mg Error	Au	Au Error	Pb	Pb Error
1	8.66	5.16	<LOD	63.95	4585.99	1491.13	<LOD	7.66	41	5.49
2	<LOD	6.32	<LOD	69.65	6000.49	1977.53	<LOD	6.97	201.27	8.56
3	<LOD	7.37	<LOD	55.07	<LOD	1897.19	<LOD	7.86	7.88	4.28
4	10.24	5.38	<LOD	58.14	<LOD	2209.94	<LOD	7.97	12.18	4.59
5	<LOD	11.15	<LOD	55.27	2711.55	1398.28	<LOD	8.06	7.42	4.2

both an archetype and a foreshadowing of archaeology to come. Given that we are living in an increasingly contaminated world, recent and future heritage is destined to become increasingly contaminated (Holtorf and Högberg 2016; Stewart 2017; Stewart, Jungkind, and Losey 2020; Witmore and Francisco 2021; Kryder-Reid and May forthcoming). This heritage will be both social and scientifically important while remaining harmful and dangerous. Such a reality is not just an opportunity for theoretical retrospection on what type of an "unruly heritage" (Olsen and Pétursdóttir 2016) is being left behind in the present but also a serious methodological provocation for current and future archaeologists. If Twin Falls should be revisited for further excavation and further soil sampling, as it very much should, how can we keep crew members safe from the toxicants that hide within the soil? Clear procedures, guidelines, and equipment are needed to tackle this challenge. In this way, archaeology of the recent past does not just call for new conceptualizations of what can be heritage but also requires us to consider new sets of methods

Table 4: pXRF (Soils Mode) Measurements in PPM.

SAMPLE	S	S Error	K	K Error	Ca	Ca Error	Sc	Sc Error	Ti	Ti Error
1	361.81	199.33	17394.98	270.51	19079.17	201.62	<LOD	67.08	4589.1	94.96
2	2485.77	309.19	11921.26	236.95	65155.59	355.53	138.28	79.77	20731.92	173.05
3	<LOD	233.25	16490.14	251	15325.81	173.87	<LOD	57.73	3611.21	81.5
4	340.44	200.06	19331.31	286.24	18523.41	201.32	<LOD	66.69	3709.7	89.68
5	<LOD	273.87	20914.45	294.73	19311.69	204.02	<LOD	67.25	4807.83	96.85

SAMPLE	V	V Error	Cr	Cr Error	Mn	Mn Error	Fe	Fe Error	Co	Co Error
1	89.81	24.01	51.7	16.48	480.02	52.65	26950.7	220.88	<LOD	128
2	210.26	39.08	<LOD	23.36	977.38	39.38	15819.4	108.02	<LOD	63.53
3	90.72	21.05	45.26	15.23	488.29	36.49	24773.9	146.24	<LOD	85.63
4	98.7	23.33	117.17	17.39	643.92	40.19	32037.4	167.98	<LOD	97.15
5	99.19	24.5	82.84	16.87	597.24	39.12	28406.1	158.35	<LOD	91.52

SAMPLE	Ni	Ni Error	Cu	Cu Error	Zn	Zn Error	As	As Error	Se	Se Error
1	70.25	18.79	26.08	11.34	472.5	17.09	<LOD	6.94	<LOD	3.67
2	17.27	11.19	28.65	7.32	1690.56	19.76	24.01	6.2	<LOD	2.36
3	69.33	12.96	21.6	7.68	39.98	4.89	3.86	2.41	<LOD	2.51
4	97.14	13.6	32.93	8.11	89.54	6.17	<LOD	3.67	<LOD	2.54
5	83.23	13.33	29.22	8	59.79	5.48	<LOD	3.63	<LOD	2.46

SAMPLE	Rb	Rb Error	Sr	Sr Error	Zr	Zr Error	Mo	Mo Error	Pd	Pd Error
1	67.77	3.23	312.49	5.45	227.4	5.14	<LOD	3.91	<LOD	6.53
2	35.64	1.61	198.66	2.79	118.27	2.53	<LOD	2.34	<LOD	5.89
3	57.2	2.08	305.85	3.72	204.88	3.41	3.15	1.78	<LOD	6.66
4	82.06	2.44	302.85	3.74	152.36	3.13	<LOD	2.63	<LOD	6.49
5	72.23	2.32	390.4	4.23	134.64	3.11	<LOD	2.58	<LOD	6.77

SAMPLE	Ag	Ag Error	Cd	Cd Error	Sn	Sn Error	Sb	Sb Error	Te	Te Error
1	<LOD	5.79	<LOD	8.53	<LOD	6.3	16.68	6.77	44.11	13.8
2	<LOD	5.32	<LOD	7.88	<LOD	5.56	<LOD	9.11	<LOD	18.22
3	<LOD	6.07	9.95	5.96	12.32	4.39	20.42	6.96	73.25	14.38
4	<LOD	5.92	<LOD	8.85	10.12	4.37	24.49	7.05	71.81	14.46
5	<LOD	6.32	<LOD	8.88	13.34	4.51	22.06	7.12	82.13	14.82

SAMPLE	Cs	Cs Error	Ba	Ba Error	W	W Error	Au	Au Error	Hg	Hg Error
1	39.27	4.62	584.24	22.9	<LOD	37.3	<LOD	4.12	<LOD	8.73
2	<LOD	6.1	<LOD	27.03	<LOD	24.76	<LOD	2.61	7.24	3.77
3	54.44	4.79	676.58	23.91	<LOD	24.55	<LOD	2.83	<LOD	5.83
4	50.65	4.8	704.06	24.25	<LOD	25.17	<LOD	2.83	<LOD	5.93
5	61.84	4.94	828.47	25.44	<LOD	25.09	<LOD	2.84	<LOD	5.96

SAMPLE	Pb	Pb Error	Th	Th Error	U	U Error
1	44.22	5.53	7.15	3.04	<LOD	6.88
2	287.38	7.52	5.65	2.32	6.01	2.59
3	14.95	2.85	4.15	1.91	<LOD	4.57
4	15.97	2.95	5.04	2.02	<LOD	5.02
5	14.86	2.89	4.63	1.99	<LOD	4.93

and procedures to carry out a toxic archaeology – simply because we must.

Acknowledgements

We acknowledge that Twin Falls lies within the traditional territory of the Innu and the NunatuKavut Inuit. We thank the staff at both organizations for granting Anatolijs and James access to the land in 2021 to carry out this research. We would also like to thank the Institute of Archaeology, History, and Religious Studies at UiT: The Arctic University of Norway for allowing archaeology to run laboratory-based courses like the one that analysed the results presented here. A great deal of gratitude also goes out to Sharon Montague and the Facebook page "Twin Falls, Labrador" for their interest and engagement in the project and for helping to identify the functions of former structures. The 2021 fieldwork that consisted of collected this data was carried out with the help of Memorial University faculty and staff from the Department of Geography, Department of Archaeology, School of Arctic and Subarctic Studies, and the Internationalization Office. This research was made possible through funding by the Norwegian Research Council (grant number 250296), the Social Science and Humanities Research Council of Canada (grant number 752-2020-0447), Institute for Social and Economic Research, and the foreign travel stipend from the Faculty of Humanities, Social Sciences, and Teacher Education at UiT: The Arctic University of Norway.

References

Agisoft LLC. 2022. Agisoft Metashape User Manual, Professional Edition, Version 1.8.

Dearing, John. 1999. *Environmental Magnetic Susceptibility - Using the Bartington MS2 System*. Second Edition. Oxford: Bartington Instruments.

Figenschau, Ingar, and Johan E. Arntzen. 2019. Arkeologiske Undersøkelser av Kalvik Krigsfangeleir. Tromsø, Norway: UiT: Norges Arktiske Universitet, Institutt for Arkeologi, Historie, Religionvitenskap, og Teologi.

Grabowski, Radoslaw. 2012. Phosphate, MS and Macrofossil Analyses of Samples from a German Second World War POW Camp at Sværholt, Finnmark, Fylke, Norway. Environmental Archaeology Laboratory Report nr. 2012-001. Umeå: Umeå University.

Grabowski, Radoslaw, Bjørnar Olsen, Þóra Pétursdóttir, and Christopher Witmore. 2014. "Teillager 6 Sværholt: the Archaeology of a World War II Prisoner of War Camp in Finnmark, Arctic Norway." Fennoscandia Archaeologica 31:3-24.

Holliday, Vance and Gartner William. 2007. Methods of Soil P Analysis in Archaeology. *Journal of Archaeo logical Science* 34:301-333. doi: https://doi.org/10.1016/j.jas.2006.05.004.

Holtorf, Cornelius, and Anders Högberg. 2016. "The Contemporary Archaeology of Nuclear Waste: Communicating with the Future." *Arkæologisk Forum* 35:31-37.

Kryder-Reid, Elizabeth, and Sarah May, eds. forthcoming. *Toxic Heritage: Legacies, Futures, and Environmental Injustice*: Routledge.

Olsen, Bjørnar, and Þóra Pétursdóttir. 2016. "Unruly Heritage Tracing Legacies in the Anthropocene." *Arkæologisk Forum* 35:38-45.

Olsen, Sterling R., C. V. Cole, Frank S. Watanabe and L. A. Dean. 1954. Estimation of Available Phosphorus in Soils by Extraction with Sodium Bicarbonate. *Circular* 939:1-19.

Olsen, Sterling R. and L. E. Sommers. 1983. Phosphorus. In *Methods of Soil Analysis Part 2* edited by A. L. Page (403-430). Accessed online at https://acsess.onlinelibrary.wiley.com/doi/abs/10.2134/agronmonogr9.2.2ed.c24 doi: https://doi.org/10.2134/agronmonogr9.2.2ed.c24.

QGIS.org. 2020. QGIS Geographic Information System. Open Source Geospatial Foundation Project. http://qgis.org

R Core Team. 2013. R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing. http://www.R-project.org/

Reitz, Elizabeth J. and Myra Shackley. 2012. *Environmental Archaeology. Manuals in Archaeological Method, Theory and Technique*. Boston, MA: Springer. doi: https://doi.org/10.1007/978-1-4614-3339-2_5

Richards, John A. and X. Jia (2006). *Remote Sensing Digital Image Analysis: An Introduction*. Berlin/Heidelberg: Springer. https://doi.org/10.1007/978-3-642-30062-2

Stewart, Haeden. 2017. "Toxic Landscapes: Excavating a Polluted World." *Archaeological Review from Cambridge* 32 (2):25-37.

Stewart, Haeden, Kendra Jungkind, and Robert Losey. 2020. "Life on the Fence Line. Early 20th-Century Life in Ross Acreage." *Archaeological Dialogues* 27 (1):57-77. doi: https://doi.org/10.1017/s1380203820000094.

Urbanek, S. 2021. jpeg: Read and write JPEG images. https://CRAN.R-project.org/package=jpeg

Venovcevs, Anatolijs, and James Williamson. 2022. Twin Falls Revisited – A Survey of Labrador's First Industrial Community. In *Provincial Archaeology Office Annual Review 2021*, edited by Stephen Hull and Delphina Mercer (257-278). St. John's, NL: Department of Tourism, Culture, Industry and Innovation.

Williams, Rhys, Gillian Taylor and Caroline Orr. 2020. pXRF Method Development for Elemental Analysis of Archaeological Soil. *Archaeometry*, 62:1145– 1163. doi: https://doi.org/10.1111/arcm.12583.

Witmore, Christopher, and Curtis L. Francisco. 2021. "Through the Jackpine-Paguate Uranium Mine." In *After Discourse: Things, Affects, Ethics*, edited by Bjørnar J. Olsen, Mats Burstöm, Caitlin DeSilvey and Þóra Pétursdóttir (257-281). London and New York: Routledge.

Fieldstone Survey at St. Augustine's Cemetery #1, New Perlican

Robyn S. Lacy
Memorial University

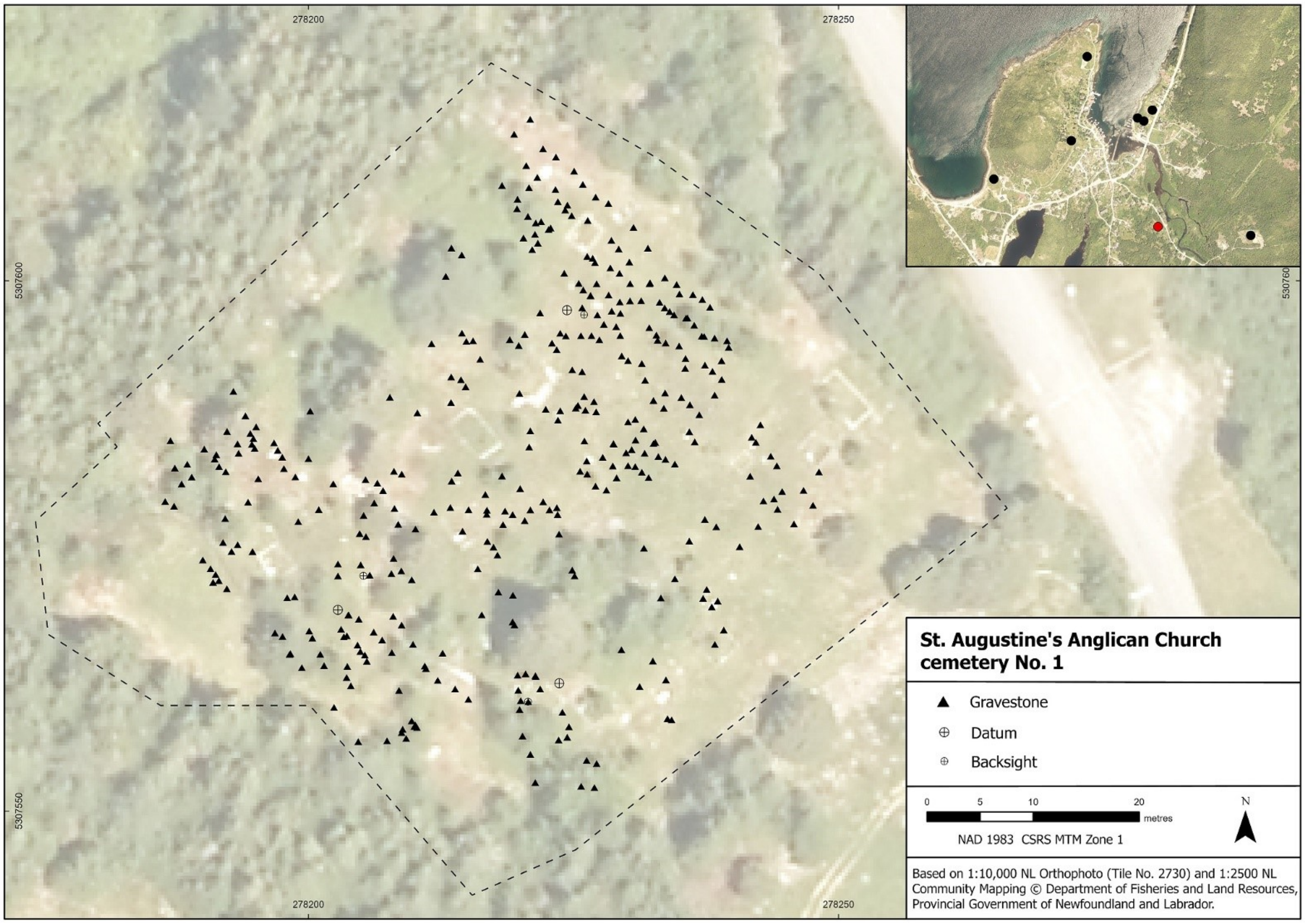


Figure 1: Survey map of the fieldstones at St. Augustine's Cemetery #1.

This field season was the completion of my surveys of the burial grounds in New Perlican, as part of my PhD research, under the supervision of Drs. Barry Gaulton and Shannon Lewis-Simpson. This portion of my project explores the development of the burial landscape within the community of New Perlican on the east side of Trinity Bay, as a case study within a settlement that has been continuously occupied by European settlers since the late 17th century. Part of my fieldwork involved recording the gravestone locations and site boundaries at the historic burial grounds for the local heritage society, Heritage New Perlican, so that the community has a geo-referenced record of the location of all the gravestones in their historic sites. I am also aiming to present my research results to the community and see if I can answer any questions they have from an archaeological perspective, as well as understand what else they wish to see from my research.

In 2021, I surveyed six burial grounds in New Perlican with Bryn Tapper and Ian Petty, using a total station theodolite (TST). These sites were ClAi-12 Bloody Point 2 Burial Site, ClAi-11 St. Mark's Anglican Cemetery Municipal Heritage Site, ClAi-15 Jane Condon's Grave Municipal Heritage Site, ClAi-4 Hefford Plantation Burial Site, ClAi-14 Pinsent's Garden Burial Site, and ClAi-16 St. Matthew's United Church

Figure 2: View looking north at the site, with multiple uninscribed fieldstones visible in the foreground.

Southside Cemetery Municipal Heritage Site. To view the maps created by Bryn Tapper for this project, please see the 2021 PAO Review.

This season, myself and Ian Petty returned to New Perlican to conduct a survey on an additional cemetery in New Perlican, St. Augustine's Cemetery #1. The fieldwork and mapping were funded by a Smallwood Foundation Grant. St. Augustine's #1 is located on the west side of Beaver Pond Rd, south of the harbour, and was opened in 1895 to serve the community after St. Mark's Cemetery was closed. It operated until 1940, when St. Augustine's Cemetery #2 opened further down Beaver Pond Rd, further into the forest. As this site was one of the more contemporary sites in the community, I did not set out with the goal of recording all of the gravestones as I did at the more historic sites, but upon visiting in 2021 we realized that the number of fieldstones present at this site was very high. Recording fieldstones, which are simple grave markers made from locally sourced stones without inscriptions, is highly important for the archaeology of burial grounds in Newfoundland and Labrador, as they are often overlooked or even removed from sites when people do not realize they are also marking burials. Fieldstones can be identified from tool marks to create a rough 'gravestone' shape, and typically they are made from local slate or shale with the layers standing vertically. With their significance in mind, I decided that we should record the fieldstones here, so at least there was some record of the volume of them.

Without the neighbouring goats and sheep, whose pasture opens into the cemetery to allow them to graze between the gravestones, we would not have been able to identify most of the fieldstones, as they are primarily quite low to the ground. They have been an invaluable part of maintaining this cemetery's grounds, when it is otherwise often overlooked in terms of maintenance. Over the course of two days, May 2nd and 3rd, Ian and myself used the TST to record the location of all uninscribed fieldstones that we were able to find at the site. In total, we recorded 373 fieldstones at the site, which is only a fraction of the gravestones present, and also does not include the number of unmarked graves that are visible in the form of sunken grave shafts.

It is evident in Figure 1 above that the distribution of fieldstones covers the majority of the site, not sticking to only an older section or a certain quadrant. This suggests that the use of fieldstones as grave markers was prevalent in the area throughout the period of use, 1895-1940, for a period of 45 years. In fact, there are several fieldstones at St. Augustine's #2 in the older portion of the site, as well as at the St. Matthew's United Church Cemetery on Birchan Hill, the other contemporary cemetery in the community. These data will contribute to my understanding of the development of the burial landscape in New Perlican, which I will be exploring further in my dissertation.

Annual Report of Proceedings, Newfoundland and Labrador Archaeological Society, 2022

Robyn S. Lacy
Newfoundland and Labrador Archaeological Society, President

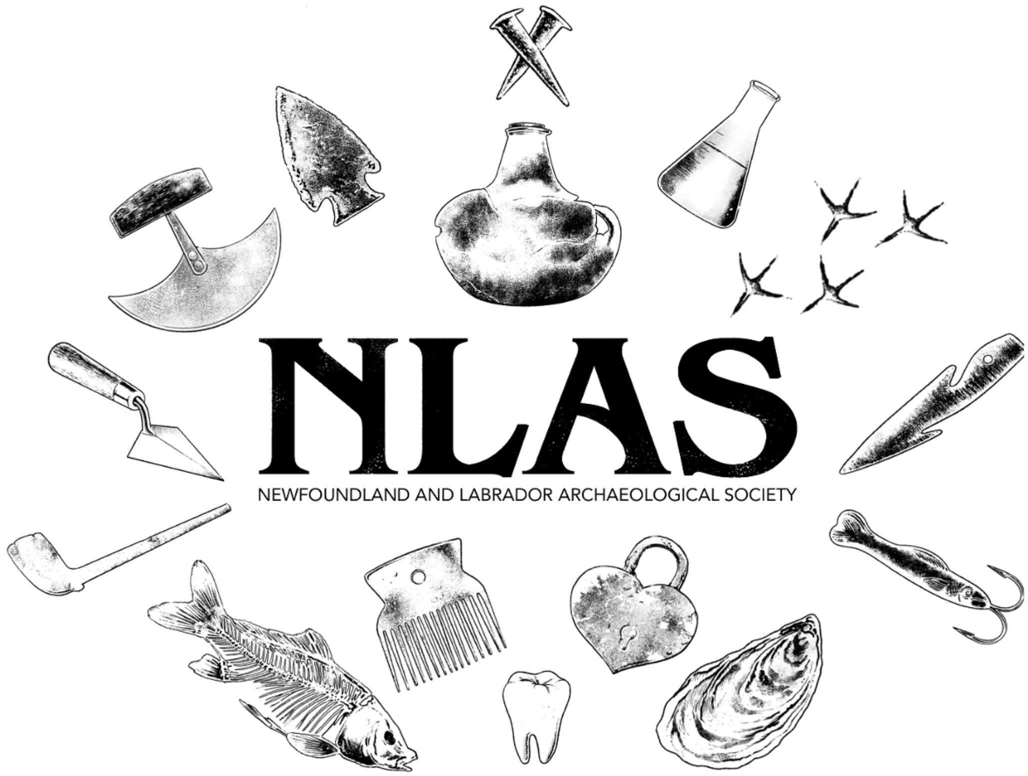


Figure 1: The new NLAS logo, created by Mike Feehan.

2022 was an exciting year for the NLAS, as we continued to work at developing the Society throughout the ongoing pandemic, with our continued goals of outreach and education for the public. This year we were involved with several public outreach events, reaching many people in the province and farther afield through presentations and public appearances. We started out the year with a couple of excellent public lectures.

- Lori Pittman and Jane Severs: 'Quaking Puddings and Cackling Farts: 17th-Century Cooking at the Colony of Avalon'
- Alexa D. Spiwak: "A slator or two: Reflections and future directions'

We are looking forward to expanding our public lecture series (affectionately known as FABS, or 'Friday Afternoon Beer Sessions') in 2023, with exciting plans for hybrid lectures in some exciting venues! This year we also began using Eventbrite to manage our ticketing and link distribution for our talks over Zoom, to automate the process and the aspect of planning of our board.

This year we were excited to reveal our new NLAS logo, visualized by our executive board members and created by local artist Mike Feehan. The new logo features the toggle harpoon and onion bottle from the original logo as part of the design, as well as a number of other objects and symbols to better encapsulate what archaeology is today in the province. The design includes a projectile point, ulu, trowel, bone comb, human tooth, clay pipe, beaker, metal lock, nails, a fish skeleton, oyster shell, bird footprints, and a lead cod jigger, with the NLAS name in the centre. We're very proud of what this new logo represents. We have included the new logo on our new t-shirts as well as the 2023 NLAS calendar.

In August, we participated in Newfoundland and Labrador's first Renaissance Festival, held in Paradise on August 27-28th. We were included in the event as a sponsor, and had our own tent beside the Colony of Avalon's team, with our Edukit and other educational materials. We estimate that we had over 200 visitors to our booth over the 2-day event, and had a lot of wonderful engagement. The organizers of the event have asked us to return in 2023 as a sponsor again, and we are excited to approach the event with even more enthusiasm!

During the International Archaeology Day on October 15th, the NLAS partnered with the Rooms to present our Edukit to the public, led by our treasurer Ian Petty. Approximately 20-30 community members participated in our Edukit display, and two archaeology graduate students volunteered their time.

Figure 2: Shannon Lewis-Simpson and Robyn Lacy at the Renaissance Festival.

Finally, for our AGM on December 14th, John Erwin of the PAO presented an "Archaeological Resource Management in Newfoundland and Labrador: History and Highlights", which was well-received by all in attendance, and we had an excellent question period after the talk. There were approximately 30 members in attendance, including members of the board and new board members elected during the meeting.

In 2023, we are looking forward to preparing the NLAS 3-Year Plan for 2023-2026, as well as continuing to assess the NLAS Code of Practice. Planning continues towards an NLAS Young Archaeology Club (YAC) and exploring a better way to manage our website and prepare more regular blog posts moving forward. We welcome all practitioners or advocates of archaeology in the province to join the society and contribute to our outreach efforts.

2022 Fieldwork Season – Black Cat Cemetery Preservation

Robyn S. Lacy & Ian Petty
Black Cat Cemetery Preservation

Figure 1: St. Paul's Anglican Churchyard, Trinity before our restoration.

This was an exciting year, our second season working with historic burial sites in Newfoundland and Labrador. We were in the field from May until mid-October this year, and have been working on completing site record forms and cataloguing artifacts through the winter. Burial grounds are a valuable historic resource, and we feel honoured that these communities we have partnered with have placed their trust in us to help preserve these sites.

This season, we completed seventeen (17) projects across multiple communities on the island of Newfoundland, including Trinity, Portugal Cove – St. Philip's, Greenspond, Hearts Content, New Perlican, Grand Falls – Windsor, Blackhead, Coley's Point, St. John's, Brigus, and Bell Island. Between all projects, we conserved and restored 173 gravestones and surveyed 308 gravestones for future conservation work. We also ran one public workshop in conjunction with Heritage NL.

Several of the projects included consultation with clients for work in the future, including Grand Falls – Windsor and Greenspond, where we surveyed the burial sites and created comprehensive reports detailing the work we recommended for the conservation of each stone at the sites. These reports will help the heritage societies plan for the conservation of the sites moving forward. Helping communities take care of their own historic burial grounds through consultation is part of our goal with projects like these. They may also use these reports to aid in grant funding applications for heritage conservation, and fundraising efforts.

The largest project of the summer was in Trinity. We partnered with the Trinity Historical Society, with whom we have been in contact with about this project for several years. Jim Miller, Ian Morris, and Kevin Toope were instrumental in the fundraising for the preservation of the St. Paul's Anglican Churchyard, located in the heart of the community. We ended up spending four (4) weeks in Trinity over

Figure 2: St. Paul's Anglican Churchyard, Trinity after our restoration.

These sites are the Old United Church Cemetery, Roman Catholic Burial Ground, Wings Island Burial Ground, the New United Church Cemetery, Salvation Army Cemetery, New Anglican Cemetery, and the Old Anglican Cemetery. In total, we recorded 235 gravestones which require conservation for their continued preservation between the sites. Some gravestones at the Roman Catholic Burial ground and the Wings Island Burial Ground were buried and likely will not be able to be preserved, due to the degraded state

the course of the season, cleaning, repairing, and uprighting a total of 151 gravestones at the site. This burial ground is a registered heritage site and archaeological site in the province due to its cultural significance as an 18th-century graveyard. The majority of the gravestones at the site are made from imported limestone from Ireland or England, with one slate marker, and several made from local sandstone or imported white marble from the USA. We cleaned each gravestone with water and D/2 Biological Solutions, and stones that required levelling were done so on a new foundation of tamped crusher dust for support and drainage. Any gravestones that were broken were repaired using UV stable stone epoxy created for conservation of heritage structures, and cracks were filled using a 100% lime mortar. All work was documented using photography and a report was written after the fieldwork was completed, which is now with the Trinity Historical Society. While in Trinity, we also cleaned and conserved six (6) gravestones in the nearby Methodist Cemetery, which is overgrown and requires further work to preserve the site in the future.

Our second largest project was in collaboration with the Greenspond Historical Society, investigating seven (7) burial grounds on the island with identified gravestones that require conservation.

Figure 3: The Hay gravestone, commemorating multiple people who were lost in a house fire, being raised for resetting to level with a chain hoist.
Ian Morris (left) and Ian Petty (right) and pictured.

Figure 4: Limestone gravestone of Benjamin Burt[on], Roman Catholic Burial Ground, Greenspond, with ornate cherubs.

of the limestone that we observed on the surface. Both sites contained 18th or early 19th century limestone gravestones, and we recorded both as new archaeological sites during this survey. The Greenspond Historical Society will be fundraising to continue this project, and hopefully we will see the restoration and protection of some or all of these sites in the near future.

During the summer, we also collaborated with Heritage NL to film a ‘How to Clean Gravestones’ video for their social media channels, as well as run a workshop in a rural cemetery on Bell Island with a group of dedicated local volunteers. This workshop involved the cleaning of the first war memorial erected on the island, in 1919. Made from grey marble, the monument was in excellent condition and only required the removal of soft sunburst lichen from its surfaces. We also presented a talk on our fieldwork this year at The Rooms provincial museum, as part of the Coffee & Culture weekday lecture series, and were pleased with the turnout for the talk and the questions that attendees had for us after the fact. It was a great year for public engagement, and we are looking forward to our ongoing work with the community of Portugal Cove – St. Philips on the redesign of the old Roman Catholic church in the community, and the curation of its adjacent 200-year-old graveyard.

Overall, we had a productive second season with Black Cat Cemetery Preservation, and we are excited to continue working with the province and with a variety of communities and historical groups to help preserve the burial grounds and historic cemeteries across the island and beyond.

Old Blackhead Methodist/ United Church Cemetery

Juliet Lanphear
Historic Plaque Intern, Heritage NL

Figure 1: Photograph of the Old Blackhead Methodist/United Church Cemetery (Photo credit Heritage NL, 2022).

The Old Blackhead Methodist/United Church Cemetery is located off the NL-70 highway in Small Point-Adams Cove-Blackhead-Broad Cove, Conception Bay, between the Old Church and Pumphouse Roads. The cemetery corresponds to the site of the first Methodist church in Canada, built in Blackhead in 1769. Founded by John and Charles Wesley, Methodism is an evangelical movement within the Church of England, from which it separated in 1795 (Piper 2000). Methodism arrived in Newfoundland in 1766 with the Church of England Reverend Laurence Coughlan, who served in Newfoundland from 1766 to 1773 and was a follower of John Wesley (Piper 2000).

In a 1998 survey of the Blackhead Cemetery (Newfoundland and Labrador Genealogical Society Inc.), 218 headstones were recorded, but the number of occupants in the cemetery is over 1000 according to government death records which include the location of burials (Newfoundland's Grand Banks 2022). The death dates on the headstones range from the 1770s to the 1920s, while the earliest date for government death records is 1891. Earlier death records are available in the United Church archives but were not included in this research due to restrictions on publication. According to death records, the most common family names recorded on grave markers and of individuals buried in the cemetery are Moores/Moors, Thistle, King, Hudson, and Legrow. Most cemetery occupants were from Blackhead or nearby communities (Adam's Cove, Broad Cove, Mulley's Cove, Small Point). However, some were born in other parts of Newfoundland, such as Greenspond and St. John's, and several were Americans from Massachusetts.

During the Fall of 2022, Heritage NL undertook documentation, preservation, and community outreach of the Old Methodist/United Cemetery. For documentation, Heritage NL used BillionGraves and created a database of individuals buried at the Blackhead cemetery to document the graveyard. Bil-

Figure 2: Several of the older cemetery headstones belonging to Mary and Jonathan Moors (Photo credit Heritage NL 2022).

Figure 3: The Old Blackhead Cemetery on BillionGraves. The circles are the GPS locations of each headstone.

lionGraves is an app which allows users to photograph headstones and record their GPS locations.

Most headstones in the Blackhead cemetery were recorded with BillionGraves, except those densely covered in vegetation that could not be photographed. Documenting the cemetery with BillionGraves creates a record of each headstone's location and photographs the inscription, preserving the information in case of future damage or weathering (BillionGraves 2022). A database of the individuals buried in the cemetery was created using a 1998 headstone survey completed by the Newfoundland and Labrador Genealogical Society and historical death records from the Newfoundland government. The database includes biographical information (first and last name, place of birth, date of death, age at death) and information about the headstone, if applicable (marker type and material, inscription, size). The database includes 1070 entries. The link to the database is here: https://tinyurl.com/OldBlackheadCemetery .

Some preliminary work was completed to preserve the headstones at Blackhead cemetery, which included a headstone cleaning workshop and clearing some vegetation around headstones. Headstones were cleaned with a 50/50 solution of D/2 biological cleaner and water, then scrubbed with soft bristle brushes to remove organic matter such as lichen, moss, and dirt. Vegetation around the headstones was carefully removed to prevent further damage and to increase visibility, but further work is required, especially northwest of the cemetery.

Community outreach was an important aspect of the work conducted at Blackhead cemetery to engage the public and to ensure that research would be accessible to the public. A workshop was conducted with the local community at the Blackhead cemetery in October 2022 to teach proper headstone cleaning techniques and cemetery maintenance. Also, weekly social media posts under the hashtag Mortuary Mondays were posted on various social media platforms (Facebook, Twitter, Instagram, and LinkedIn) about the Blackhead Cemetery, including articles about the headstone art and the cemetery database.

Figure 4: Headstone cleaning workshop at Blackhead Methodist Cemetery in October of 2022 (Photo credit Heritage NL 2022).

Figure 5: Headstone prior to vegetation clearing (Photo credit Heritage NL 2022).

Figure 6: Headstone after vegetation clearing (Photo credit Heritage NL 2022).

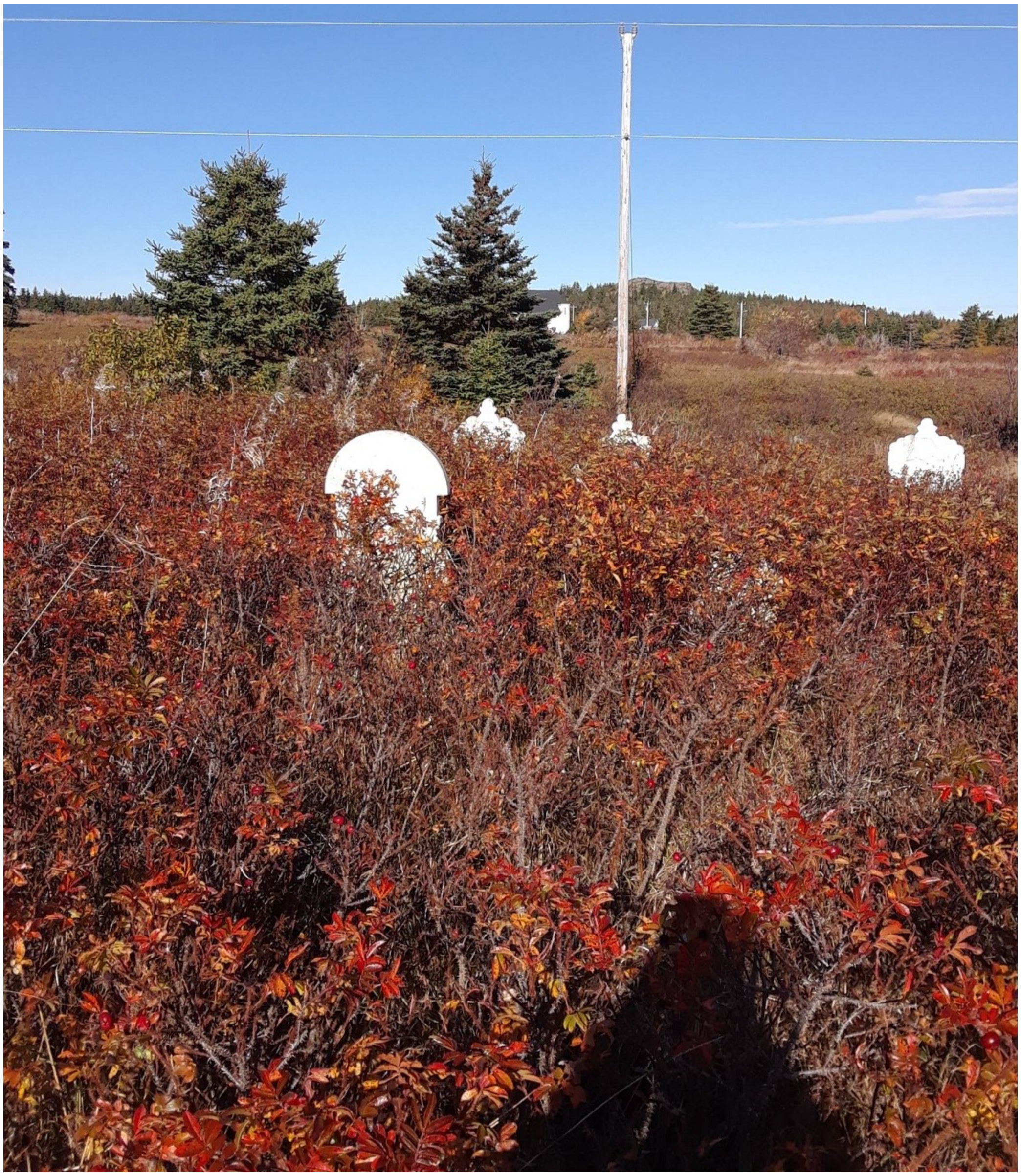


Figure 7: Headstones in the southwest area of Blackhead Methodist Cemetery are covered in vegetation (Photo credit Heritage NL 2022).

References

"Blackhead Old Methodist Cemetery, Small Point - Broad Cove - Blackhead - Adams Cove, Newfoundland, Newfoundland and Labrador, Canada | BillionGraves Cemetery and Images." BillionGraves, billiongraves.com/cemetery/Blackhead-Old-Methodist-Cemetery/285819.

Piper, Liza. "Newfoundland Methodism." Heritage Newfoundland and Labrador, 2000, https://www.heritage.nf.ca/articles/society/methodist.php.

"Newfoundland Vital Statistics Bay De Verde District." Bay De Verde Vital Statistics, 2022, http://ngb.chebucto.org/Vstats/1vstats-bdv-idx.shtml.

Newfoundland and Labrador Genealogical Society Inc. "Cemetery Headstone Transcripts: Old Blackhead Cemetery". 1998.

Ground Penetrating Radar (GPR) Survey of Makkovik Moravian Cemetery, Nunatsiavut

Maria Lear
Memorial University

Figure 1: Site location of Makkovik Moravian cemetery. Overall boundary (yellow) with community-requested focus area in purple (image provided by the community, Google Earth, 2021).

The Makkovik Moravian Cemetery Ground Penetrating Radar (GPR) Research Project, 2022 was initiated by representatives of the Moravian Church (Mrs. Joan Anderson, Moravian Church Elder & Curator of the White Elephant Museum) in conjunction with the Makkovik Inuit Community Government (MICG), the Nunatsiavut Archaeology Office (NAO) and residents of the local community. Specifically, the intention was to document and record the Makkovik Moravian cemetery in terms of unidentified graves (from missing or displaced headstones) using Ground Penetrating Radar (GPR).

A Ground Penetrating Radar (GPR) survey of the Moravian cemetery in Makkovik was completed over a 3-week period in July 2022. A smaller sub-area of the cemetery located in the older section was highlighted by the community as the primary survey focus (Figure 1.) The full extent of the cemetery is quite large, measuring approximately 75m x 35m and is currently in use with areas of expansion. Throughout the cemetery, there is an abundance of standing headstones. Some areas in the older section show surface evidence of possible unmarked graves (sunken and raised/mounded areas arranged in a linear fashion.)

Upon arrival in Makkovik, a site visit was completed with Moravian Church Elder & primary community contact: Mrs. Joan Anderson to assess the cemetery in terms of GPR suitability and to devise a survey plan. The fenced cemetery was relatively clear of large, standing vegetation, except for some clusters of tall tress (Figure 2.) Lower bushes and shrubbery areas are scattered throughout which is typical of a cemetery of this age. A pathway from the church (with deep, narrow trenches along the sides) continues into the centre of the cemetery with several wooden platform bridges to allow safe walkover. The cemetery has many white wooden crosses and there are a number of large, standing headstones, and individually fenced graves of varying condition. Many graves have ornate flower arrangements and other funerary monument design and surface decoration (Figure 3).

Figure 2: Entrance into the cemetery via pathway from the Moravian Church.

Figure 3: SW corner of overall cemetery looking NE.

Figure 4: Total station map (preliminary) showing full cemetery perimeter and locations of grids, headstones/graves & standing trees.

As with any site, in order for the most accurate use of the GPR survey equipment, full site clearance of the vegetation was necessary in preparation for the planned survey. The community completed the majority of this work prior to the GPR equipment arriving on site, however, in some areas, additional removal of larger tree branches was required to allow clear line of sight of the survey equipment. The clearance of vegetation also allowed for the recording of all visible headstones and grave markers. A number of grids were placed within the fenced site boundary to achieve the greatest extent of meterage included in the overall GPR and total station survey. In total, twelve (12) grids were established with five (5) of those included in the GPR survey.

A total of 147 headstones/burials were recorded that ranged from simple, white wooden crosses to the elaborate (more modern) design stone markers. In order to keep an accurate tally, individually numbered pin flags were placed along each headstone within the separate grids. Each headstone was photographed and notes taken regarding the grave and headstone condition. Transcription details (where legible) were recorded and general remarks on grave style (low wooden surround, a wooden fence, concrete surround, mounded with sand or vegetation, or, the presence of flowers/other decoration) were documented. In order to map the surface and grid orientation, a total station was used to take specific spatial measurements of all grids, headstones, individual graves and surrounding features such as the tall trees that were located within the cemetery boundary (Figure 4.)

One challenge to overcome in any site survey is the placement of grids within an irregular and most often, non-square landscape. One issue that is not unusual in a known cemetery is the existence of standing headstones and graves that have upright edging (either wooden or concrete), high wooden fencing or other landscape features that form a border around the individual burial and create an obstruction. One must determine which specific areas would benefit from a GPR survey in terms of known and unknown burial details – this is where open knowledge sharing with the local community is vital. The more information gathered about a location before the start of on-site work, the better. Additional factors to consider for the Makkovik cemetery in particular is that the space is actively in use and there are areas that are extensions and modern in date - those sections do not require a GPR survey as that burial information is known by the community.

While the GPR survey equipment is robust, it is designed to run along a straight transect line in an uninterrupted manner triggered by the internal odometer and not lift off the ground surface (Conyers, 2013.) If a transect line crosses over a grave or headstone where the antenna cannot continuously record, the machine will not be able to move over the obstruction and will end prematurely at that measured stop point (Sensors & Software, 2021). The same is for natural surface obstructions such as irregular vegetation, stones or standing trees – the GPR machine cannot scan over the obstacle and must stop short at the physical boundary.

Taking into account the individual request of the community to focus mainly on the older section of the Makkovik cemetery and the physical variables of the site itself, several grids where chosen to concentrate GPR efforts. Grids C, D, G and to a lesser extent J and K were highlighted to be of the older sections using information provided by the community and the visible headstone dates as a guide. The grids varied in size but all included transects spaced at 0.25m to allow full coverage along both the X & Y axis (Figure 5). The antenna chosen for the cemetery survey was a 500MHz antenna belonging to the Noggin© SmartTow GPR system.

Each grid was surveyed individually with two people: archaeological field assistant/MUN student and author/GPR operator. As is the case with other archaeological site work, digital photos and daily site notes are recorded as supplementary information to accompany each grid within the overall GPR cemetery survey.

The results from the geophysical survey provided much data for analysis and interpretation – over 600 individual transect lines were collected. For consistency, each grid will be downloaded, analysed and processed using the same post-processing procedure and affiliated geophysical software. Results typically differ from the individual grids (due to site variability) but there sometimes are noted trends across the site that lead to the suggestion of possible unmarked graves. For the majority of grids, possible inhumation indicators appeared as roughly equispaced contrasts.

The GPR data is displayed in two modes: as a section-view of each individual transect line (reflection profile) and an aerial at a particular depth (amplitude slice) (Conyers, 2012.) The reflection profile is a static, black & white visual. The antenna is triggered by an internal odometer as it is pulled along the surface. It emits radio waves down through the ground.& the reflected information provides an image of the subsoil (Conyers, 2012.) If the antenna passes over a linear (or sub-linear) soil difference at a right angle, the reflection created will be a hyperbola (Conyers, 2012.)

Figure 6 is a reflection profile of a transect line in Grid C (measured 15m x 8m), located at 6.5m along the X-axis, highlighted by a red line that traces how the antenna moved from the baseline of the grid towards to the top (YLine 26). The hyperbolas may represent the location of unmarked burials. The coloured amplitude slice of this data shows the thin, red transect line (YLine 26) bisecting a number of red/yellow images (Figure 7.) It also shows areas where the GPR machine could not survey (areas on the ground that prohibited the free-flow of the antenna due to surface obstructions) - in this case, low wooden grave surrounds and/or headstones of the neighbouring Grid A & Grid D. Those areas on the amplitude slice appear as dark-blue, completely blank areas and void of data. One can also see as well on the image those transect lines that were either skipped or stopped short due to surface conditions. They appear as interrupted lines in terms of their maximum length.

As with all geophysical investigation, making a precise location marker can be difficult and this is particularly true when dealing with buried human remains. Possible grave locations can be difficult to capture with the GPR due to the physical decomposition, which can create less of a contrast (Conyers,

Figure 5: A grid prepared for GPR survey with measuring tape & transect lines spaced 0.25 m.

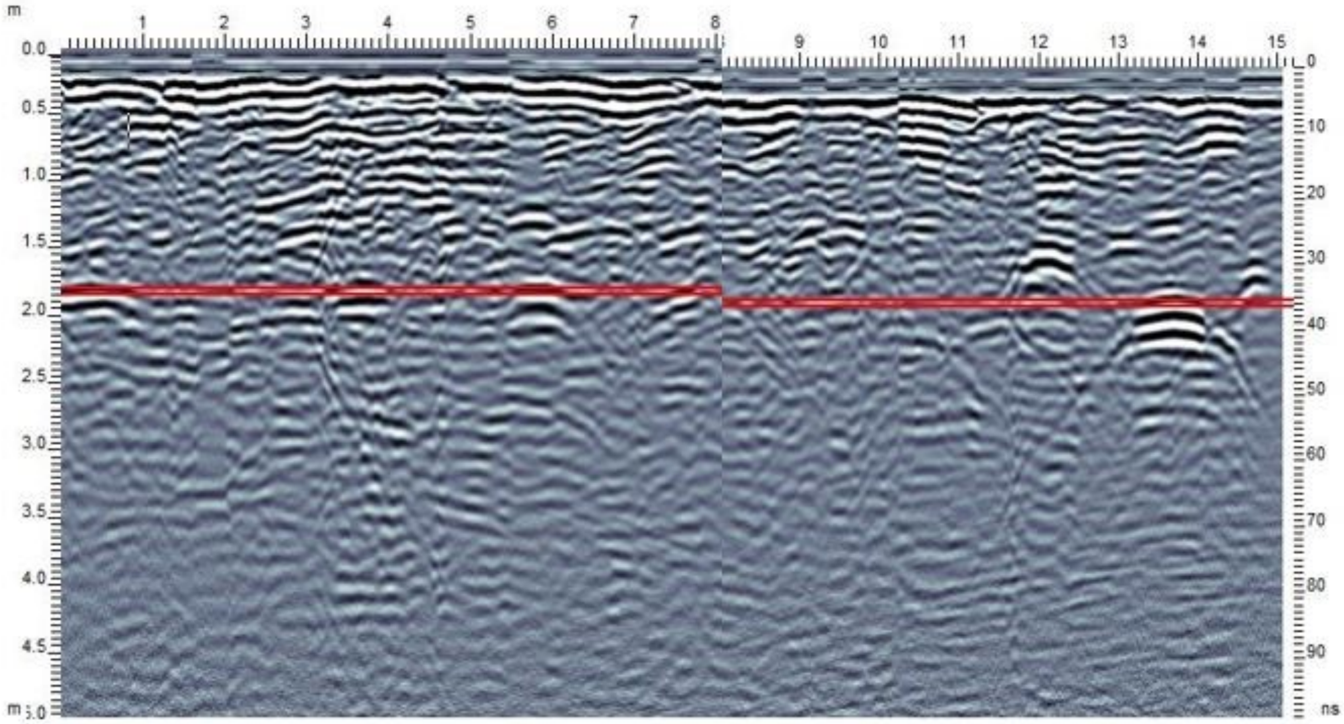


Figure 6: Reflection profile Y Line 26 in Grid C.

2012.) However, the information gathered from this fieldwork - from the desktop research, the community, site photography and the geophysical/total station survey provide a vast array of data from which to make suggestions and offer ideas.

Acknowledgements

The fieldwork would not have been possible without the hard work of MUN Archaeology student/Archaeological Field Assistant Lisa Neal. Huge appreciation to Mrs. Joan Anderson, the White Elephant Museum, the Makkovik Inuit Community Government (MICG), Lena Onalik of the Nunatsiavut Archaeology Office (NAO), Labrador Inuit Lands and residents of the local community. The issue of an archaeological permit granted formal permission from the Nunatsiavut Government as well as approval from the Nunatsiavut Government Research Advisory Committee (NGRAC.) Community outreach was aided by a radio broadcast with CBC Labrador Morning as well as a local community meeting hosted at the Makkovik Craft Centre. Thanks to Dr. Lisa Rankin and Dr. Vaughan Grimes, Department of Archaeology, Memorial University. Labrador Inuttitut translation currently ongoing and provided by Ms. Sophie Tuglavina. The research project received financial support from Memorial University - the JR Smallwood Foundation, the Institute of Social and Economic Research (ISER) and Student Work Experience Program (SWEP) as well as from the Provincial Government of NL - the Provincial Archaeology Office (PAO.)

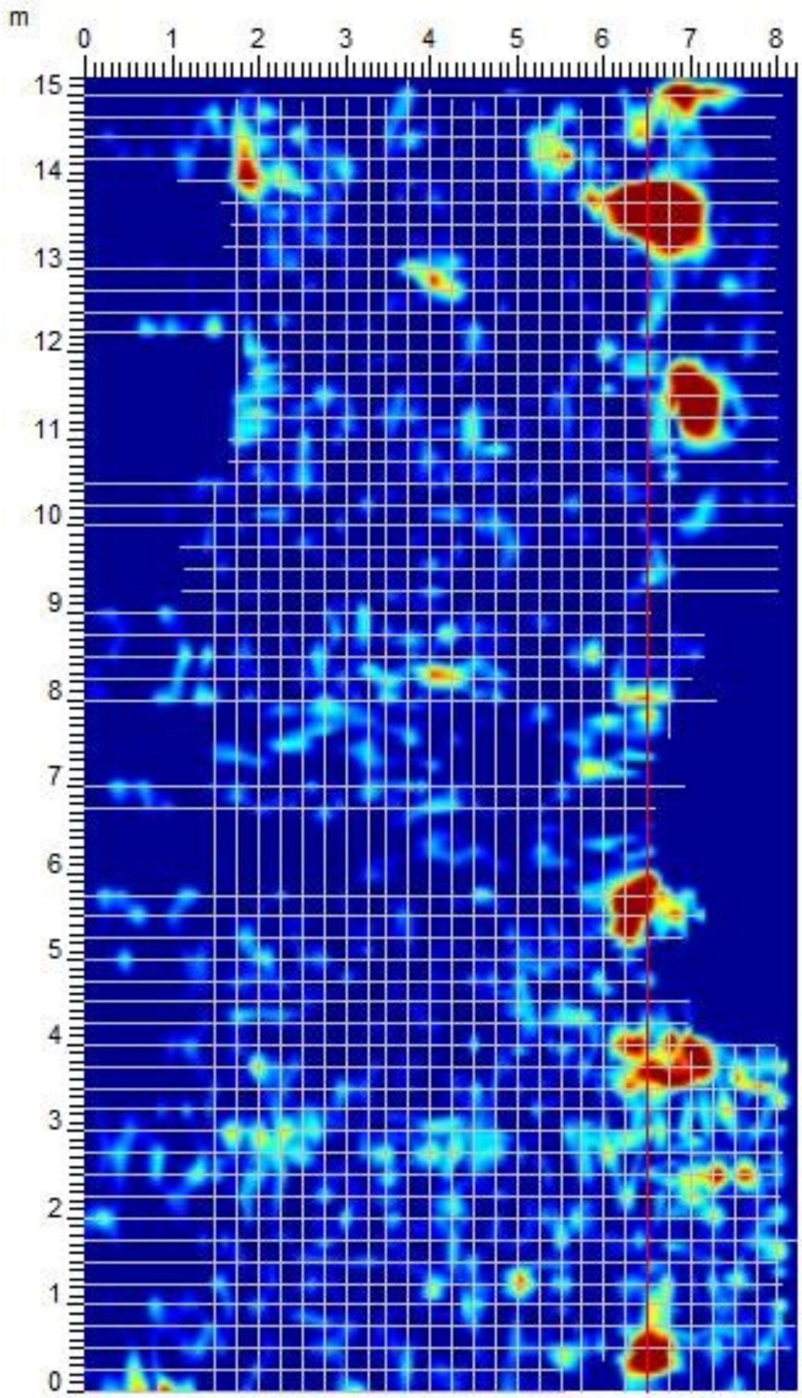


Figure 7: Amplitude slice of Grid C showing red Y Line 26 transect bisecting possible graves (red/yellow images). Also shown are the areas that were not surveyed (surface obstructions) – dark blue patches with no visual data.

References

Conyers, L.B (2012) *Interpreting Ground-penetrating Radar for Archaeology*. Walnut Creek: Left Court Press

Conyers, L.B. (2013) *Ground-Penetrating Radar for Archaeology* (3rd ed.). Plymouth: AltaMira Press: a division of Rowman & Littlefield Publishers.

Sensors & Software (2021) Noggin User Guide. Mississauga, Ontario

Bay Bulls –
Cod, and Warfare in the Longue Durée

Chermaine ZheMin Liew
Memorial University

Figure 1: Canonized Saints in front of St. Peter and Paul's church, Bay Bulls.

The history of ships crossing the Atlantic to fish around Newfoundland since the 16th century and conflict over marine resources are perfectly showcased in the gate of the St. Peter and Paul church in Bay Bulls (Figure 1), which features four "canonized Saints." Literally, four statues of saints mounted on historic canons that were recovered around the harbour are displayed as part of the church gate. Encompassing 400 years since the initial settlement, Bay Bulls holds a rich historical and archaeological heritage varying from fishing industries to shipwrecks and war contexts. The church gate is only one example of this heritage, and there is much more to be explored, preserved and displayed in the community of Bay Bulls. Hence, my research aims to assess archaeological sites and landscape changes in Bay Bulls in a longue durée perspective.

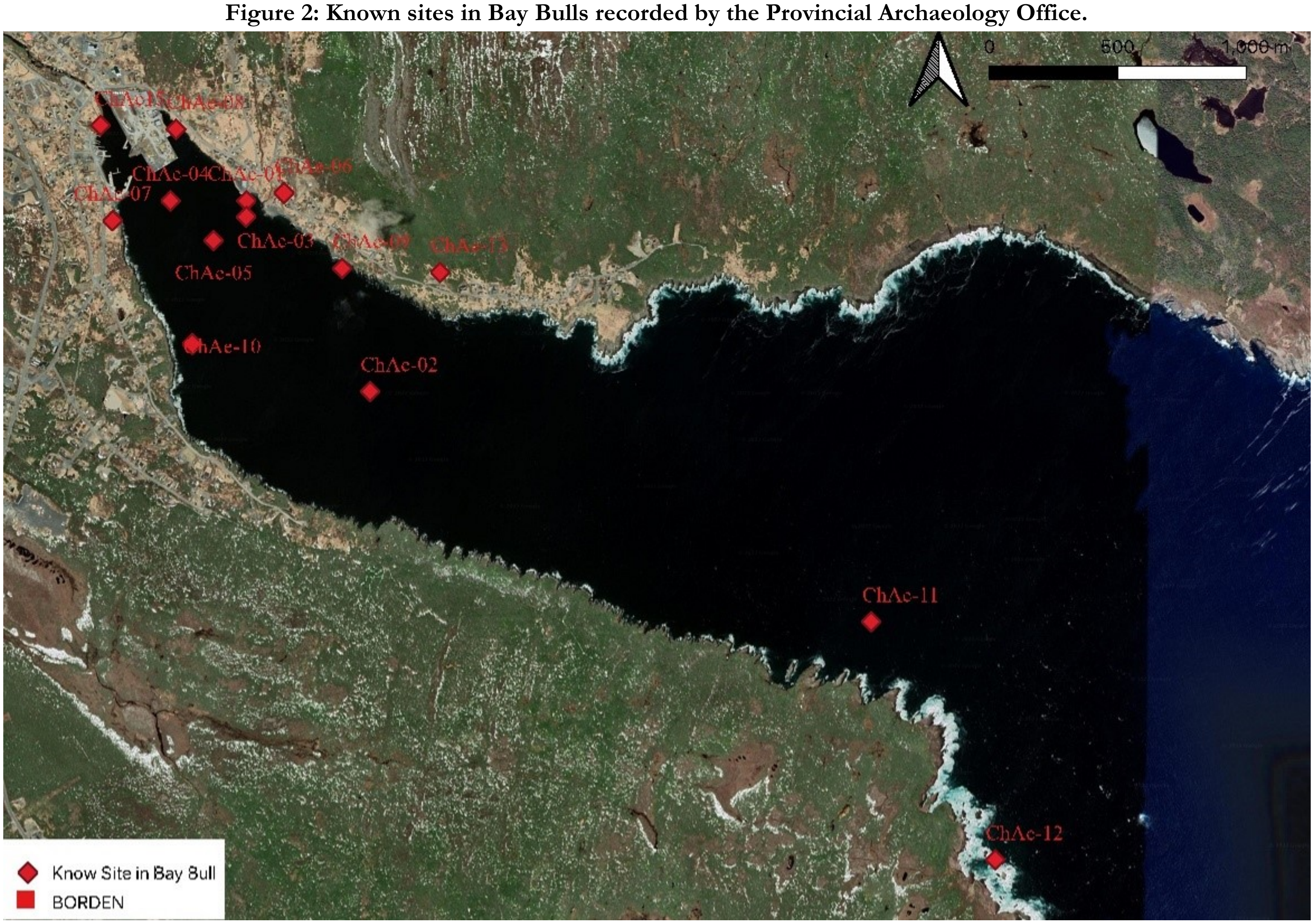
Bay Bulls was known early on for its rich fishing grounds and hence became one of the oldest settlements established by Europeans in Newfoundland (Maloney 1994:2, Prowse 2002:157). The harbor of Bay Bulls was frequented by fishermen from France, Spain, and Portugal, before the initial settlement period in the 16th century. One of the major reasons that the harbor was frequented is due to its location on the 'Southern Shore' of the Avalon Peninsula close to St. John's (O'Neil 1983:9, Anspach 1819). Bay Bulls became a harbor used for not only fishing activities, but also for vessel docking, and replenishment, and later developed into a fishing community. Public interest in Bay Bulls is triggered by its fascinating historical past and tourist attractions. Thus, the preservation of historical sites is becoming a subject of interest for the local community and municipal authorities of Bay Bulls. The residents of Bay Bulls are aware of their rich historical past and the location of some possible archaeological sites, but no systematic documentation of these interesting places have been done with regard to locating and assessing the sites around the shore of both the north and south side of the inlet. The Provincial Archaeology Office (PAO) has a list of known sites in Bay Bulls recorded in GIS (geographic information system) (Figure 2), however, it is believed that there are more to be discovered and recorded. Hence, the goal of the survey in the summer of 2022 was to access the whole north and south side of Bay Bulls harbor to identify possible archaeological sites and anthropic modification of the landscape.

The town of Sapphire, or more?

The history of Bay Bulls is strongly associated with the changes in economic activities and the international relation between England and France. In general, archival documents primarily focus either on the fishery development and the war outbreak (O'Neil 1983, Prowse 2002), or on the local community relationship/hardship and development (Maloney 1994, Prowse 2002, Lynch 1973). The scarcity of research concerning the past of Bay Bulls is surprising when the richness of its history is taken into account. In fact, there is not much research focusing on the landscape modification associated with the historic occupation of the bay or linking Bay Bulls with historical events in a broader context. Research on the H.M.S Sapphire that was sunk in 1696 (Colledge 1987, Baber 1977, O'Neil 1983, Newfoundland Marine Archaeology Society 1977) was done in the late 1970s into early 80s (Figure 3). The primary research objective was to document the shipwreck and its architecture. In addition to the study of the wreck itself, the conflict between England and France seems to have greatly captured the imagination of the public and was also part of the research framework regarding the Sapphire.

There is a lack of written documents regarding known heritage sites in Bay Bulls. The information regarding the location of possible sites is con-

Figure 2: Known sites in Bay Bulls recorded by the Provincial Archaeology Office.



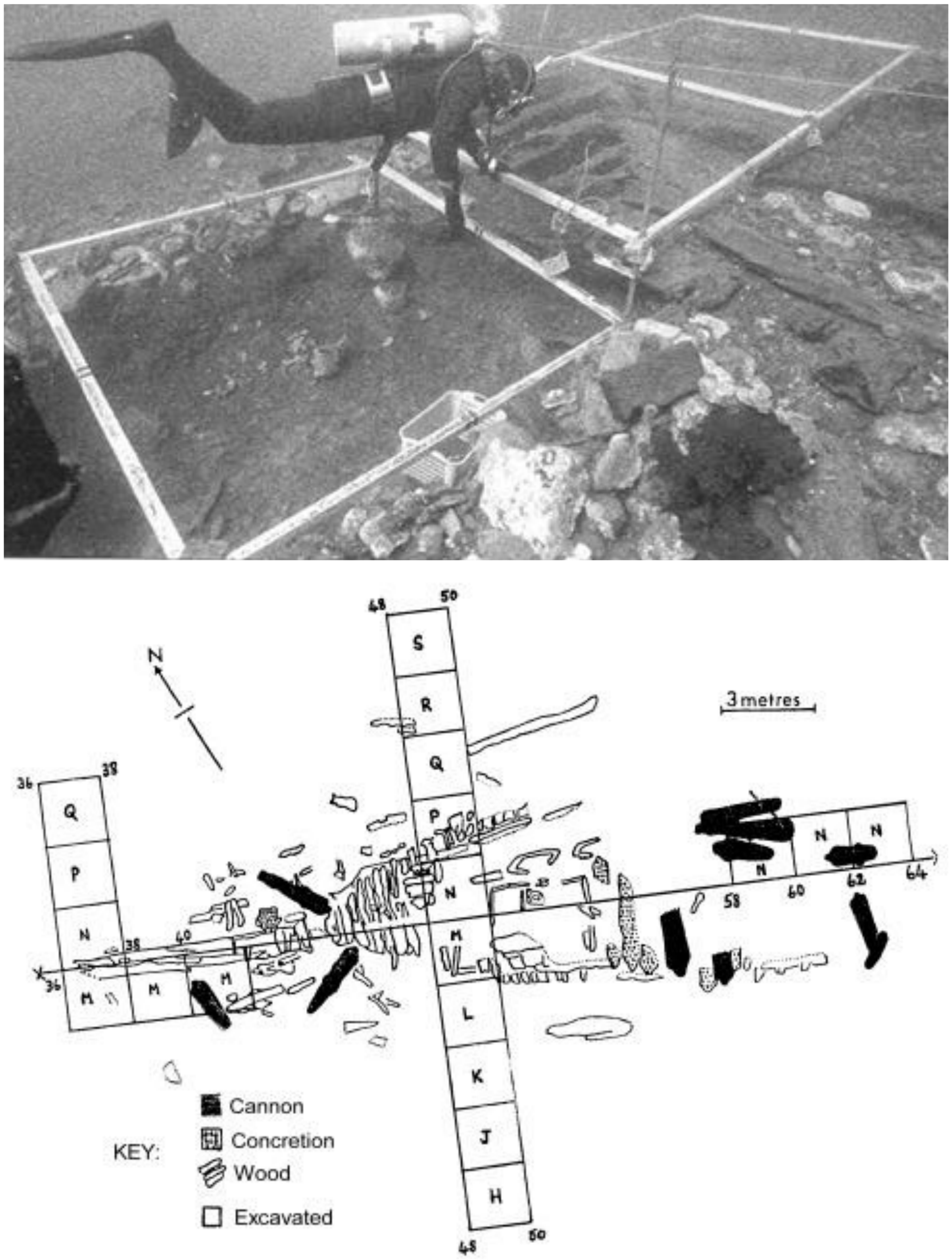


Figure 3: Picture and map of Sapphire wreck research. Picture taken from http://www.historicplaces.ca/fr/rep-reg/image-image.aspx?id=3481#i1

veyed by local residents that have developed a strong interest in Bay Bulls history. Although the Provincial Archaeology Office has a database containing GPS coordinates (Figure 2) and a basic description of Bay Bulls archaeological sites, the information provided did not fully convey the potential of heritage richness in Bay Bulls.

Currently, there is ongoing research excavation in the Riverhead area (ChAe-15) (Figure 2), which provides us with more information regarding the settlement history of Bay Bulls. "Riverhead, Bay Bulls – Desk based archaeological assessment" gave an overview of the archaeological assessment on Riverhead (ChAe-15) carried out by Gerald Penney Associates Limited 2019 at the request of the landowners, followed by the excavation in 2019. In 2021 there was a data-recovery excavation carried out by Blair Temple Associates Ltd, to investigate the possible late 17th (possibly early 18th century) material culture. The excavation results of 2021 confirmed the secure late 17th to/or early 18th-century component exists at the site (ChAe-15) and holds further research potential (Temple 2021:31).

The fruitful archaeology studies in Bay Bulls (H.M.S Sapphire and Riverhead), shows the high heritage and historical potential to be further explored. However, the area being studied is not sufficient enough to understand the history of the whole bay. It is believed that the research of the Sapphire and Riverhead were not the only two important heritage in Bay Bulls, but two of the many that were yet to be discovered. With the data gathered in the summer, the research project can provide an easier access to heritage sites found in Bay Bulls by building a database in GIS and documenting the sites for future heritage management.

400 years of development: 16th century – 1992 cod moratorium

To understand the settlement of Bay Bulls we first need to discuss the initial settlement of Europeans in North America. Since the discovery of the Grand Banks in the North Atlantic, European fishermen have been crossing the Atlantic Ocean to fish in Newfoundland on a seasonal basis (Holm et al., 2018:2). Like most of the English settlements in Newfoundland, the initial settlement of Bay Bulls started as a migratory fishing base, and soon developed into a fishing community, then into an officially recognized town in 1986. Since the initial settlement in the 16th century, there have been many small local historical events that contribute to the happening of "great events" in the past. By implying Braudel's idea of the "Longue Durée" in studying the local historical events in Bay Bulls, and projecting it to international historical changes helps in further understanding the history of Bay Bulls in different periods in a broader context.

Early Development of the fishing communities

Bay Bulls harbor was first used by fishermen from many European countries including, France, Spain, and Portugal. By 1635, it is recognized as an English community. In 1640 when Sir David Kirk took over the command of Avalon Grant, he fortified the community by erecting a fort with several cannons just north of Carpenter's Cove overseeing the entrance into Bay Bulls (Maloney 1994:2).

This fortification is seen as an effort to protect the fishing interest of the English merchants during the time. However, even with the fortification effort of Sir David Kirk, the community of Bay Bulls was still being raided, attacked, and captured during French and English conflict (Maloney 1994 5-4, O'Neil 1983:17, George et. al. 2016:31). The first recorded capture of Bay Bulls is in 1665 by sea raiders, but, from 1696 to 1796 the community is frequently attacked by the French, the Sapphire wreck is the result of one of these series attacks. Even under these conditions, the community was able to rebuild and sustain cod fishing and trading activity. According to the archives, Bay Bulls established its first trading connection with New England in 1645, and trading records shows that fisherman in Bay Bulls traded mostly with English towns, including the city of Boston (before the Civil war) and merchants from New England (Maloney 1994:3).

Economic Depression and World War Era

The harbor of Bay Bulls was busy with cod fishing and trading until the early 19th century. With changes in the regulation of the Newfoundland Bank fishery in 1805, the bank fisheries were reduced to almost zero in Bay Bulls harbor. This forced the residents to look for alternative ways sustaining themselves. The stagnation of fishing activities forced the fishing community to develop infrastructure in Bay Bulls, including more structures such as roads, schools, housing, and chapels with the help of grants from the governor, the House of Assembly, and more (Maloney 1994:28-30).

An economic turning point came in the early 20th century when the harbor once again became busy with fishing activities. Maloney (1994:39) points out that "due to the extensive bank fishery that accommodates massive inshore fishery and a bait freezer depot established in the town, this encouraged the banking fleet to use Bay Bulls as a bait supply center and created a massive business opportunity for the town." In addition, in the fall of 1911, the construction of a railway up the Southern Shore began, and Bay Bulls had railway connections with St. John's and Trepassey. The prosperous period of Bay Bulls did not last long due to the impact of World War I in 1914. Fishing activities once again were slowed down due to the war; yet, the cod trading business in Bay Bulls remained active, even though bank fishery slowly diminished during the war. Archival records show an American Packing Company built a saltwater fish plant on the upper hill in Bay Bulls and during World War I and, they continued to skin and cure fish with salt to be packed for exportation to African markets. The plant was closed shortly after the war due to the massive recession in the price of fish, and the property remained idle until it was taken over by the Fishery Research Station in the 1930s.

With the start of World War II in 1939, Bay Bulls began to play an important military role for the defense of Newfoundland. According to Maloney (1994:59), "The Canadian government negotiated a ninety-nine-year lease on some property in Bay Bulls and built a navy ship repair site in the community". During the war, the site was used as a repair and supply base for both navy and merchant ships. In 1943, the Canadian Government built a large dock and barracks at the west end of Bay Bulls harbor (Figure 9) which was a busy spot throughout the war.

After the war, Bay Bulls returned to being a fishing community until the summer of 1992 and the cod moratorium, which banned all commercial cod fishing in the area. This banning of commercial fishing greatly affected the main industry in Bay Bulls. Nonetheless, Maloney (1994:62) expresses that "what

Figure 4: Left to right, Chermaine Liew and Valentin de Filippo (research assistant) recording and flying the drone for 3D modelling

the future holds for Bay Bulls only time can tell, but it seems certain that a town with four hundred years history of survival will survive even the loss of the cod fishery".

Looking into the past assessing today's landscape

A month of archaeological survey was conducted in the early summer of 2022, assessing the north and south shore of Bay Bulls. By using non-invasive technology including drone and real-time kinetic (RTK), we are able to assess most of the areas along the Bay Bulls harbour. Some areas show interesting landscape modification through time and have significant features and infrastructure left from past occupations. Besides the already known sites that have been assigned Borden numbers (figure 2), we found three more areas (figure 5) that show extensive anthropic modifications caused by past activities. Those sites include site 4 and 5 (the midsection of the north shore), site 6 and 7 (the midsection of the south shore) and site 8 (after Gunridge Road, not far from the opening of the East Coast Trail). The primary activities of site 6, 7 and 8 seem to be related to human occupation site, but further information on these areas is needed for a conclusion of the landscape usage.

One of the most interesting and well-researched sites in Bay Bulls is the Riverhead site (ChAe-15) (Site 1 in Figure 5), (Blair Temple Associates Limited 2021, Gerald Penny Associates Limited 2019). Based on data acquired from previous research the area shows a heavy trace of occupations, which most probably indicates that it is where the initial settlement of Bay Bulls started. The excavation carried out by Blair Temple in 2021 supports the secure late 17th to/or early 18th-century component that exists at the site of the Riverhead area (ChAe-15). Possible walls, structures, roads, and features were recorded on the RTK and drone photography for further analysis.

Hypothetically, the Riverhead area was probably inhabited in the 16th century and the occupation of the north shore spread out from there. The south shore seems to have been the focus of defensive fortifications since it is an ideal area for overseeing the entrance of the harbor. The landscape survey on the south presented a less ideal land formation for human occupation since it mostly includes slopes and small inlets with huge drops, and less flat surfaces for infrastructure establishment.

On the Battery Bay Bulls site (ChAe-07) (Site 2 in Figure 5), we found the remains of a cannon and well-defined earthworks (Figure 6). In Temple's work (2021) he points out that these fortifications were erected in the late 18th century and in use as late as 1814. With the landscape structure and evidence given, the fortification erected by Sir David Kirk in 1640 might be located in this area. It was mentioned in Maloney 1994:3 that the fortification is to oversee the entrance of the harbors, and the orientation of the Battery Bay Bulls (ChAe-07) perfectly meets the conditions. The more recent fortification helped support the hypothesis that this location (ChAe-07) might be effective for the defense of Bay Bulls harbor.

Another area of interest is at site 3 (ChAe-06) (refer to Figure 5 for the location and Figure 7 for a closer interpretation). In the aerial photo of 1948 that was georeferenced in QGIS software (Figure 8), shows the structure of the possible canning factory that was still running until the late 1950s. With the survey and data analysis, most of the remaining structure in site 3 is believed to be associated with the canning factory. One of the residents provided us with more information that this grey shade in the picture

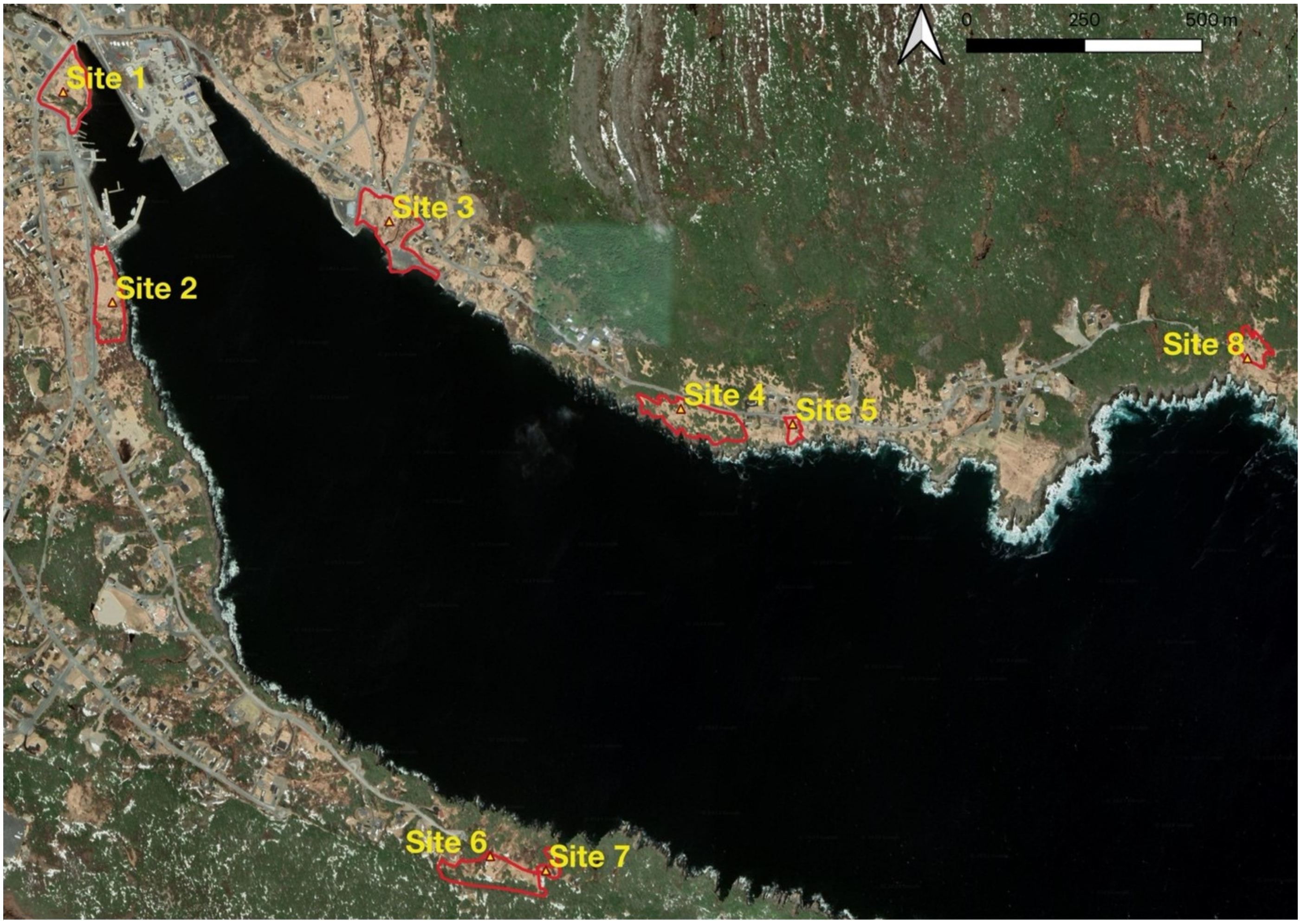


Figure 5: Area that was survey and recorded with RTK during fieldwork.

Figure 6: Closer look at Site 2, pink dots were the RTK points recorded as an indication of structures. The arrow is where the cannon was found.

Figure 7: Closer look at Site 3, yellow dots are RTK points recorded as an indication of structures.

Figure 8: Georeferenced site 3 with the layer of 1948 aerial photo, showing the layout of a canning factory.

Figure 9: Naval dock in Bay Bulls, built in 1942-1944. Picture taken from http://www.forposterityssake.ca/SE/SE0052.htm, courtesy of Donald (Bud) Rose.

(red circle in figure 8) was used for drying the fish, the bottom of the drying rack was a salt room to store salt for the fish. The small river was used for cleaning the processed fish and the room on the right (square in figure 8) was used as a storeroom. It is also mentioned that the storeroom was then used as a boom defence during the World War II period but not much information is given regarding the length of usage and actual function of the boom defense. There is indeed military fleet entering Bay Bulls during World War 2, and Bay Bulls was leased to the Canadian Government for dockyard construction in 1942-1944 (Figure 9) and repair site for navy and merchant ships during the war. Site 3 (ChAe-06) is believed to be part of the area that was rented to Canada for marine docking purposes during the war.

In conclusion, the representation of canonized saints in the gates of St. Peter and Paul's church very accurately displays the history of Bay Bulls. The 400 years of history since the initial settlement Bay Bulls has shown active participation in cod trading activities while facing the conflict between France and England over marine resources (George et al. 2016:31), while playing the role of an exporter of cod. Besides being an exporter of cod, Bay Bulls played an active role of trader. It is strongly believed that salt, sugar, and fishing gear were traded into Bay Bulls to support the production of salt fish and to sustain the daily needs of the community. Given the French and English history in Newfoundland (Maloney 1994:2, Prowse 2002:157), Bay Bulls is very likely part of multiple trade networks throughout the longue durée, connecting to different places and times. More work is needed to have a comprehensive view of the past in Bay Bulls. Nevertheless, Bay Bulls shows a strong connection of trading and mobility in the fisheries industries, and rich heritage and archaeological potential.

References

Anspach, L. A.
1819 *A History of the Island of Newfoundland*. Sherwood, Gilbert & Piper, London.

Barber, V. C.
1977 The Sapphire, a British frigate, sunk in action in Bay Bulls, Newfoundland, in 1696. *The International Journal of Nautical Archaeology and Underwater Exploration* 6(4): 305-313.

Blair Temple Associates Limited.
2021 *Bay Bulls (Riverhead) Data-Recovery Excavation (ChAe-15).* On file at the Provincial Archaeology Office.

Fernand Braudel, & Immanuel Wallerstein.
2009 History and the Social Sciences: The Longue Durée. *Review - Fernand Braudel Centre for the Study of Economies, Historical Systems, and Civilizations*, 32(2), 171–203.

George, J.I.R., Gary, S.E., Thompson, V.E., & Wright, K.
2016 *The French, English and a Fish: How They Transformed the Island of Newfoundland, 1696-1713*. ProQuest LLC, Ann Arbor.

Gerald Penney Associates Limited.
2019 *"Riverhead, Bay Bulls – Desk-based Archaeological Assessment". Prepared for property owner.* On file at the Provincial Archaeology Office.

Holm, Poul, Francis Ludlow, Cordula Scherer, Charles Travis, Bernard Allaire, Cristine Brito, Patrick W. Hayes, J. Al Matthews, Kieran J. Rankin, Richard J. Breen, Robert Legg, Kevin Lougheed and John Nicholls.
2018 The North Atlantic Fish Revolution (ca. AD 1500). *Quaternary Research*, 1-15.

Maloney, Q.
1994 *Trail Wanderings: A Folk History of Bay Bulls, Newfoundland*. Creative Publisher, St. John's.

Newfoundland Marine Archaeology Society
1977 *Final Report on the Underwater Survey and Excavation in Bay Bulls, 1977*. NMAS, St. John's.

O'Neil, P.
1983 *The Seat Imperial: Bay Bulls Past and Present.* Harry Cuff Publications Limited, St.John's.

Prowse, D. W.
2002 *A history of Newfoundland from the English, colonial and foreign records*. MacMillan and Co, New York.

Archaeology at Anse à Bertrand, Saint-Pierre et Miquelon 2022

Catherine Losier, Meghann Livingston, Aubrey O'Toole, Valentin De Filippo & ZheMin (Chermaine) Liew
Memorial University

Figure 1: From left to right, Frida Arlon, Julia Vanderwier, Valentin de Filippo (teaching assistant), Chermaine Liew (research assistant), Aubrey O'Toole (teaching assistant), Brian Howe, Meghann Livingston (research assistant), Calum Brydon, Hannah Wade, Jesse Reid, Victoria Ryan-Whiffen, and Dr. Catherine Losier.

During the summer of 2022, excavations at Anse à Bertrand in Saint-Pierre et Miquelon - this French archipelago is located 25 kilometres off the coast of Newfoundland - resumed for the final year of the project. Since 2016, Memorial's University team led by Dr. Catherine Losier spent four seasons investigating the site of Anse à Bertrand which is located on the south-eastern edge of Saint-Pierre harbour. In 2016, a pedestrian survey allowed to identify the unique potential of the site. In 2017, 2018, 2019, and 2022 the site was excavated. Over the four years, 145 square metres were excavated; 60 square metres were excavated in 2022 alone. The 32,311 artefacts and ecofacts recovered and catalogued so far (this number does not include 2022 findings) allow us to understand the material environment of the fisher folk who settled at Anse à Bertrand since the 17th century.

It should be mentioned that the excavation at Anse à Bertrand is the key aspect of the "Cod Road project" which has three objectives. First, it aims to better understand the unique role of Saint-Pierre et Miquelon in the historic French salt-cod fishery. Second, it documents the changes that occurred in the French fisheries between the 16th and the 20th centuries. We also devote considerable energy to reconstruct the trade networks associated with each period identified to determine how Saint-Pierre et Miquelon was connected with diverse regions of the Atlantic World between the 16th to 20th centuries and the impact of the cod fisheries in relation to globalization.

As it was the case in 2017 and 2018, the Anse à Bertrand project housed the Memorial Archaeology field school. Therefore, seven students travelled to Saint-Pierre to participate in the project to learn field and laboratory methods. With the vast area excavated in 2022, I would like to thank field school students Frida Arlon, Calum Brydon, Brian Howe, Jesse Reid, Victoria Ryan-Whiffen, Julia Vanderwier and Hannah Wade for their hard work. I also extend my thanks to my extraordinary team of teaching/research assistants: Valentin de Filippo, Chermaine Liew, Meghann Livingston and Aubrey O'Toole whom were key to the success of this field campaign (Figure 1). Not only did we do a lot this year, but it was a very fun field season.

The first objective of the 2022 field campaign was to finish the excavation at the Anse à Bertrand site. This is the reason why we opened two vast sectors namely, sectors 9 and 10, each measuring 7 metres (east-west) by 5 metres (north-south). This area is located in the east of the site, contiguous to sector 8 (Figure 2). The second objective of the field campaign was to finish the excavation of the 19th cen-

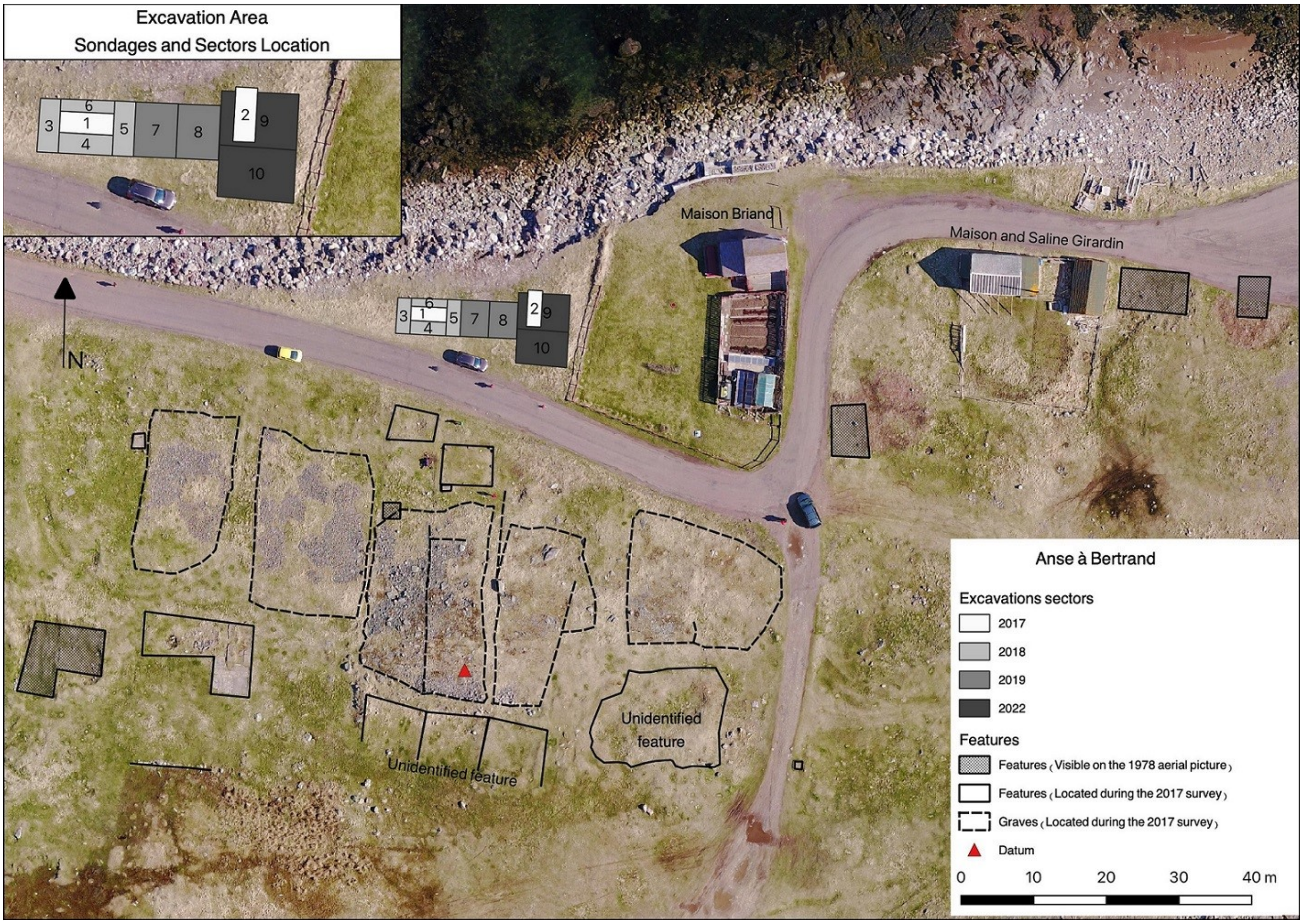


Figure 2: Map of Anse à Bertrand with a close up locating the sectors excavated in 2017, 2018, 2019 and 2022.

tury building found in 2019 in sector 8 (Losier et al. 2020). As no eastern limit was found in sector 8, it was evident that the foundation of this building was continuing to the east. The third objective was to document all the archaeological contexts from the 21st century to the first occupation of the site in the 17th century and link the discoveries of 2022 with the excavations of 2017, 2018, 2019 (Losier et al. 2018; 2019; 2020). This will be done in the synthesis of the project.

Throughout the years, our comprehension of the site became very nuanced, and we can associate the archaeological contexts identified at Anse à Bertrand with the geopolitics of the time and the ruptures in the stratigraphy with the transformations that occurred in the cod fisheries during the last 500 years. Although Indigenous precontact occupations have been identified in the archipelago (Auger et al. 2020; Leblanc 2010; Yvan Pailler 2022), no precontact occupation has been identified at Anse à Bertrand. The oldest context dates from the 17th century and is associated with French seasonal migratory fishing expeditions and the establishment in Newfoundland and Saint-Pierre et Miquelon of *habitants-pêcheurs* during the second half of the 18th century, and the site is likely abandoned and reoccupied during the 19th century.

The most interesting aspect of the 2022 excavation is the bounty of new information about the 19th century, notably artefacts. This period was not very well documented by previous excavations and it is important to understand the change that occurred in the fisheries with the increased presence of the *négociants* who were consolidating large fishing establishments and hiring of many fisher folk, men and children, coming from France on a yearly basis. Again, at the beginning of the 20th century, there is a rupture in the occupation of the site and a change in the infrastructure associated with the increased presence of the *petits pêcheurs* in the Anse à Bertrand neighbor-

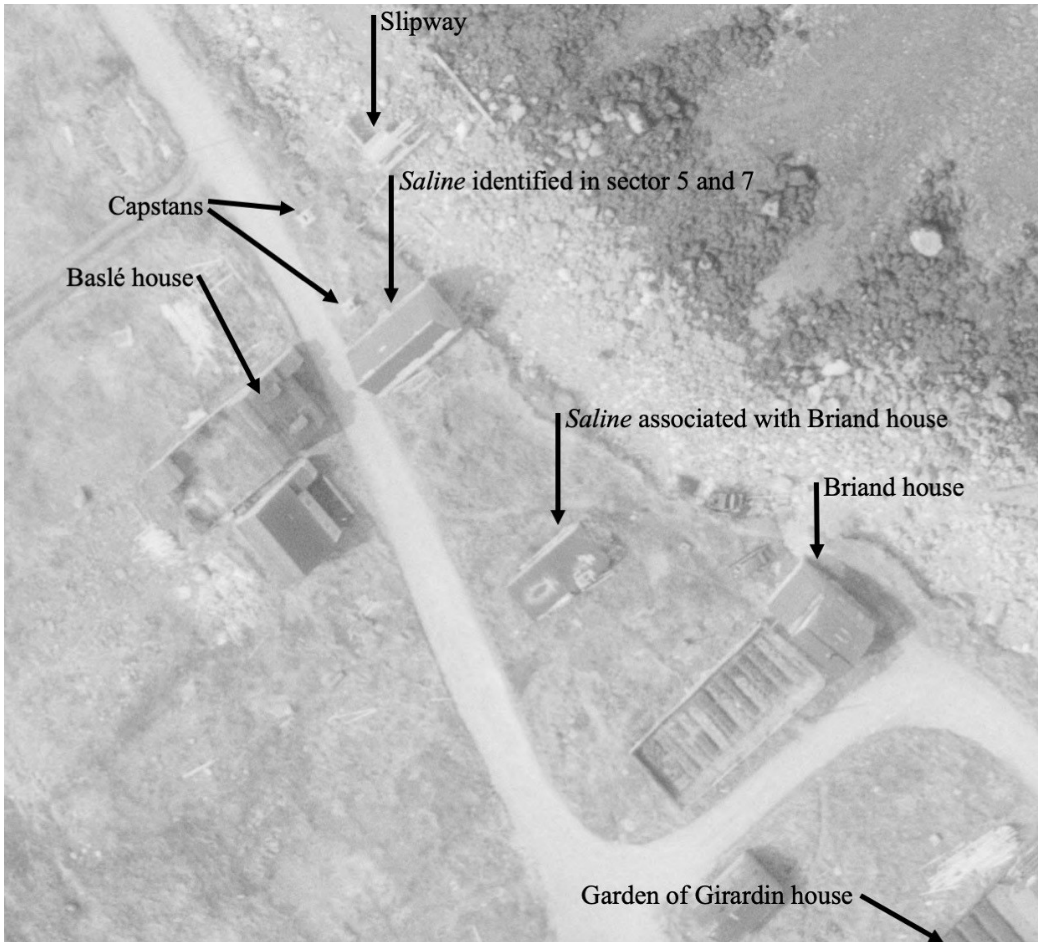


Figure 3: Aerial picture of 1978 showing the infrastructure of Anse à Bertrand, from Géoportail.

hood. Except for Briand and Girardin families who never agreed to sell their properties, Anse à Bertrand inhabitants have been expropriated at the beginning of 1980s when the civil aviation extended and reoriented the airstrip of the first airport. Excavations have revealed the presence of the families living at Anse à Bertrand during the 20th century. I invite readers to consult former PAO Reviews, other papers and www.thecodroad.com website for additional information pertaining to the historic context of Saint-Pierre et Miquelon and Anse à Bertrand. My goal here is to update readers about the 2022 excavations and to avoid being redundant (Champagne et al. 2019; Livingston et al. 2018; 2020; Losier 2021; Losier et al. 2021).

The 20th century

In 2018, the excavation of sector 5 led to the discovery of the foundations of the Baslé *saline* (fishing stage). In 2019, the excavation of sector 7, adjacent to sector 5, allowed us to complete the excavation of the feature. The 20th century contexts in sector 8 (excavated in 2019) and sectors 9 and 10 (excavated in 2022) yield evidence of demolition such as portions of walls or floor associated either with the destruction of the Baslé or Briand *salines*. The sectors excavated in 2022 are located in between both *salines* (figure 3). Besides the demolition and occupation layers in which an important quantity of artefacts associated with the 20th century were found, including marbles, graphite rod or alcohol containers, no feature dating from the period was identified (figure 4). This is not surprising as the aerial pictures informed us that we were likely in a work area or a circulation space.

In addition, it seems that the building that we associate primarily with the 19th century (see *The 19th century* section), but still stands in 1903, could have been contemporaneous to some of the buildings present at Anse à Bertrand during the 20th century. It is notably the case for the Briand house as it is suggested on a postcard from 1903-1904 (figure 5). Therefore, the space in between the two *salines* (Baslé and Briand) will have been occupied by this building before its destruction, which likely occurred in the first half of the 20th century. Indeed, this building does not seem to appear on the aerial picture of 1949, nor on the IGN map of 1955.

The 19th century (and beginning of the 20th century)

One of the main objectives of the 2022 field season was to excavate the eastern portion of the 19th century building initially found in sector 2 (2017) and better described by its excavation in sector 8 in 2019

Figure 4: a) Graphite rod use in the batteries of motorized dories, after 1911; b) Marbles, 20th century; Bottle of Pernod anise, circa 1970 according to the seal.

(figure 6). Although the northern portion of the building is lost to erosion, we have been able to excavate the whole width of the building in an east-west orientation. The stone foundation of the building measures 10.10 metres (east-west) by a minimum of 4.45 metres (north-south) not including the lean-to located on the south side and likely on the west side of the building (Losier et al. 2020: 90). This makes it a bigger building than the Briand house (8.70 metres east-west on 4.5 metres north-south) or the Girardin house (9.00 metres east-west on 5.20 metres east-west) lean-to included. These measurements led us to hypothesize that the biggest building present on the postcard of 1903-1904 might be the one located during the excavations (Figure 5).

One of the most interesting aspects of the 2022 field work is the excavation of occupation layers directly associated with the use of the 19th century building. The period between 1816, which mark the return of the population to the archipelago after its final retrocession to France in 1815, and the beginning of the 20th century are not very well understood so far. We now have more data to inform our interpretations. The perspective of the artefact analysis is exciting but not done yet, the study will be available in future reports and publications.

The late 17th and 18th century

The features and occupation layers associated with this period are probably the most interesting, but also the most puzzling, aspects of the 2022 excavation. In sector 9 where the 19th century building was identified, we did not excavate under the foundation. Therefore, only two postholes associated with the 18th century were located in the extreme east of sector 9, outside the limit of the building. In sector 10 however, the situation is completely different. We found what looks like the base of a larger feature that, like in other parts of the site, incorporated natural boulders in its construction. The main difference with other 17th and 18th century features found at Anse à Bertrand is its size,

Figure 5: Postcard of the of Anse à Bertrand taken from the west to the east, 1903-1904.

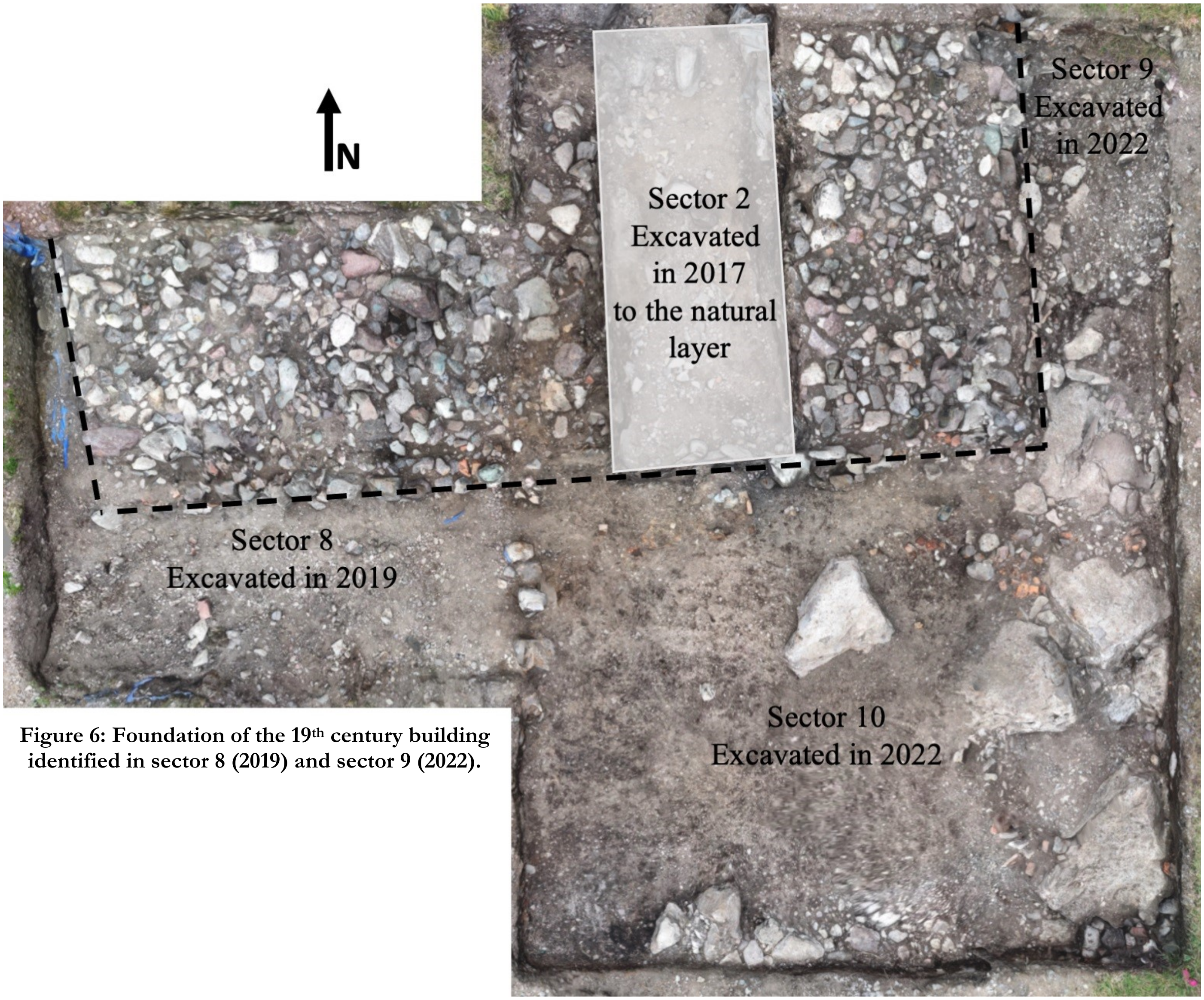


Figure 6: Foundation of the 19th century building identified in sector 8 (2019) and sector 9 (2022).

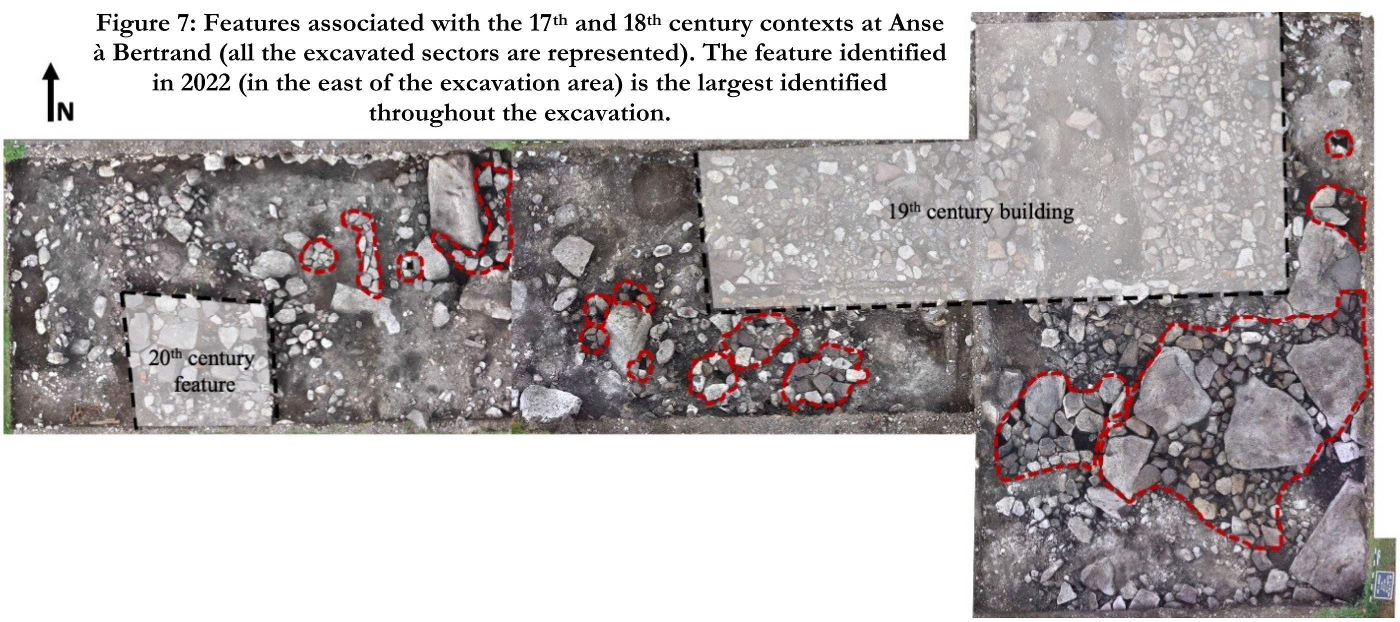


Figure 7: Features associated with the 17th and 18th century contexts at Anse à Bertrand (all the excavated sectors are represented). The feature identified in 2022 (in the east of the excavation area) is the largest identified throughout the excavation.

Figure 8: End of season backfilling of the Anse à Bertrand site.

almost 4.50 metres (southeast-northwest) by 3.20 metres (northeast-southwest). The postholes identified in sectors 9 and 10 seem to be located on the edge or outside of the foundation of that feature (Figure 7).

The layers associated with the feature and the ones located under it are not rich in artefacts. The majority of the artefacts associated with the 17th and 18th centuries have been located in the stratigraphic units located outside of the feature, thus reinforcing the fact that we could have been in the interior of a building and the refuse will have been tossed outside of it. This is a unique discovery at Anse à Bertrand and we can associate this feature with the habitants-pêcheurs settled seasonally at the Anse à Bertrand during 17th and 18th century fishing campaigns.

The 2022 field work was the ultimate season of the Anse à Bertrand project. Under a drizzly and grey weather (matching our feelings) and with the help of Patrick Alain's team from the DTAM we backfilled the site one last time (figure 8). We are proud of what we accomplished and aware that the data recovered between 2016 and 2022 are important in analyzing the French fisheries over 500 years and documenting the impact of cod in the development of the modern world. This is a good place to mention that over the course of the project 29 undergrad students participated in the field school and seven grad students work as research or teaching assistants on the project. The training to undergrad students and the research opportunities for three honours students and four MA's ensure that the Anse à Bertrand project will have durable impact on the education of Memorial archaeology students. The population and youths of Saint-Pierre et Miquelon were also involved in the project as spontaneous volunteers, visitors and informants; we thank them deeply. I also want to thank our local and internationational partners: Association Sauvegarde de l'Archipel, la Préfecture et Collectivité Territoriale de Saint-Pierre et Miquelon, Le Musée de l'Arche, le CRSH, Memorial University, le SRA-Bretagne, ainsi que Rosiane de Lizzaraga Cheffe de la Mission aux Affaires Culturelles, préfecture de Saint-Pierre et Miquelon.

References

Auger, R., Marchand, G. and Rousseau, L. (2020). *Rapport final d'opération de fouille programmée. Le site de l'Anse-à-Henry, Saint-Pierre, Saint-Pierre et Miquelon*, Submitted to Direction Régionale des Affaires Culturelles de Bretagne, Québec.

Champagne, M., Losier, C., Livingston, M. and Barras, M. (2019). Archaeology at Anse à Bertrand, Saint-Pierre et Miquelon 2018. *Provincial Archaeology Office 2018 Archaeology Review,* p. 38–44.

Leblanc, S. (2010). *Middle Dorset Variability and Regional Variability and Regional Cultural Traditions: A Case Study from Newfoundland and Saint-Pierre and Miquelon*, Achaeopress, Oxford, England.

Livingston, M., Losier, C. and Champagne, M. (2020). Archaeology at Anse à Bertrand, Saint-Pierre et Miquelon 2019. *Provincial Archaeology Office 2018 Archaeology Review,* p. 160–166.

Livingston, M., Losier, C., Champagne, M. and Barras, M. (2018). Archaeology at Anse à Bertrand, Saint-Pierre et Miquelon 2017. *Provincial Archaeology Office 2018 Archaeology Review,* p. 164–167.

Losier, C. (2021). *Saint-Pierre et Miquelon : 500 ans de pêche française dans l'Atlantique Nord*, Memorial University, St. John's.

Losier, C., Liew, Z. M., Champagne, M. and Livingston, M. (2021). Le grand métier et la petite pêche : Archéologie des 19e et 20e siècles à Anse à Bertrand Saint-Pierre et Miquelon. *Revue D'Archéologie Contemporaine Française* **1**: 59–80.

Losier, C., Livingston, M. and Champagne, M. (2018). *Campagne de fouille 2017, Anse à Bertrand, Saint-Pierre et Miquelon*, Submitted to Direction de la cohésion sociale, du travail, de l'emploi et de la population (DCSTEP), Saint-Pierre and to Service d'archéologie de la DRAC-Bretagne, St. John's.

Losier, C., Livingston, M. and Champagne, M. (2019). *Rapport intermédiaire 2018. Année 1 du projet triennal : Fouille Anse à Bertrand, Saint-Pierre (2018-2020)*, Submitted to Direction de la cohésion sociale, du travail, de l'emploi et de la population (DCSTEP), Saint-Pierre and to Service d'archéologie de la DRAC-Bretagne, St. John's.

Losier, C., Livingston, M. and Champagne, M. (2020). *Rapport intermédiaire 2019. Année 2 du projet triennal : Fouille Anse à Bertrand, Saint-Pierre (2018-2020)*, Submitted to Préfecture de Saint-Pierre et Miquelon, Saint-Pierre and to Service d'archéologie de la DRAC-Bretagne, St. John's.

Yvan Pailler (2022). *Saint-Pierre-et-Miquelon, Miquelon-Langlade. Recherches croisées autour des occupations modernes (XVIIe-XVIIIe s.) de Miquelon*, INRAP, Paris.

Summary of Research Undertaken in 2022

Laurie Mclean
Consulting Archaeologist

The author performed two archaeological projects in 2022. A Stage 1 Historic Resources Impact Assessment (HRIA), Permit No. 22.19, was conducted at the former Indian Cove Neck Park in May and an archaeological survey of Badger Bay, Permit 22.25, took place in July. The latter activity led to a salvage excavation and continued brief surveying, Permit 22.25.01, in August and September (see below).

Stage 1 Historic Resources Impact Assessment Of The Former Indian Cove Neck Park

Indian Cove Neck is located near the base of the Comfort Cove-Newstead Peninsula in Notre Dame Bay. The author conducted a Stage 1 HRIA of a former day park there to help facilitate Newfoundland and Labrador's Department of Fisheries, Forestry and Agriculture/Land Management Division's planned dispossession of title for all lands described as the former park (Terms of Reference). Indian Cove Neck had been assigned archaeological potential in consideration of historic accounts of people using it to portage between Loon Bay and Indian Arm. There was also high probability for Indigenous people having portaged across this neck, as 13 archaeological sites have been recorded along the peninsula's shoreline and nearby. Another 88 sites, containing 111 components, are located in the adjacent Bay of Exploits to the west and 28 sites, encompassing 40 components, have been identified along the coast to the east. There are also a number of accounts of Beothuk attacking European fishers in Loon Bay, Indian Arm and Birch Bay which are adjacent to the peninsula or nearby (McLean 2022a:2).

Figure 1: Notched log feature found in the former Indian Cove Neck Park.

The author assessed the 620 x 620-420 meter park area through surface examination and judgemental test pitting implemented while walking repeated parallel transects through the study zone as much as the dense forest and extensive standing water permitted. Pre-twentieth century cultural material was not recovered, but there was extensive evidence for recent woodcutting and rabbit snaring (Figure 1). The low topography and extensive wet conditions led to the conclusion that a vacant property located 170 meters south of the former park, outside the assessment area, is a better candidate for the reported portage route. This property contains a large cottage and outbuildings that are adjacent to a road extending across the neck. These structures may be associated with a former waystation that provided a stopover for people travelling between outer Notre Dame Bay and Lewisporte before the completion of the highway to Comfort Cove in 1952 (Ibid:1).

Archaeological Survey of Badger Bay, Notre Dame Bay

The author, in 2022, had discussions with a former archaeology student/experienced archaeological field worker/retired teacher, now living in Triton, regarding the Beothuk legacy of the Badger Bay region and related archaeological issues. This led to a survey of Badger Bay in July, which preceded a salvage excavation undertaken in August and September. Two new Beothuk sites, DiAw-18 and 19, were identified in Wild Bight, Badger Bay, and a nineteenth/early twentieth century historic occupation, DjAw-23, was discovered in Pilley's Tickle. Additional new evidence for Beothuk occupations near Badger Bay was obtained from a set of privately collected artifacts that were donated to the project (see below). Three previously known sites, DiAv-5, 6, 7, were revisited during the survey and two former burials (DjAw-16, 17) on Big Island, also known as Burnt Island, could not be found during a brief search (McLean 2022b:28, 29).

A review of archaeological and historical data in preparation for the survey showed an absence of Beothuk living sites along the coastline from New Bay to Green Bay, in Notre Dame Bay, despite numerous historic references to Beothuk in this region. The dearth of Beothuk archaeological sites extended to the Badger Bay watershed where significant Beothuk activity was also historically reported (see below). These coastal areas and its adjoining near-coastal zones contained 82 archaeological sites, manifesting 110 components, along with seven unconfirmed Beothuk localities, before the 2022 survey. This site list shows occupations beginning with the Maritime Archaic, through Pre-Inuit and Ancestral Beothuk. Beothuk were represented by six burials and a late Little Passage/early Beothuk interment (McLean 2022b:1). Historical data show repeated sightings of Beothuk travelling in canoes and vacant camps in the region between 1769 and 1827. Europeans implemented eight searches for Beothuk along this coastline and the Badger Bay watershed during this period, recording at least 37 wigwams, along with hearths, portage paths and canoe-travelling Beothuk. This includes a minimum of 14 wigwams along the coastline and 23 in the Badger Bay watershed (McLean 2022b:5; 2022c:7). The wigwam total is listed as a minimum estimate due to the many references citing an unspecified number of structures. These sites are interpreted as containing at least two wigwams.

Badger Bay was selected for archaeological examination in 2022 in consideration of the historically recorded Beothuk activity there and its affiliation with Beothuk movements between the Exploits Valley and the seacoast. At least six wigwams, three portage paths and one near encounter with canoe-travelling Beothuk were recorded for Badger Bay (Ibid 2022b:5). Two of the wigwams are associated with the surrender of Shanawdithit, her sister and their mother to European furriers in 1823. Shanawdithit's route through the watershed and along the Badger Bay coast area is also shown on a map she drew in 1828/29 in St. John's (Howley 1915:243). Another two wigwams and two portage paths are shown on a map representing European exploration of Wild Bight and the adjoining watershed in 1820. This map also shows the location of four wigwams at two locations in the watershed (Waller ND). This interior area also contained seven wigwams that were occupied by Beothuk in 1822-23 prior to Shanawdithit's desperate move to the coast (Howley 1915:170). An additional 10, or more, wigwams, plus other features, were reported at one site within the watershed in 1827 by William Cormack during his search for Beothuk (Ibid:191).

The non-recognition, archaeologically speaking, of Badger Bay's Beothuk features prior to 2022 may be partly attributable to the late-Beothuk, i.e. post- A.D. 1780, tactic of establishing camps in previously unused locations, often at extended distances from river banks and shorelines, in order to avoid detection by Europeans (McLean 2020:34). Shanawdithit described the Beothuk's construction of a new camp, following these criteria, on the shore of Red Indian Lake in 1811 (Howley 1915:227). This preference for camp location suggests that archaeological searches for late-period Beothuk occupations should encompass slightly wider coastal tracts and river bank/lake shore sections than would normally be examined.

The 2022 survey began in Wild Bight, at the south end of Badger Bay, where a 4000 square meter level terrace, four to six meters above sea level, skirts a cobble beach. A prominent stream drains into the bight's eastern corner and a smaller brook flows into its west corner. Flakes had been observed by one of the crew members at the eastern eroding bank a few years ago, indicating that undocumented archaeological resources existed in this cove. Surface examination of the terrace in 2022 found an eroding hearth at its eastern end (Figure 2). The profile was lightly trowelled, revealing two in situ flakes, charcoal, fire-altered rocks and an obvious black culture layer. Test pits

Figure 2: Eroding profile of a Beothuk hearth found in Badger Bay.

dug throughout the hearth perimeter were sterile, indicating that the identified feature represented the vestigial portion of a larger deposit that had been disturbed by the recent construction of a private road and erosion. This conclusion was corroborated by the discovery of rosehead wrought iron nails and fire-altered rocks on the surface of the base of the four-meter high eroding bank at the hearth's eastern end. Additional rosehead nails and fragments occurred on the surface as well as slightly sub-surface of the road skirting the foot of the eroding bank. These displaced artifacts appear to have originated from the hearth. A site record form was submitted to the Provincial Archaeology Office (PAO) for the Badger Bay Bottom site and the Borden Number of DiAw-18 was assigned.

Charcoal from the hearth was radiocarbon dated to 130 $\pm$ 30 BP (Beta 633121), CAL AD 1798-1942 (64%)/CAL AD 1674-1744 (26.8%)/CAL AD 1750-1765 (4.1%)/1774-1776 (0.5%) (McLean 2022b:16). The presence of flakes within the hearth and the fact that the majority of the first calibrated period lies outside the terminal Beothuk date of 1829, suggests that the projected 1674-1765 interval is more realistic. This date and the assemblage's combination of European materials along with traditional options are consistent with early to mid-period Beothuk collections from the Beaches (DeAk-01), Boyd's Cove (DiAp-03) and Inspector Island (DiAq-01). Wrought iron nails were selected for recycling into projectile points at the Beaches, which was occupied until the mid-eighteenth century and were by far the most popular European objects selected for modification at Boyd's Cove and Inspector Island, which were abandoned between 1720 and 1730 (McLean 1989:49, 107, 128; Pastore 1987:12, 1992:30).

The accumulated data pertaining to the hearth, in consideration of the rarity of Beothuk sites in the region, along with the risk of further erosion and rumoured cabin development, prompted the crew to plan salvage excavation of the feature. The PAO extended the author's permit and 3.37 square meters were dug in three days. The earlier light trowelling of the profile had excavated 0.21 square meters, meaning that the total sampled area equalled 3.58 square meters. The salvage dig recovered another two flakes, along with charcoal and fire-altered rocks. The small amount of cultural material within the remaining portion of the feature, the absence of artifacts in its perimeter and the recovery of wrought iron nails and fire-altered rocks from the eroding bank suggest that associated activity areas probably occurred in the

Figure 3: Badger Bay Bottom-2 (DiAw-19). Arrow points to the location of a Beothuk-modified nail.

missing southern portion, which was removed by road construction and erosion. There was no evidence of an associated structure, leading to the conclusion that the hearth probably was briefly used by Beothuk travelling between the coast and the inland environment before the heightened tensions of the latter eighteenth and nineteenth centuries.

A final check for the wigwam shown on the 1820 map of Wild Bight took place during the conclusion of the salvage dig and afterwards. A crew-member was equipped with a metal detector and was dispatched to the central area of the terrace where the wigwam was located. Testing of flagged positive hits recovered 13 metal artifacts and one refined white earthenware sherd (McLean 2022b:22). The presence of a complete rosehead nail with its shaft partially hammered flat in mid-section identified the assemblage as Beothuk. This object represents the initial stages of manufacturing a projectile point from a wrought iron nail (McLean 1989:48; 2003:7) (Figures 3, 4). Additional judgemental test pitting and surface examination did not produce cultural material, meaning that a more rigorous analysis is needed to check for the presence of the reported wigwam along with other possible deposits. This site was recorded as Badger Bay Bottom-2 (DiAw-19).

The 2022 survey also consisted of a surface examination and brief test pitting at a blunt 8000 square meter promontory along Badger Bay's eastern coast that appears to be Shanawdithit's point of contact with European furriers as shown on a map she created in St. John's (Figure 5) (Howley 1915:243). Cultural material was not observed here in 2022, but a more comprehensive analysis of this location is advocated. A possible rock feature in Shoal Arm was not tested and good quality chert-like cobbles were

Figure 4: Beothuk-modified nail from Badger Bay Bottom-2 (DiAw-19).

Figure 5: South beach of Shanawdithit's possible contact area with furriers in 1823.

Figure 6: Projectile point fragments from Oil Island (DjAw-15): (A) Little Passage, (B) Little Passage/Beothuk.

identified on the North Slope overlooking North Twin Lake.

A number of privately collected stone artifacts that were donated to the project add additional evidence of Beothuk activity in this coastal area, along with other information. Artifacts that were surface collected from Oil Island (DjAw-15), northwest from Badger Bay, corroborate the previous identification of Pre-Inuit and Little Passage occupations there, but an incomplete basally notched stone point represents the early Beothuk period at this site (Schwarz 1984:62) (McLean 2022b:29) (Figure 6). A waterworn Pre-Inuit biface that had been collected from the surface of Sir Richard Squires Park, 25 kilometers northeast from Deer Lake and 11 kilometers northwest from Sandy Lake is the first evidence of precontact activity along this portion of the Humber River, resulting in the designation of a new site (DiBh-02) (McLean 2022b:30) (Figure 7). Provenience data for this artifact are scant, meaning that further archaeological assessment of this area is necessary.

Figure 7: Biface fragment found at Sir Richard Squires Park (DiBh-02).

References

Department of Fisheries, Forestry and Agriculture/Land Management Division, Government of Newfoundland and Labrador.
2022 Former Indian Cove Neck Park, Terms of Reference for Stage 1 Historic Resources Impact Assessment. Contract No. 002-22-C.

Howley, J,P.
1915 The Beothucs or Red Indians. Prospero Books. Toronto.

McLean, Laurie. The Beothuk Adoption of Iron Technology. Unpublished M.A. thesis,
1989 Department of Anthropology, Memorial University of Newfoundland and Labrador. St. John's.
2003 A Guide to Beothuk Iron. NAHOP Artifact Studies 1, Newfoundland Archaeological Heritage Outreach Program, Archaeology Unit. Memorial University of Newfoundland and Labrador. St. John's.

2020 Beothuk Housepits: Barometers of Historic Transition. Academia.edu.

2022a A Stage One Historic Resources Impact Assessment for the Former Indian Cove Neck Park: Permit No. 22.19: Contract No. 002-22-C: Final Report. On file, Provincial Archaeology Office, Department of Tourism, Culture, Industry and Innovation, Government of Newfoundland and Labrador. St. John's.

2022b Final Report for an Archaeological Survey of Badger Bay, Newfoundland. Permit No. 22.25, 22.25.01. Report on file, Provincial Archaeology Office, Department of Tourism, Culture, Industry and Innovation, Government of Newfoundland and Labrador. St. John's.

2022c Tracing Shanawdithit: Badger Bay as a Focal Point for Eighteenth and Nineteenth Century Beothuk. Paper prepared for the Beothuk Institute. beothukinstitute.ca

Pastore, Ralph T. Fishermen, Furriers and Beothuks: The Economy of Extinction. Man in the 1987 North east. No. 33.

1992 Shanawdithit's People. The Archaeology of the Beothuks. Atlantic Archaeology Ltd. St. John's.

Schwarz, Frederick A. The Little Passage Complex in Newfoundland. Honours Dissertation, 1984 Department of Anthropology, Memorial University of Newfoundland and Labrador. St. John's.

Waller, Charles C. Captain Buchan's Track into the Interior of Newfoundland Undertaken in the N.D. Month of January, 1820 to open a Communication with the Native Indians. ADD 577031.1, the British Library. Photocopy at the Centre for Newfoundland Studies, Queen Elizabeth II Library, Memorial University of Newfoundland and Labrador. St. John's.

Old beetles in Kivalekh's landscape: What can they tell us?

Pier-Ann Milliard
PhD Student, Memorial University

Introduction

Humans inhabiting a landscape affect, in many ways, ecosystems' dynamics as their activities leave traces in the environment. Redefining the place humans occupy in nature started with reexamining old paradigms in the humanities and deconstructing popular thinking (Billington 1981; Bottema et al. 1990; Dickason 1997; Mann 2005; Redman 1999). For a long time, scholars associated the beginnings of human impacts on nature with the emergence of agricultural societies and centralized economies (e.g., Lozny 2006; Moran 2010), and their acceleration with the Industrial Revolution in the 18th century (Moran 2010). Indigenous people have thus long been assumed to have minimal or no impact within their environment (Billington 1981; Dickason 1997) – something primarily depicted through the Pristine Myth (Denevan 1992) and the Noble Savage trope (Briggs et al. 2006; Mann 2005; Redman 1999, 2005). It is only recently that debates within both ecology and archaeology have started to shift this paradigm, dismantling these two theoretical constructs. As a number of studies have since proved that environmental changes associated with mobile groups were also detectable and accessible in the palaeoecological record (e.g., Aronsson 1994; Barbel et al. 2020; Barry et al. 1997; Bhiry et al. 2016; Butler & Dawson 2013; Butler et al. 2018; Derry et al. 1999; Dussault et al. 2016; Forbes et al. 2015, 2020; Kamerling et al. 2017; Kaplan & Woollett 2016; Ledger 2018; Ledger & Forbes 2020; Michelutti et al. 2013; Oberndorfer et al. 2020; Panagiotakopulu et al. 2020; Renouf et al. 2009; Roy et al. 2015, 2021; Zutter 2012), ideas about Indigenous peoples living in harmony with nature have been abandoned. Nowadays, ecosystems are understood as the product of interactions between ongoing natural processes and the results of human actions (Briggs et al. 2006; Wu & Loucks 1995; Scheffer et al. 2001). However, since that paradigm shift first emerged, the continued use of words such as 'destructive effects', 'degraded', or even 'impact/impacted' (e.g., Bottema et al. 1990; Briggs et al. 2006) when referring to all or most human action within the natural environment continue to endorse somewhat of a pejorative meaning. Today, as an increasing number of studies have looked into the possibility that humans could also be a force for positive changes in the environment (e.g., by increasing biodiversity or ecosystem productivity, see for example Butler et al. 2018; Thomas 2020), we are moving towards a more nuanced understanding of the role humans play in shaping the landscapes around them.

A recent review of palaeoecological and environmental-archaeological studies conducted in Labrador has drawn a picture of the general patterns that emerge as a result of Inuit-influenced environmental interactions (Carlson 2022). Evidence shows that the long history of engagement between Inuit (and Palaeo-Inuit) and their environment shaped the Labrador landscape. For example, it is now known that Arctic foragers' everyday activities cause environmental disturbances by adding nutrients into the soil, leading to changes in local biotic communities, thanks to the fact that this leaves detectable traces in the palaeocological record, in the form of remains of plants, insects, or biochemical signatures (Couture 2014; Couture et al. 2016; Derry et al. 1999; Dussault et al. 2016; Fenger-Nielsen et al. 2019; Forbes 1996; Frink & Knudson 2010; Hicks 1993; Kamerling et al. 2017; Knudson & Frink 2010; Ledger 2018; Ledger & Forbes 2020; Lutz 1951; Michelutti et al. 2013; Renouf et al. 2009; Roy et al. 2012; 2015; 2021; Zutter 2009, 2012). Following these premises, my MA project examined environmental change and human activity within Labrador's northern coastal landscape by attempting to capture and define an "ecological footprint" for the groups of Arctic foragers who lived there. Since insects have proven to be an excellent proxy to study both lifeways and environmental changes, archaeoentomological analyses have been performed on samples of peat collected near the archaeological site of Kivalekh.

Studying beetle fossils extracted from a carefully selected sampling location within a peat bog close to Inuit habitation sites allowed me to assess and document local ecological change over time, including the archaeological footprint (i.e., the beetle taxa and associated ecological information) of Inuit groups. In order to achieve a detailed, high-resolution chronology for different occupations, the archaeoentomological data produced has been integrated into a Frequency diagram with radiocarbon dates, alongside microscopic charcoal analysis and loss-on-ignition (LOI) results. The data generated, combined with a thorough review of the literature about past Indigenous lifeways in the Arctic and the history of the chronology of human occupation in Labrador, helped interpret the palaeoecological datasets and relate them with occupation and human activity potentially captured in the peat.

For this article, I will avoid any methodological jargon except perhaps for sampling methods used in the field as it consists of a relatively novel method developed by Dr. Forbes and Dr. Ledger (cf. Ledger & Forbes 2020) that we applied at Kivalekh– that I will only describe briefly below. Instead, I will focus on explaining larger concepts, such as niche construction processes, which are particularly helpful in explaining human-environment interactions using beetle remains. Before that, however, let's see what we mean when using terms like "Arctic foragers" and "ecological footprint".

Who are the Arctic foragers and what do we know about their ecological footprints?

The term 'Arctic foragers' as employed herein proposes to encompass the traditional definition of hunter-gatherers and/or hunter-fisher-gatherers, which refers to populations who do not practice agriculture. The term 'forager' suggests a group of people who rely chiefly on harvesting local resources that are seasonally available. It incorporates traditional activities such as fishing, hunting, and harvesting various wild food resources.

In Labrador, the mosaic of culture is complex and dynamic, meaning that there are several distinct groups (within two archaeological traditions (1) Palaeo-Inuit; and (2) Inuit) who migrated eastward from Alaska (Friesen 2007, 2013, 2015; Friesen & Mason 2016; McGhee 2000). The lifeways of these cultural groups have left evidence in the environment, and in order to define the disturbances caused by Arctic foragers (as a cultural entity) on the environment, it is essential to examine ecological processes that have been documented near archaeological sites. Anthropogenic activities and climate fluctuations disrupt ecological systems to varying degrees and scales. These ecological disturbances can be, and have been, studied using different palaeoecological and environmental-archaeological methods. This is what I refer to the "ecological footprint". "Environmental signature", "ecological signal" are also other terms used to describe these ecological and anthropic disturbances in the environment. A recent MUNL Master's thesis by Ivan Carlson (2022) has identified geochemical analysis, palynology, sedimentology, paleolimnology, zooarchaeology, and archaeoentomology as particularly useful to identify measure and interpret these. It was a valuable resource to help find relevant literature and better understand what kinds of ecological traces and disturbances that are likely to have been left in northern Labrador's landscapes due to human activities. The schema below (Figure 1) illustrates and synthesizes palaeoenvironmental research conducted in the North Atlantic by stressing key 'niche constructing' processes documented at or near Arctic archaeological sites. A focus on archaeoentomology is further developed as it consists of the main methodology employed to achieve my MA.

Beetles, a great indicator for defining an ecological footprint

Indeed, insect communities are known to show ecological behaviors in archaeological contexts. These patterns are characterized by abundant and rich biodiversity in areas close to Indigenous archaeology (Böcher & Fredskild 1993; Dussault et al. 2016; Forbes et al. 2015). This can manifest as an increase in insect taxa associated with a marsh-like environment as a specific site becomes wetter and warmer over time (Dussault et al. 2016), or as an increase of Staphylinidae (rove beetles), which are indicators of decaying organic matter (suggesting nutrient-rich habitats) likely to be associated with human activities (Forbes et al. 2017). Thus far, the only obligate synanthropic taxon associated with Indigenous populations is *Pediculus humanus* L. (human louse), which has been found in Inuit dwellings and associated structures across the circumpolar north (Forbes et al. 2015; Ledger & Forbes 2020). In archaeological contexts, it is common to find taxa that usually occupy niches that are rarely sampled in modern entomological re-

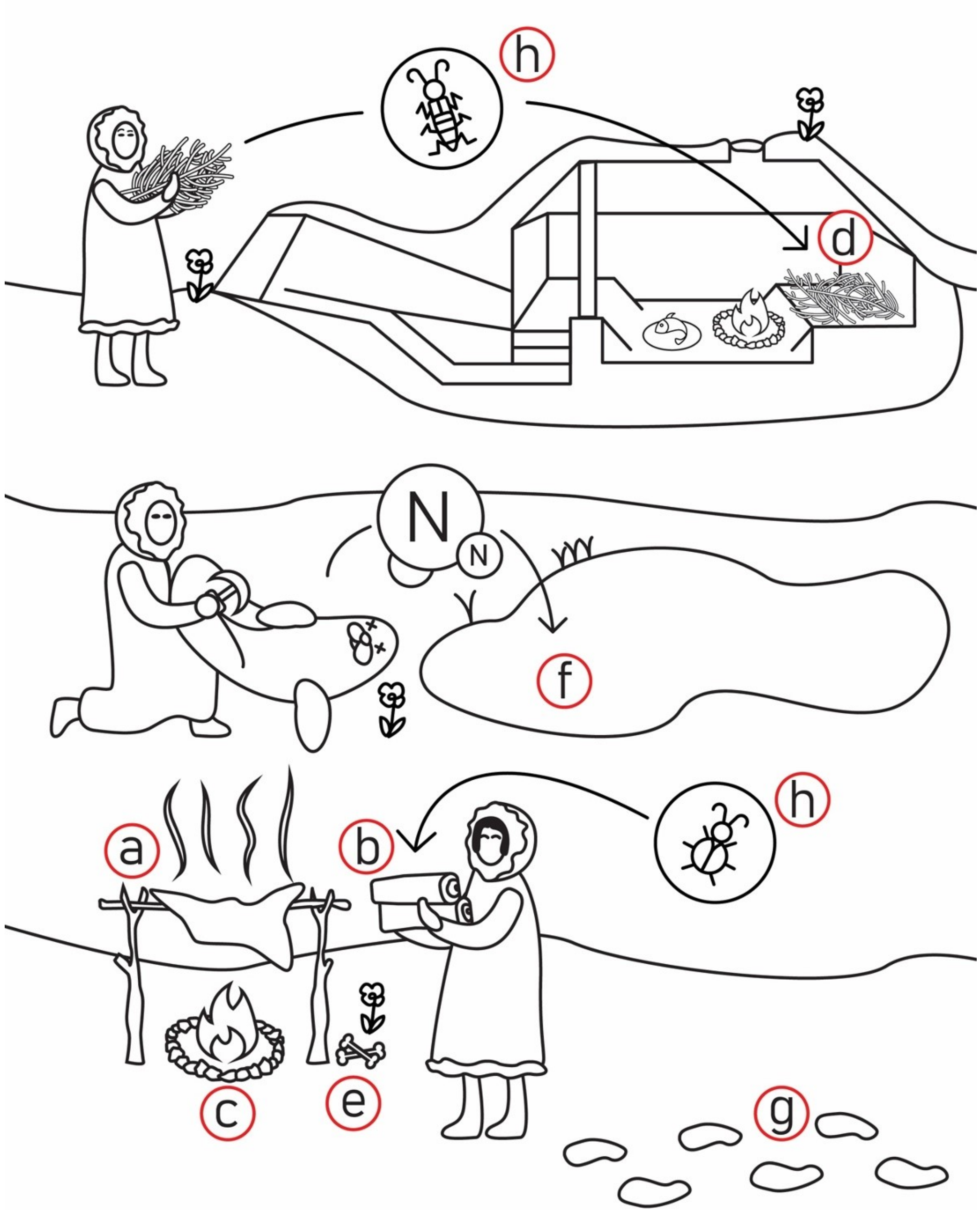


Figure 1: "A day in the life of Labrador Inuit" scene. Schematic representation of various human-environment interactions in the Labrador landscape as described in this article, inspired by the literature review by Carlson (2022). A total of eight (8) different activities are pictured: (a) animals (terrestrial or marine) were hunted in the area and brought back to the camp to be processed, consumed, and discarded; (b) wood is harvested for a variety of purposes: cooking, heating, building tools and dwellings; (c) the presence of charcoal indicate Arctic foragers' use of woodland resources, leaving traces in the soil matrix; (d) harvesting *Picea* (spruce) and using it for insulating dwellings, beddings, and as a flooring material offers opportunities for specific beetles to occupy niches inside the houses; (e) the presence of abundant discarded bones is responsible for increasing the presence of certain nutrients in the soil composition, resulting in the emergence of rich and diversified vegetation compared to occupation sites' 'natural' surroundings; (f) certain kinds of human activities, when undertaken near the edge of a body of water (such as here, skinning or processing a seal or its skin) affect the level of eutrophication in ponds and lakes through nitrogen inputs; (g) foot traffic (or trampling) can result in decreasing the presence of certain native plants that are sensitive to disturbance, and increasing those who thrive in such disturbed context; and finally (h) the transportation of specific resources (spruce, down, fur, feathers, wood, etc.) creates niches for beetles associated with organic matter, that can be transported or attracted to human homes. Figure made by the author in collaboration with Eric Aylward.

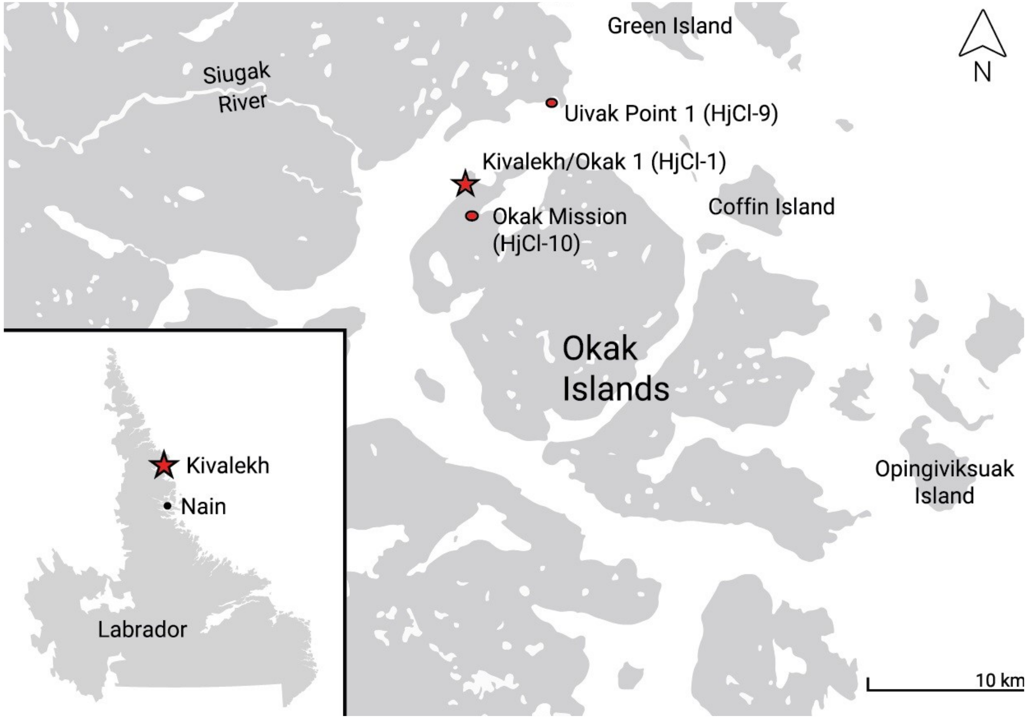


Figure 2: Simplified map showing the archaeological site of Kivalekh with principal geographical features and important archaeological sites nearby as described herein. Figure made by the author.

cording surveys, such as bird nests, beaver dams, or bark (Forbes et al. 2014). The transportation of specific resources could explain this (e.g., down, fur or feathers used for clothing, bedding, insulation, or beavers as food resources; wood or sod for building dwellings, fuel, and so on) (as seen in Figure 1h) although it is also possible that the occupation sites simply mimic ecological conditions found in such contexts (Forbes et al. 2017). These examples demonstrate that human-built habitats are responsible for attracting certain taxa to the human-built environment and providing ideal niches for species that thrive in a 'disturbed' milieu (Forbes et al. 2017). Understanding this phenomenon also requires us to consider the mechanisms by which insects end up into archaeological deposits, including the fact that some insects can fly or walk there, while others could only be passively transported over considerable distance by being transported by humans (Kenward & Allison 1994). It is therefore important both to understand the population dynamics of the insect groups studied (e.g., the 'background fauna' to be expected in your context of study, Kenward 1982), as well as the ecological requirements and physiology of the individual species identified from the archaeological context. Before getting into the materials and methods used to conduct this research, it is essential to locate Kivalekh in time and space.

Presentation of the study site

Kivalekh is located on Okak Islands, approximately 100 km north of Nain, on the Labrador coast (Figure 2). Okak, a coastal environment characterized by an arctic climate, is divided into three distinct ecological zones: the mainland, the inner islands, and the outer islands (Curtis et al. 2006). Okak Bay's mainland is characterized by forested vegetation following the southern tree line. The lowlands portions of the rivers (e.g., Siugak River as shown on Figure 2) flow upstream into a deep bay. The inner islands, including Okak Islands, are partially forested with spruce and brush. The outer islands, including Opingiviksuak, are characterized by tundra vegetation on a rocky-dominated landscape (Curtis et al. 2006).

Its proximity to well-documented sites (Uivak Point 1 and Oakes Bay 1, the latter located in Nain area) makes Kivalekh an ideal place for this study. As well, it has the potential to complement existing environmental-archaeological data from the area with new insights into past Inuit-environment interactions and possibly on the chronology of occupation of the site as well as the Okak region as a whole.

Archaeology at Okak

Steven Cox (1977) conducted the first systematic archaeological study of Okak in 1974 and 1975. Cox surveyed more than sixty archaeological sites from which he selected specific sites to conduct more extensive excavations to document each major cultural period identified (Curtis et al. 2006; Onalik 2006). In 1977 and 1978, Fitzhugh and colleagues (1978,

Cultural groups	Cultures	Dates (BP)	Number of sites at Okak
First Nations	Maritime Archaic	~ 8800 – 3000	20
	Intermediate Period	~ 3600 – 1000	6
Palaeo-Inuit	Groswater	~ 2800 – 2100	4
	Pre-Dorset	~ 4000 – 2700	37
	Dorset	~ 2500 – 700	35
Inuit	Inuit	~700 – present	50
	TOTAL		**154***

Table 1: Table presenting a cultural history of Labrador partly established through the archaeological sites studied at Okak. This table is intended to illustrate the cumulative work conducted in that region and provided here to give a sense of the chronology and number of sites identified for each archaeological culture. Table initially made by Curtis et al. 2006: 6; adapted and modified by the author. *Please note that since some sites include cultural material from more than one culture, the total seen in the table is greater than the total of sites as described above (128 sites). Also, the dates proposed above are not finite. They are always subject to change and refinement as new research is conducted and new chronological data obtained.

1980, and 1981) from the Smithsonian Institution led a larger project called "Torngat Archaeological Project" in order to excavate and document the previous important sites identified between 1974 and 1975 by Cox. New sites continued to be recorded by several archaeologists who came to work in the area during the next few decades (e.g., Cox 2003; Hood 1997; Kaplan 1983; Sutton et al. 1981; Woollett 2003). Therefore, the Okak area is known to include 128 archaeological sites to date, representing all cultural periods known for the Labrador coast (Table 1). Because of its cultural and scientific importance, Okak was designated a National Historic Site in 1978 (Agenda Paper 1978.06-SUA based on Cox's 1977 report). Okak's significance in terms of cultural history in the Arctic resides in the integrity of the archaeological sites that it regroups, rather than in a fraction of them (Curtis et al. 2006; Onalik 2006). Kivalekh (also known as Okak-1) is one of them.

The archaeological site of Kivalekh is situated on the beach pass, adjacent to a small peninsula at the northwestern tip of the Okak Islands. It is reported to be the largest known Inuit winter settlement in Labrador, consisting of 49 semisubterranean sod houses ranging in size from 15 m² to 70 m² (Figure 3). These include small single-family houses and large multi-family 'communal' dwellings (Whitridge 2018). Several have been excavated over a decade (from 1974 to 1984), with repeated archaeological testing occurring in the vicinity of Kivalekh (e.g., Cox 1977; Sutton et al. 1981; Kaplan 1983).

Recent spatial analysis (topographic map generated using an RTK system, orthomosaic and 3D model produced using aerial drone imagery) delivered

Figure 3: Example of a large sod house visible on the surface of the site, found at the western end of the archaeological site of Kivalekh, facing North. Photo courtesy of Dr. Peter Whitridge (2018).

accurate and precise maps (Figure 4) of the features and archaeological activities, helping to gain a general sense of the site (Whitridge 2018).

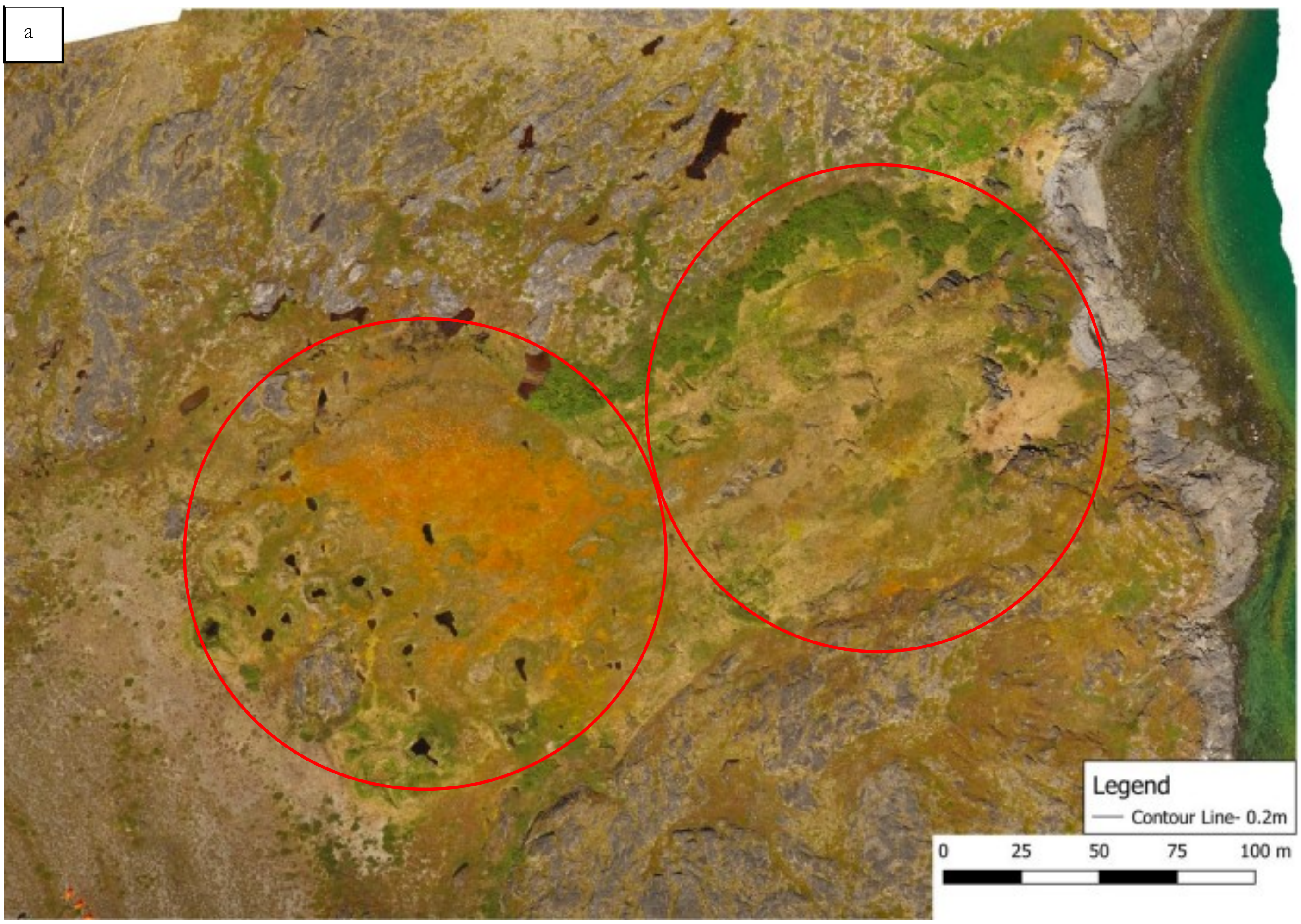
Besides the agglomeration of sod houses on the eastern portion (i.e., referred to as Kivalekh itself), a modest scatter of historical (from a recent period) caches, in addition to tent rings, have been found at the northern tip of the peninsula (Whitridge 2018). A dense concentration of burial cairns on the eastern side, immediately north of the sod houses, have also been identified. Occasional inuksuit and simple cairns were also present at prominent locations (Figure 5).

Another crucial factor, which contributed to shape Kivalekh's landscape, was the presence of Moravian missionaries in the area in the 18th century. Inuit culture began to change as the complex contact situation inevitably contributed to shaping new identities. The Moravian mission in Okak was established in Okak Harbor in AD 1776 (Figure 6) and gradually, Inuit families from Kivalekh relocated to the mission site (Taylor & Taylor 1977).

The Moravian diaries indicate that at least six houses were occupied in Kivalekh during the winter of AD 1772-1773. Other records from that period indicate that the population resident at Kivalekh in 1778-1779 numbered 152 people (Curtis et al. 2006; Taylor 1974). The 49 sod-houses documented at Kivalekh represent repeated occupations over many years. This is supported by Cox's (1977) research on one of the houses from which they recovered faunal remains along with European artifacts of the 18th to

Figure 4: a Orthophoto mosaic of the archaeological site of Kivalekh generated from RPAS imagery. The agglomeration of sod-houses (red circles) like the one seen from the ground as shown in Figure 3, is easily observable using drone technologies. b – Contour map of the archaeological site of Kivalekh, generated in QGIS. Red circles highlight the two agglomerations of sod-houses. c – Orthophoto mosaic of the same area presenting the sod-houses (underlined). All these are a courtesy of James Williamson.

SEE THE NEXT PAGE FOR Figures 4 b & 4c



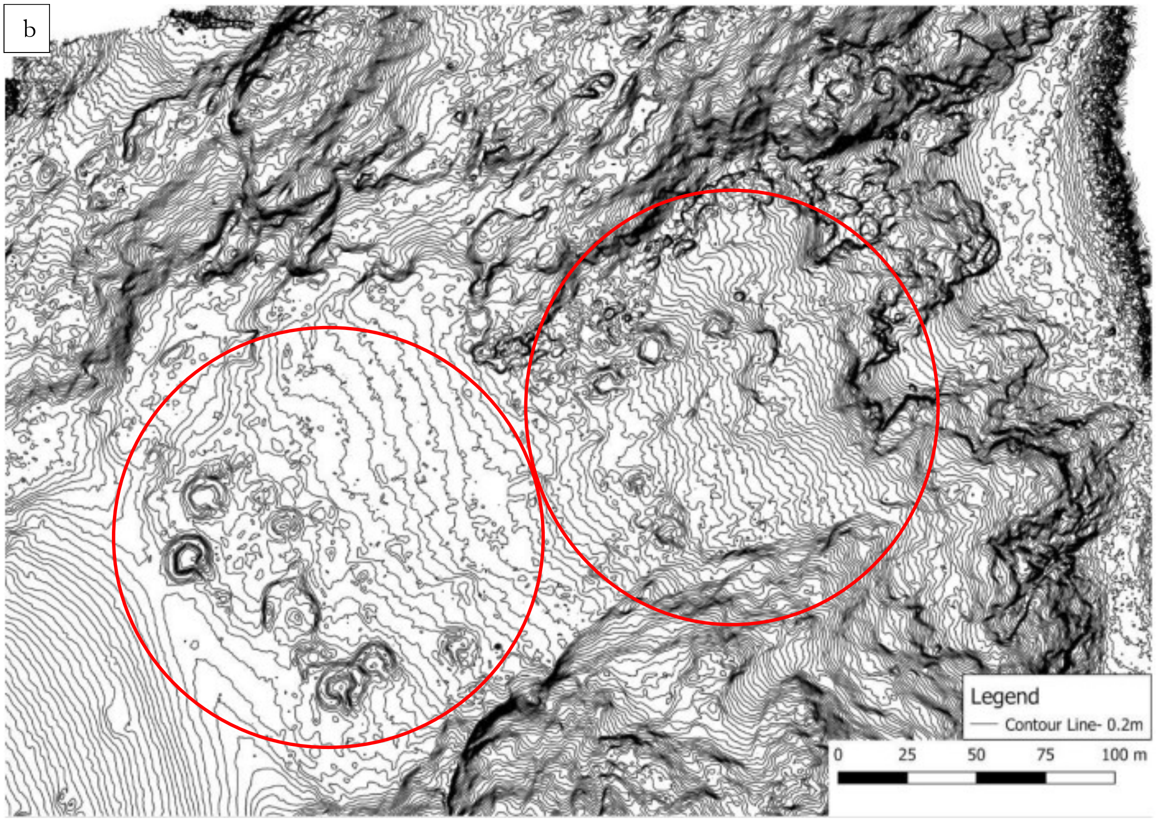
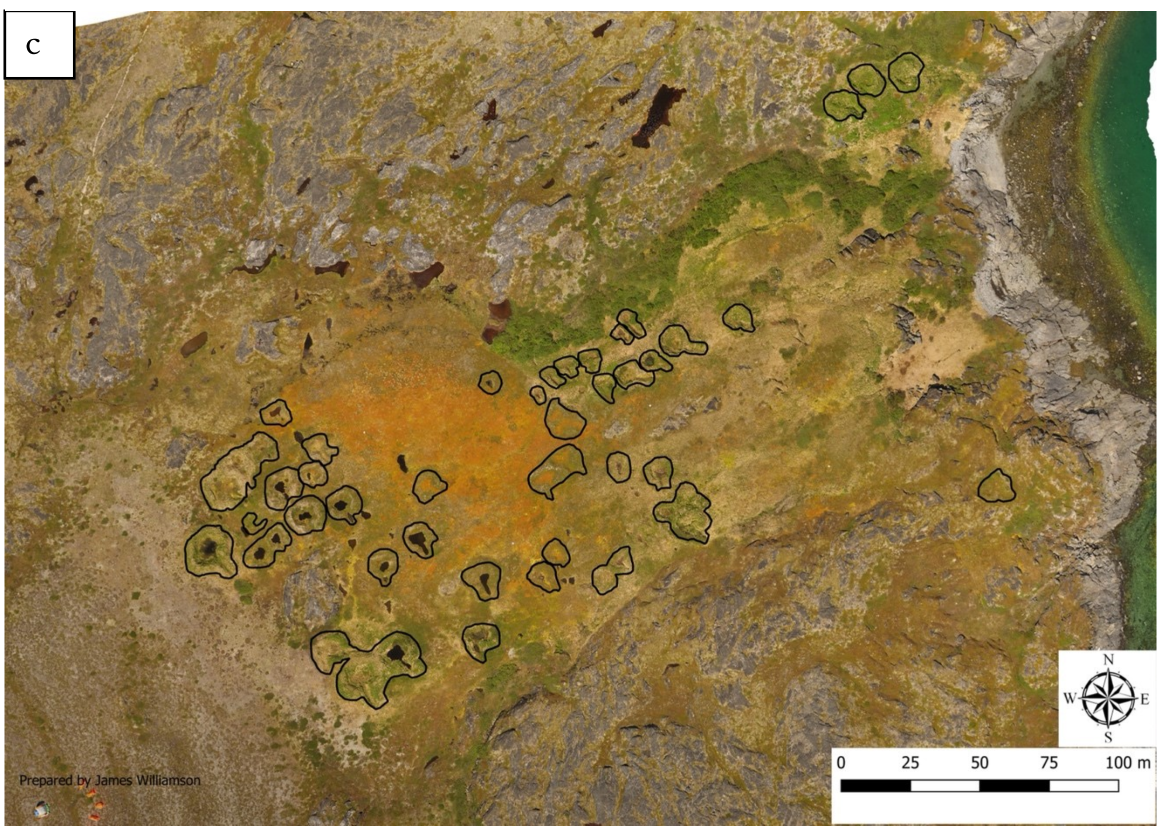


Figure 4: b – Contour map of the archaeological site of Kivalekh, generated in QGIS. Red circles highlight the two agglomerations of sod-houses. Figure 4: c – Orthophoto mosaic of the same area presenting the sod-houses (outlined). All these are a courtesy of James Williamson.



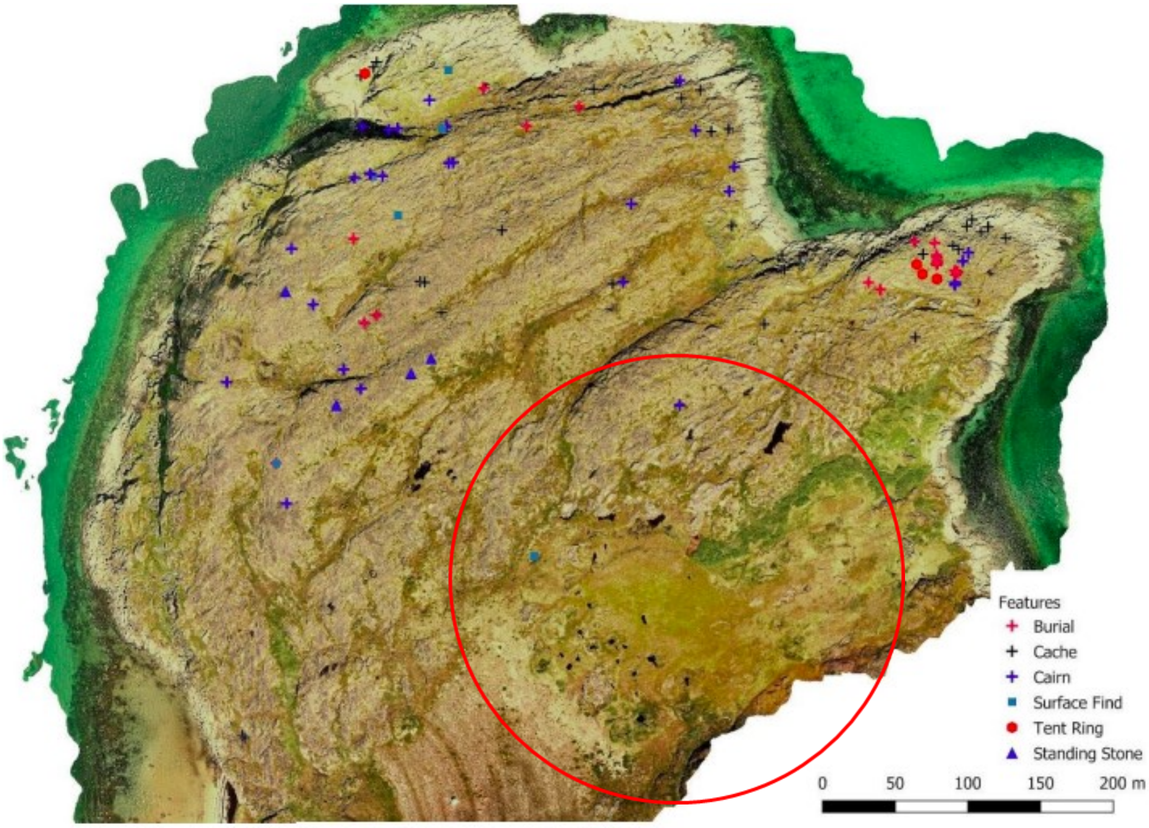


Figure 5: Archaeological features surveyed and recorded, located north of the winter houses at Kivalekh. Courtesy of James Williamson. The large red circle shows the agglomeration of winter sod houses of Kivalekh, as depicted in Figure 4.

Figure 6: Photo of Okak Moravian settlement (photograph taken sometimes before 1919). From Archives and Special Collections at Queen Elizabeth II Library, Memorial University of Newfoundland, St. John's.

early 19th century. The same house excavated also revealed Dorset stratified material culture, right beneath the cultural layers associated with the Inuit, which indicates a longer cultural sequence at the site. This is also supported by subsequent surveys (Sutton et al. 1981) conducted on the site, which revealed traces of Groswater and Pre-Dorset occupations, stressing once again that Kivalekh was occupied repetitively over several hundreds of years (Curtis et al. 2006). Although mainly described as a winter settlement occupation site, other adjacent structures were found indicating that it has been occupied during warmer seasons as well. This includes a late summer camp dated to AD 1781 through information in Moravian diaries, which explicitly attest that at least seven summer tents were placed at this very location, among the sod-houses (Taylor 1974:19). It is important to keep in mind that the structures so-called "winter house" or "summer tent" could have been occupied or reused for other purposes in between seasons.

The written documentation and the results of archaeological work, taken together, demonstrate the importance of Kivalekh as a cultural landscape. The site was a major settlement in northern Labrador until its abandonment in AD 1919. As of today, no excavation has been conducted at the Okak Mission site (where Inuit living at Kivalekh relocated in the 18th century), as it is still a sensitive matter in Inuit's living memory in Labrador. Kivalekh has a long cultural sequence that mirrors the whole cultural history of the region (Curtis et al. 2006:18). Strategically located, the Okak Mission site also shares Kivalekh's significance as both Moravian and Inuit interacted and lived together there for centuries. Rich marine, terrestrial, and stone resources are all key components of Okak's cultural landscape as they have shaped its inhabitants' lifeways (and vice-versa) for a few thousand years (Curtis et al. 2006).

Palaeoecology at Okak Islands

Over the last few years, work in environmental archaeology has focused on the detailed reconstruction of specific elements of Inuit culture in northern Labrador, illuminating aspects of settlement and land-use patterns and economic activities (Bain 2000a,b, 2001; Brice-Bennett 1977; Couture 2014; D'Arrigo et al. 2003; Kaplan & Woollett 2000; Roy 2010; Roy et al. 2012; 2015; Woollett 2003, 2008, 2010, 2011; Woollett et al. 2000; Zutter 2009). Large collaborative projects have sought to define the nature of human-environment relationships in specific landscapes to examine how human presence and climatic and ecological processes (Hardesty & Fowler 2001) have shaped them. Following that premise, other researchers (Kaplan & Woollett 2000) applied this model of palaeoecology to better understand the relationships between environmental dynamics and social and historical processes pertaining to Inuit cultural change from the 16th to the late 19th centuries (Kaplan & Woollett 2000; Kaplan 1983, 2009, 2012). In order to do so, they collected samples as part of targeted excavations (Uivak Point 1 – HjCl-09 and Oakes Bay 1 – HeCg-08) to be analyzed using various methods such as palaeoethnobotany, zooarchaeology, and archaeoentomology. Additionally, the application of dendrochronology was used as a dating method to provide precise dates that integrate high-resolution palaeoclimate records and correlates them with the environmental archaeology data produced throughout their collaborative research work (Bain 2000a, b; D'Arrigo et al. 2003; Kaplan 2012; Woollett 2003, 2008; Woollett et al. 2000; and Zutter 2009). These projects allowed the identification of land-use activities, including the economic and seasonal particularities of the Inuit occupation in Uivak Point 1 and Oakes Bay 1. Although there are still subtle complexities that are poorly understood in terms of linking the signals of Inuit-environment interactions read in the palaeoecological record to specific activities or groups, these projects have proposed approaches capable of reconstructing environments and land-use patterns of human impacts, and finally refined chronologies of site occupations for the context that interests us (Couture 2014; Roy 2010; Roy et al. 2012, 2015). Integrating pedology, sedimentology, geochemistry, and micromorphology with the study of sea-level changes and peat formation allowed 'ecohistories' (Crumley 1994) to be provided for northern Labrador. Palaeoecological data recovered from Uivak Point houses show that both human activities and climate triggered temporal changes in the vegetation (Roy et al. 2015), therefore proposing broad ecological phases that can help contextualize this present study within the wider ecological history of Labrador. The combination of palaeoenvironmental research conducted in the study area, paints a pic-

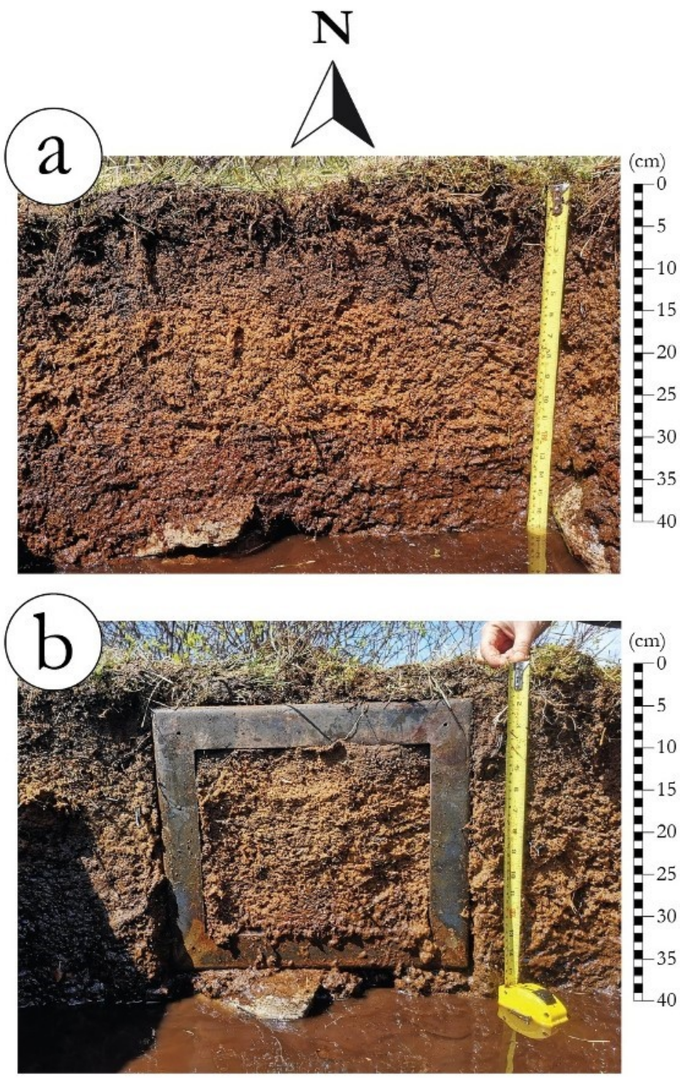


Figure 7: a – Photo of Kivalekh's P.E.T #3 profile North before tin insertion. b – Photo of the monolith inserted into Kivalekh's P.E.T #3 profile North. The scale is provided to help read the measures from the tape. Photos are a courtesy of Ivan Carlson (2019). Figure made by the author.

ture of a landscape fluctuating between periods of cultural changes, especially during the 17th century with the arrival of European settlers along the coast and the establishment of Moravian missionaries in the area. In addition to the influx of new groups in northern Labrador, a period of climatic instability with the advent of the Little Ice Age (which extended from the 16th to the 19th centuries approximately) sees a significant regional cooling in the North Atlantic and the Eastern Arctic, inherently impacting both the environment and the people inhabiting the landscape over a few centuries. Of course, previous occupations are more challenging to capture archaeologically, but more research is needed to examine Palaeo- and Neo-Inuit landscapes.

Some methodological considerations in the field

In the summer of 2019, my colleague Ivan Carlson and my supervisor, Dr. Véro Forbes, surveyed the Okak Islands area and collected a large peat monolith in the vicinity of the archaeological site of Kivalekh. The sampling location was crucial to ensure the analysis of macrofossils, as well as proposing a high-resolution chronology of human occupation at the site. For example, there are two main factors that need to be considered when collecting peat samples for insect remains that are intended to date an archaeological site: (1) the proximity of the archaeology from the sampling location, combined with (2) the depth of the peat. To examine the potential footprint of hunter-gatherer populations in the palaeoecological record, the peat deposits should be thick enough (at least 40 cm), close enough to the archaeology (ideally less than 100 meters) and have a level topography. These factors are crucial for sampling using a monolith tin (the peat sample should ideally fill up the total space within the tin) and to allow an examination of insect macrofossils and pollen (microfossils) assemblages at the same chronological resolution. In that case, the sampling location was 30 meters northwest of the settlement of Kivalekh. The peat monolith was collected using one monolith tin, which consisted of a stainless-steel box that Carlson inserted into an exposed peat section (Figure 7). Once the monolith had been successfully extracted, it was sliced into 1-cm thick subsamples, which I analyzed in the P.E.A.T. Laboratory at MUN. (* *Note that for this article, I do not describe and explain every step of my methodology (both in the field and in the laboratory). Instead, I present only one of my research objectives below. If you have any questions, please feel free to contact me* pmilliard@mun.ca).

New beetle locality records for Labrador

The arthropod fauna of Labrador has been less studied than in southern provinces, as northern regions are challenging to access due to their remoteness to urban centers. Topography and hydrology are physical factors that make it challenging. Labrador makes no exception to that statement. Indeed, Labrador's northern coast is composed of many rocky islands, where the tundra environment is dissected by rivers, ponds, streams, and bogs characterized by discontinuous permafrost as found in other sub-Arctic contexts (cf., Forbes & Sikes 2018). Knowing the study locale's insect fauna is imperative to successfully identify disarticulated sub-fossil remains and derive ecological information from them (cf. Elias 2010, Forbes et al. 2016; Forbes & Sikes 2018). The analysis of Kivalekh's insect fossil assemblage indicates that all of the specimens identified are Holarctic in distribution, which refers to the biogeographic region that includes the northern parts of both the so-called 'Old' (Palearctic) and 'New' (Nearctic) worlds. However, one Byrrhidae (*Simplocaria metallica* [Stephens]) recovered from the assemblage is considered adventive (i.e., introduced) in North America, according to Bousquet et al. (2013). Accordingly, this study produced new entomological records that provide information about the local native fauna over a few hundred years. Subfossils from two species belonging to the family Staphylinidae (rove beetles), namely *Holoboreaphilus nordenskioeldi* (Mäklin) and *Olophrum boreale* (Paykull) (Figure 8) were identified in the Kivalekh assemblage, allowing them to be recorded in Labrador for the first time. Although the fact that they are Holarctic in distribution (Bousquet et al. 2013) suggests they have probably been established in northern Labrador for a long time, they are nevertheless giving us a chronological range (AD mid-15th to early 17th century, *terminus ante quem*) for their presence in Labrador. It is also likely that these species still live in northern Labrador, but perhaps they have never been collected there simply due to a geographical sampling bias. This illustrated well the problem mentioned before about the relative paucity of ecological and locality data for beetle's species in northern geographic areas, something that this study begins to address.

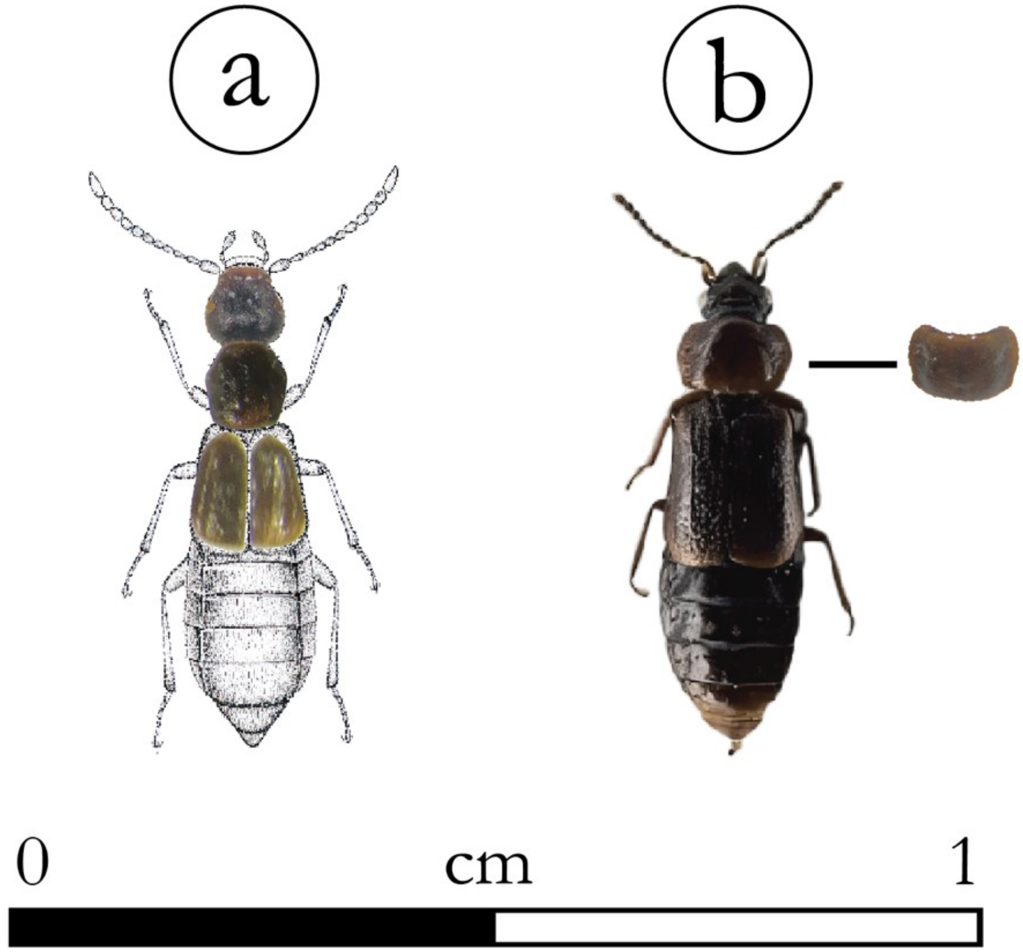


Figure 8: New locality records for Labrador: a) the Omaliinae *Holoboreaphilus nordenskioeldi* (Mäklin), for which heads, pronota, and elytra have been identified in the Kivalekh fossil assemblage (drawing underneath by Campbell 1978); and b) *Olophrum boreale* (Paykull) photograph of a complete specimen from Staphyliniformia world catalog database (GBIF 2022), with a photograph from one of the pronota identified by the author.

Using insect macrofossils to help document how past humans have impacted the landscape will help understand the ecological requirements and processes of the modern fauna found in northern contexts, which are more and more affected by climate change. Although existing research has documented a general trend regarding species from the south migrating north as the climate warms, there is a lot that remains unknown due to a lack of knowledge of the native fauna in northern areas (IPCC 2013; for further reflections, see Froyd & Willis 2008; Jeffers et al. 2015). Accordingly, this research provided another opportunity to enrich entomological (and archaeoentomological) databases (c.f., BugCEP [Buckland 2007, 2009]), providing us with new locality data points that extend the known records of these northern beetle's species in space and in time. More archaeoentomological analysis in Kivalekh (and elsewhere in the North Atlantic), ideally combining palaeoecological sampling and modern entomological surveys, would be beneficial to clarify the significance of these beetles for the reconstruction of past Arctic foragers' lifeways and biodiversity change.

Concluding statements

Therefore, establishing what constitutes an ecological footprint for Arctic foragers, and more specifically in that case, for Labrador Inuit, is complex and far from straightforward, supported by similar studies (e.g., Bhiry et al. 2016; Ledger 2018; Renouf 2003; Renouf et al. 2009; Roy et al. 2015). As only briefly demonstrated herein, Arctic forager societies were, and still are today, intrinsically complex and diverse, therefore interacting within the environment in a multitude of ways, potentially in a unique fashion between cultural groups. Despite these challenges and numerous pitfalls, it proved possible to identify human presence through palaeoecological methods within Kivalekh's landscape as resulting from ecological feedback and niche construction processes rather than being able to identify and target specific domestic activities (with the exception perhaps of the presence of charcoal in association with the use of woodland resources). Although the ecological signal captured could not be associated with a particular cultural group (i.e., Labrador Inuit) or with a specific occupation, it nevertheless showed convincing evidence of being attributed with Arctic foragers as a general group. Kivalekh offered another great opportunity to investigate its cultural history through time by examining past human-environment relationships within Labrador's Indigenous landscapes. It once more, captured the complexity of the site and indubitably, the region as a whole; though more research needs to be done in order to truly understand its culture history.

References

Aronsson, K. (1994) Pollen evidence of Saami settlement and reindeer herding in the boreal forest of northernmost Sweden – An example of modern pollen rain studies as an aid in the interpretation of marginal human interference from fossil pollen data. *Review of Palaeobotany and palynology* 82(1-2): 37-45.

Bain, A. (2000a) *Uivak archaeoentomological analysis*. Report, Hunter College and Bowdoin College, Brunswick, ME.

Bain, A. (2000b) *Uivak archaeoentomological analysis 2*. Report on file in the office of Susan A. Kaplan, Bowdoin College, Brunswick, Maine.

Bain, A. (2001) U*ivak archaeoentomological – 2 analysis*. Report, Hunter College and Bowdoin College, Brunswick, ME.

Barbel, H., Todisco, D., and Bhiry, N. (2020) A geochemical investigation of an early Inuit semi-subterranean winter dwelling in a periglacial context. *Journal of Archaeological Science:* Reports 33: 1-16.

Barry, R.G., Arundale, W.H. Andrew, J.T., Bradley, R.S., and Nichols, H. (1997) Environmental change and cultural change in the eastern Canadian Arctic during the last 5000 years. *Arctic and Alpine Research* 9: 193-210.

Bhiry, N., Marguerie, D., and Lofthouse, S. (2016) Paleoenvironmental reconstruction and timeline of a Dorset -Thule settlement at Quaqtaq (Nunavik, Canada). *Arctic, Antarctic, and Alpine Research* 48(2): 293-313.

Billington, R.A. (1981) *Land of savagery, land of promise: The European image of the American frontier in the nineteenth century*. Norman: University of Oklahoma Press.

Böcher, J. & Fredskild, B. (1993) Plant and arthropod remains from the Palaeo-Eskimo site on Qeqertasussuk, West Greenland. Meddelelser om Grønland, *Geoscience* 30. Copenhagen: Museum Tuscalanum Press.

Bousquet, Y., Bouchard, P., Davies, A.E., and Sikes, D. (2013) *Checklist of Beetles* (Coleoptera) *of Canada and Alaska*. Second Edition. Pensoft, Sofia-Moscow.

Bottema, S., Entjes-Nielborg, G., and vanZeist, W. (eds) (1990) *Man's role in the shaping of the Eastern Mediterranean landscape*. Rotterdam: Balkema.

Brice-Bennett, C. (1977) *Our footprints are everywhere: Inuit land-use and occupancy in Labrador*. Nain, Newfoundland and Labrador: Labrador Inuit Association.

Briggs, J.M., Spielmann, K.A., Schaafsma, H., Kintigh, K.W., Kruse, M., Morehouse, K., and Schollmeyer, K. (2006) Why ecology needs archaeologists and archaeology needs ecologists. *The Ecological Society of America* 4(4): 180-188.

Buckland, P.I. (2007) The development and implementation of software for palaeoenvironmental and palaeoclimatological research: The Bugs Coleopteran Ecology Package (BugsCEP). *Archaeology and Environment* 23. Umeå: University of Umeå, Department of Archaeology and Sami Studies.

Buckland, P.I. (2009) The Bugs Coleopteran Ecology Package (BugsCEP). The development and implementation of a software for palaeoenvironmental and palaeoclimatological research. VDM Verlag Dr. Mūller Aktiengesellschaft & Co, Saarbrüken.

Buckland, P.C. Edwards, K.J., Panagiotakopulu, E. and Schofield, J.E. (2009) Palaeoecological and historical evidence for manuring and irrigation at Gardar (Igaliku) Norse eastern settlement, Greenland. *Holocene* 19: 105-116.

Butler, D.H. & Dawson, P.C. (2013) Accessing hunter-gatherer site structures using Fourier transform infrared spectroscopy: Applications at a Taltheilei settlement in the Canadian sub-Arctic. *Journal of Archaeological Science* 40(4): 1731-1742.

Butler, D.H., Lopez-Forment, A., and Dawson, P.C. (2018) Multi-element and biomolecular analysis of soils as a mean of sustainable site structure research on hunter-gatherer sites: A case study from the Canadian Arctic. *Journal of Archaeological Science: Reports* 17: 973-991.

Campbell, J.M. (1978) A revision of the North American Omaliinae (Coleoptera: Staphylinidae) 1. The Genera Haida Keen, Pseudohaida Hatch, and Eudectoides new genus. 2. The tribe Coryphiini. *Memoirs of the Entomological Society of Canada* 106: 1-87.

Carlson, I. (2022) The genesis of Labrador's Indigenous landscapes: A review of research approaches and current knowledge. *MA thesis*, Memorial University of Newfoundland, St. John's, NL.

Couture, A. (2014) Configuration de l'espace domestique des Inuit historiques du nord du Labrador pendant la période de contacts : Approches archéologiques, micromorphologique et géochimique. *Doctoral dissertation*, Université Laval, Québec, QC.

Couture, A., Bhiry, N., Monette, Y., and Woollett, J. (2016) A geochemical analysis of the 18th – century Inuit communal house floors in northern Labrador. *Journal of Archaeological Science: Report* 6:71-81.

Cox, S.L. (1977) Prehistoric settlement and culture change. *Ph.D. thesis presented for Harvard University*, Cambridge, Massachusetts, May 1977.

Cox, S.L. (1978) Paleo-Eskimo occupations of the North Labrador coast. *Arctic Anthropology* 15(2).

Cox, S.L. (2003) Palaeoeskimo structures in the Okak region of Labrador. *Études/Inuit/Studies* 27(1-2):417-433.

Cox, S.L. & Spiess, A. (1980) Dorset settlement and subsistence in northern Labrador. *Arctic* 33(3).

Curtis, J., Baikie, G., Merkuratsuk, J., Onalik, L., Mitchell, K., Ford, B., Jarause, W., Fay, A., and Webb, F.J. (2006) Okak National historic site: Cultural landscape site visit.

Crumley, C.L. (1994) *Historical Ecology: A multidimensional ecological orientation: Cultural knowledge and changing landscapes*. School of American Research Press, Santa Fee: 1-16.

D'Arrigo, R., Buckley, B., Kaplan, S.A., and Woollett, J. (2003) Interannual to multidecadal modes of Labrador climate variability inferred from tree-rings. *Climate Dynamics* 20: 219-228.

Denevan, W.M. (1992) The 'Pristine Myth' revisited. *Geographical review* 101(4): 575-591.

Derry, A.M., Kevan, P.G. and Rowley, S.D.M. (1999) Soil nutrients and vegetation characteristics of a Dorset/ Thule site in Canadian Arctic. *Arctic* 52(2): 204-213.

Dickason, O.P. (1997) *The myth of the savage and the beginnings of French colonialism in the Americas*. Edmonton: The University of Alberta Press.

Dugmore, A.J., McGovern, T.H., Streeter, R., Koch-Madsen, C., Smiarowski, K. and Keller, C. (2013) *Clumsy solutions' and 'elegant failures': Lessons on climate change adaptation from the settlement of the North Atlantic islands,* chapter 38. *In* A changing environment for human security: transformative approaches to research, policy, and action. L. Sygna, K. O'Brien and J. Wolfe (eds). Routledge UK London.

Dussault, F., Bell, T.J., and Grimes, V. (2016) Archaeoentomological perspectives on Dorset occupations in Newfoundland. *Arctic* 69(1): 1-15.

Elias, S.A. (2010) *Advances in Quaternary Entomology*. Elsevier, Amsterdam.

Fenger-Nielsen, R., Hollesen, J., Matthiesen, H., Andersen, E.A., Westergaard-Nielsen, A., Harmsen, H., Michelsen, A., and Elberling, B. (2019) Footprints from the past: The influences of past human activities on vegetation and soil across five archaeological sites in Greenland. *Science of the Total Environment* 654: 895-905.

Fitzhugh, W.W. (1978) Maritime Archaic cultures of the central and northern Labrador coast. *Arctic Anthropology* 15(2):61-95.

Fitzhugh, W.W. (1980) A review of Palaeo-Eskimo culture history in southern Québec-Labrador and Newfoundland. *Études/Inuit/Studies* 4(1-2): 21-31.

Fitzhugh, W.W. (1981) *Smithsonian archaeological surveys, central and northern Labrador* (1980). *In* Archaeology in Newfoundland and Labrador, Thomson, J.S., and Ransom, B. (eds) pp. 26-47. St. John's: Provincial Archaeology Office.

Forbes, B.C. (1996) Plant communities of archaeological sites, abandoned dwellings, and trampled tundra in the eastern Canadian Arctic: A multivariate analysis. *Arctic* 49(2): 141-154.

Forbes, V., Dussault, F., and Bain, A. (2014) Archaeoentomological research in the North Atlantic: past, present, and future. *Journal of the North Atlantic* 26: 1-24.

Forbes, V., Britton, K., and Knecht, R. (2015) Preliminary archaeoentomological analyses of permafrost-preserved cultural layers form the pre-contact Yup'ik Eskimo site of Nunalleq, Alaska: Implications, potential and methodological considerations. *Environmental Archaeology* 20(2): 158-167.

Forbes, V., Dugmore, A.J., and Ólafsson, E. (2016) The life and death of barn beetles: faunas from manure and stored hay inside farm buildings in Northern Iceland. *Ecological Entomology* 41: 480-499.

Forbes, V., Dussault, F., Lalonde, O., and Bain, A. (2017) Coléoptères, poux et puces subfossiles provenant d'habitat de chasseurs-cueilleurs : l'apport des recherches archéoentomologiques dans le nord circumpolaire. *Recherches Amérindiennes au Québec.*

Forbes, V., & Sikes, D. (2018) A survey of beetles (Coleoptera) from the Tundra surrounding the Nunalleq archaeological site, Quinhagak, Southwestern Alaska. *Biodiversity Data Journal* 6: e22788.

Forbes, V., Ledger, P.M., Cretu, D., and Elias, S.A. (2020) A sub-centennial, Little Ice Age climate reconstruction using beetle subfossil data from Nunalleq, Southwestern Alaska. *Quaternary International* 549: 118-129.

Fredskild, B. (1988) Agriculture in a marginal area – South Greenland from the Norse *landnám* (985 A.D.) to the present (1985 A.D.). H.H. Birks, H.J.B. Birks, P.E. Kaland and E. Moe (eds). *In The cultural landscape – past, present, and future*. Cambridge University Press, Cambridge: 381-393.

Friesen, T.M. (2007) Hearth rows, hierarchies, and Arctic hunter-gatherers: The construction of equality in the Late Dorset period. *World Archaeology* 39(2): 194-214.

Friesen, T.M. (2013) When worlds collide: Hunter-gatherer world-system change in the 19th century Canadian Arctic. University of Arizona Press

Friesen, T.M. (2015) On the naming of Arctic archaeological traditions: The case for Paleo-Inuit. *Arctic* 68(3): 3 -4.

Friesen, T.M. & Mason, O.K. (2016) *The Oxford handbook of the prehistoric Arctic*. Oxford University Press, Oxford.

Frink, L. & Knudson, K.J. (2010) Using ethnoarchaeology and soils chemistry to examine fisheries on the Arctic Alaskan coast. *North American Archaeologists* 31(2): 221-247.

Froyd, C.A. & Willis, K.J. (2008) Emerging issues in biodiversity and conservation management: the need for a palaeoecological perspective. *Quaternary Science Reviews* 27: 1723-1732.

Global Biodiversity Information Facility (GBIF) (2022) *Olophrum boreale* (Paykull, 1792), URL: www.gbif.org/species/4444206, consulted 2022.

Guillemot, T., Bichet, V., Gauthier, E., Zocatelli, R., Massa, C., and Richard, H. (2016) Environmental responses of past and recent agropastoral activities on south Greenlandic ecosystems through molecular biomarkers. *Holocene* 26: 783-795.

Hardesty, D.L., & Fowler, D.D. (2001) *Archaeology and environmental changes*. *In* New Directions in archaeology and environment: Intersections. C.L. Crumley (ed), pp. 72-89. Walnut Creek, CA: AltaMira Press.

Hicks, S. (1993) Pollen evidence of localized impact on the vegetation of northernmost Finland by hunter-gatherers. *Vegetation History and Archaeobotany* 2(3): 137-144.

Hood, B. (1997) *Archaeological surveys between the Nain and Hebron regions, Northern Labrador*. *In* Archaeology in Newfoundland and Labrador (1997) Nelmes, K. (ed), pp. 1-17, St. John's: Provincial Archaeology Office.

IPCC (Intergovernmental Panel on Climate Change) (2013) Climate change 2013: The physical science basis exit EPA disclaimer. Contributions of working group 1. In T.F. Stocker, D. Qui, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xias, V. Bex and P.M. Midgley (eds). Contribution of working group 1 to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge.

Jackson, R., Arneborg, J., Dugmore, A., Koch Madsen, C., McGovern, T.H., Smiarowski, K. and Streeter, R. (2018) Disequilibrium, adaptation, and the Norse settlement of Greenland. *Human Ecology* 46: 665-684.

Jeffers, E.S., Nogué, S. and Willis, K.J. (2015) The role of palaeoecological records in assessing ecosystems services. *Quaternary Science Reviews* 112: 17-32.

Kamerling, I.M., Schofield, J.E., Edwards, K.J., and Aronsson, K. (2017) High-resolution palynology reveals the land use history of a Sami Renvall in northern Sweden. *Vegetation History and Archaeobotany* 26(4): 369-388.

Kaplan, S. (1983) Economic and social change in Labrador Neo-Eskimo culture. *Ph.D. thesis presented for Bryn Mawr College.*

Kaplan, S.A. (2009) From forested bays to tundra covered passes: Transformation of the Labrador landscape. *Conference "The Thule culture – New perspectives in Inuit Prehistory". Papers in Honour of Hans Christian Gulløv*, edited by Bjarne Grønnow, pp. 119-128. Studies in Archaeology and History, no. 15. Greenland Research Centre, Danish National Museum, Copenhagen.

Kaplan, S.A. (2012) Labrador Inuit ingenuity and resourcefulness: Adapting to a complex environmental, social, and spiritual environment. In *Settlement, Subsistence, and Change among the Labrador Inuit: The Nunatsiavummiut Experience*, edited by David C. Natcher, Lawrence Felt, and Andrea Proctor, pp. 15-42. University of Manitoba Press, Winnipeg.

Kaplan, S.A. & Woollett, J.M. (2000) Challenges and choices: Exploring the interplay of climate, history, and culture on Canada's Labrador coast. *Arctic, Antarctic, and Alpine Research* 32(3): 351-359.

Kaplan, S.A. & Woollett, J.M. (2016) Labrador Inuit: Thriving on the periphery of the Inuit world. In *The Oxford handbook of the prehistoric Arctic*. Friesen & Mason (eds)Oxford University Press, Oxford.

Kenward, H.K. (1982) Insect communities and death assemblages, past and present. In Environmental archaeology in the urban contexts, A.R. Hall & H.K. Kenward (eds)., London.

Kenward, H.K. & Allison, E. (1994) Rural origins of the urban insect fauna. In *Urban-rural connexions: Perspectives from environmental archaeology*, Kenward H.K. and Allison E. (eds) Oxbow Books, Oxford.

Knudson, K.J. & Frink, L. (2010) Ethnoarchaeological analysis of Arctic fish processing: Chemical characterization of soils on Nelson Island, Alaska. *Journal of Archaeological Science* 37(4): 769-783.

Ledger, P.M. (2018) Are circumpolar hunter-gatherers visible in the palaeoenvironmental record? Pollen analytical evidence from Nunalleq, Southwestern Alaska. *The Holocene* 28: 415-426.

Ledger, P.M., Edwards, K.J. and Schofield, E.J. (2013) Shieling activity in the Norse Eastern settlement: Palaeoenvironment of the 'Mountain farm'. Vatnahverfi, Greenland. *The Holocene* 26(6): 810-822.

Ledger, P.M., Girdland-Flink, L. and Forbes, V. (2019) New horizons at L'Anse aux Meadows. *PNAS* 116(31): 15341-15343.

Ledger, P.M. & Forbes, V. (2020) Paleoenvironmental analysis from Nunalleq, Alaska illustrates a novel means to date Pre-Inuit and Inuit archaeology. *Arctic anthropology* 56(2): 39-51.

Lozny, L.R. (2006) *Landscapes under pressure: Theory and practice of cultural heritage research and preservation*. Springer, New York.

Lutz, H.J. (1951) The concentration of certain chemical elements in the soils of Alaskan archaeological sites. *American Journal of Science* 249(12): 925-928.

Mann, C.C. (2005) *1491: new revelations of the Americas before Columbus*. New York, NY: Knopf Press.

McGhee, R. (2000) Radiocarbon dating and timing of the Thule migration. *In* Identities and cultural contacts in the Arctic. *Proceedings from a conference at the Danish National Museum, Copenhagen, November 20 to December 2, 1999*. M. Appelt., J. Berglund, and H.-C. Gulløv (eds). Copenhagen Danish Polar Center: 181-191.

McGovern, T.H., Harrison, R. and Smiarowski, K. (2014) *Sorting sheep and goats in medieval Iceland and Greenland: Local subsistence or world system? In* Long-term human ecodynamics in the North Atlantic: An archaeological study. R. Harrison & R. Maher (eds). Lexington Publishers, Lanham, Maryland.

Michelutti, N., McCleary, K.M., Antoniades, D., Sutherland, P., Blais, J.M., Douglas, M.S.V., and Smol, J.P. (2013) Using paleolimnology to track the impacts of Early Arctic people on Freshwater ecosystems from southern Baffin Island, Nunavut. *Quaternary Science Reviews* 76: 82-95.

Moran, E.F. (2010) Environmental social science: Human-environment interactions and sustainability. Wiley-Blackwell publication, Oxford.

Oberndorfer, E., Broomfield, T., Lundholm, J., and Ljubicic, G. (2020) Inuit cultural practices increase local-scale biodiversity and create novel vegetation communities in Nunatsiavut (Labrador, Canada). *Biodiversity and Conservation* 29(4): 1205-1240.

Onalik, L. (2006) Report on the 2006 Parks Canada trip to Black Island, Nutak and Okkak. Nunatsiavut Government, Torngâsok Cultural Centre.

Panagiotakopulu, E. & Buckland, P.C. (2017) A thousand bites – Insect introductions and the late Holocene environments. *Quaternary Science Reviews* 156: 23-35.

Panagiotakopulu, E., Skidmore, P., and Buckland, P.C. (2007) Fossil insect evidence for the end of the Western settlement in Greenland. *Naturwissenschaften* 94: 300-306.

Panagiotakopulu, E., Buckland, P.C., Wickler, S.H., and John, P. (2018) Is there anybody in there? Entomological evidence from a boat burial at Øksnes in Vesterålen, northern Norway, *PloS one* 13(7): doi: 10.13.71/journal.pone.0200545.

Panagiotakopulu, E., Schofield, E.J., Vickers, K., Edwards, K.J., and Buckland, P.C. (2020) Thule Inuit environmental impacts on Kangeq, southwest Greenland. *Quaternary International* 549: 176-190.

Redman, C. L. (1999) Human impact on ancient environments. Tucson: University of Arizona Press.

Redman, C. L. (2005) Resilience theory in archaeology. *American Anthropologist* 107(1): 70-77.

Renouf, M.A.P. (2003) Palaeoeskimo dwelling structures in Newfoundland and Labrador: A review. *Études/Inuit/Studies* 27(1-2):375-416.

Renouf, M.A.P., Bell, T., and Macpherson, J. (2009) Hunter-gatherer impact on subarctic vegetation: Amerindian and Palaeoeskimo occupations of Port au Choix, Northwestern Newfoundland. *Arctic Anthropology* 46(1-2): 176-190.

Roy, N. (2010) *Évolution du paysage naturel et occupation humaine à Dog Island au nord du Labrador*. Université Laval, Québec, QC.

Roy, N., Bhiry, N., and Woollett, J. (2012) Environmental change and terrestrial resource use by the Thule and Inuit of Labrador, Canada. *Geoarchaeology: An International Journal* 27: 18-33.

Roy, N., Woollett, J. and Bhiry, N. (2015) Palaeoecological perspectives on landscape history and anthropogenic impacts at Uivak Point, Labrador, since AD 1400. *The Holocene*: 1742-1755.

Roy, N., Woollett, J., Bhiry, N., Lemus-Lauzon, I., Delwaide, A., and Marguerie, D. (2021) Anthropogenic and climate impacts on sub-Arctic forests in Nain region, Nunatsiavut: Dendroecological approaches and historical approaches. *Écoscience*: 1-16.

Scheffer, M., Carpenter, S., Foley, J.A., Folke, C., and Walker, B. (2001) Catastrophic shifts in Ecosystems. *Nature* 413 (6856): 591-596.

Smiarowski, K., Harrison, R., Brewington, S., Hicks, M., Feeley, F., Dupont-Hébert, C., Hambrecht, G., Woollett, J., and McGovern, T.H. (2017) *Zooarchaeology of the Scandinavian settlements in Iceland and Greenland: diverging pathways*. *In* U. Albarella, M., Rizzetto, H. Russ, K. Vickers, and S. Viner-Daniels (eds). Oxford Handbook of Zooarchaeology.

Sutton, D., Hood, B. and Fitzhugh, W.W. (1981) In quest of Dorset subsistence strategies: 1980 excavations at Okak-1 and No-Name Island, Labrador. In Archaeology in Newfoundland and Labrador (1980), vol. Annual Report 1, Thomson, J.S. and Ransom, B. (eds) pp. 48-57.

Taylor, G. (1974) Labrador Inuit settlements of the early contact period. *Ethnology* (9), National Museum of Man, Ottawa.

Taylor, J.G. & Taylor, H. (1977) Inuit land use and occupancy in the Okak region: 1776-1830. *In* Our footprints are everywhere: Inuit land use and occupancy in Labrador. C. Brice-Bennett (ed) Nain: Labrador Inuit Association.

Thomas, C.D. (2020) The development of Anthropocene biotas. *Philosophical transactions Royal Society B* 375: 1-9.

Whitridge, P. (2018) Archaeological Investigations at Kivalekh (Okak-1; HjCl-01), Northern Labrador, July-August 2018. *Provincial Archaeology Office 2018 Archaeology Review*: 250-261.

Woollett, J.M. (2003) An historical ecology of Labrador Inuit culture-change. *Ph.D. thesis*, The City University of New York.

Woollett, J. (2008) Labrador Inuit subsistence in the context of environmental change: An initial landscape history perspective. *American Anthropologist* 109(1): 69-84.

Woollett, JM (2010) Oakes Bay 1: A preliminary reconstruction of a Labrador Inuit seal hunting economy in the context of climate change. *Geografisk Tidsskrift-Danish Journal of Geography* 110: 245-260.

Woollett, JM (2011) Dog days at Uivak Point: Zooarchaeological perspectives on Inuit dog team management. In: *Society of American Archaeology Meetings*, Sacramento, CA.

Woollett, J., Henshaw, A.S., and Wake, C.P. (2000) Palaeoecology implication of archaeological seal bon assemblages: Case studies from Labrador and Baffin Island. *Arctic* 53: 395-420.

Wu, J. & Loucks, O. (1995) From balance of nature to hierarchical patch dynamics: a paradigm shift in ecology. *Q Rev Biol* 70: 439-66.

Zutter, C. (2009) Paleoethnobotanical contributions to 18th- century Inuit economy: An example from Uivak, Labrador. Journal of the North Atlantic, special volume 1: 23-32.

Zutter, C. (2012) The shrubs in the forest: The use of woody species by 18th-century Labrador Inuit. *Études/Inuit/Studies* 36(1): 139-155.

Castle Hill NHS Exhibit Enhancement Indigenous Connections

Stephen Mills
Heritage Consultant


Left: "Portrait of three Micmac Indian women" 1859 / Baie Saint-Georges, Newfoundland by Emile Miot (Library and Archives Canada - Library and Archives Canada PA-202288 http://www.ucs.mun.ca/~mwilks/pa202288.html)
Right: Maritime Archaic organic and stone tools from Port au Choix, Newfoundland (Tuck 1976, Plate 1).

In the fall of 2022, Parks Canada Newfoundland East Field Unit contracted the author to write a report on the history of Indigenous presence along the south coast of Newfoundland, from Cape St. Mary's in the east to Cape Ray in the west. The study area also included the French-administered archipelago of Saint Pierre and Miquelon (Figure 1). Specific, this report will present information on Indigenous lifeways, geographic locations, names of individuals and other related topics as revealed by the archaeological and historic record. The period for this project begins before the written record, pre-1500 CE (Common Era), and continues to the early 1800s.

Archaeological and historical sources made it possible to write this history. Archaeology confirms Indigenous groups first inhabited the study area about 4000 years ago. These hunter and gatherer groups include First Nations and Pre-Inuit populations. The Mi'kmaq of Miawpukek First Nation are living in the study area today.

After 1500 CE, historic documents provide a written record of the Indigenous presence.

Sources include first-hand accounts of Indigenous interactions with European fishers, and numerous letters, contracts and dispatches from government and military officials, notaries and planters. Together, these documents provide a rich trove of data related to an Indigenous presence in the study area during the historic period, particularly in the eighteenth century. Secondary sources on the subject include reports, academic theses and various historical and archaeological studies.

A wealth of research on the subject, carried out in the 1990s and early 2000s, greatly assisted in the preparation of this study. Noted Canadian historians and archaeologists were among the experts who wrote extensively on the presence, or absence, of Indigenous people in southern Newfoundland. This research, produced for a legal dispute between several Mi'kmaq and the Government of NL, produced 283 volumes of incredibly valuable primary and secondary research, including reports and studies, maps, charts, translations of historic correspondence and transcripts from court proceedings, all related to the Indigenous presence on the south coast of Newfoundland. All of the primary documents and most of the other secondary sources cited in this report are available at the Centre for Newfoundland Studies (CNS), Memorial University Queen Elizabeth II Library and/or online. To access these documents in the CNS, search under the following title: *1996 St. J. No. 1022 in the Supreme Court of Newfoundland Trial Division between Her Majesty the Queen in right of Newfoundland as represented by the Minister of Government Services and Lands (plaintiff) and Ken Drew (defendant) and Abitibi-Consolidated Inc. and Abitibi-Consolidated Company of Canada (interveners) and Corner Brook Pulp and Paper Limited (intervener) and ... Wilfred John (defendant) ... Larry John (defendant) ... Larry John (defendant) ... Ralph John (defendant) ... Wilfred Drew (defendant) ....*

This report is divided in two parts. Part 1 covers the Indigenous presence before the year 1500 CE. Information on this period comes from archaeological sources, gathered over the past 50 or more years, but also includes nineteenth-century discoveries by curious residents. The pre-contact occupations in southern Newfoundland was the topic of a number of Memorial University graduate and honours theses. Part 2 addresses the post-contact period of the study area's history, beginning with the prosecution of the European cod fishery in the early 1500s.

By the 1660s, French and Basque fishers settled along the south coast. Europeans fishing in Placentia Bay encountered Indigenous people, likely Beothuks, in the late sixteenth century and by the second half of the seventeenth century French authorities at Plaisance encouraged the migration of Indigenous families from Cape Breton into the region. Conflicts between the French and English meant that the French-allied Indigenous folk were forced out of Newfoundland along with the French families. Following a tumultuous first half of the eighteenth century, Mi'kmaq communities were once again established at the bottom of Fortune Bay and along the southwest section of Newfoundland in the 1760s.

Access to the study area came via the west coast of the island, around Cape Ray and, in the east, most likely via the Isthmus of Avalon between Trinity Bay and Placentia Bay (Figure 2). Archaeological research and historic documents uncovered abundant evidence that Indigenous populations from the Maritime Archaic period to the seventeenth century (Evans 1981, Robbins 1985, Holly et al. 2010, Williams 1987, Wix 1836) used the south end of Trinity Bay. Sites of the same age and cultural affinities are

Figure 1: South coast of Newfoundland with the Study Area defined between Cape Ray and Cape St. Mary's. (Map provided by the Provincial Archaeology Office, Provincial Government of Newfoundland and Labrador)

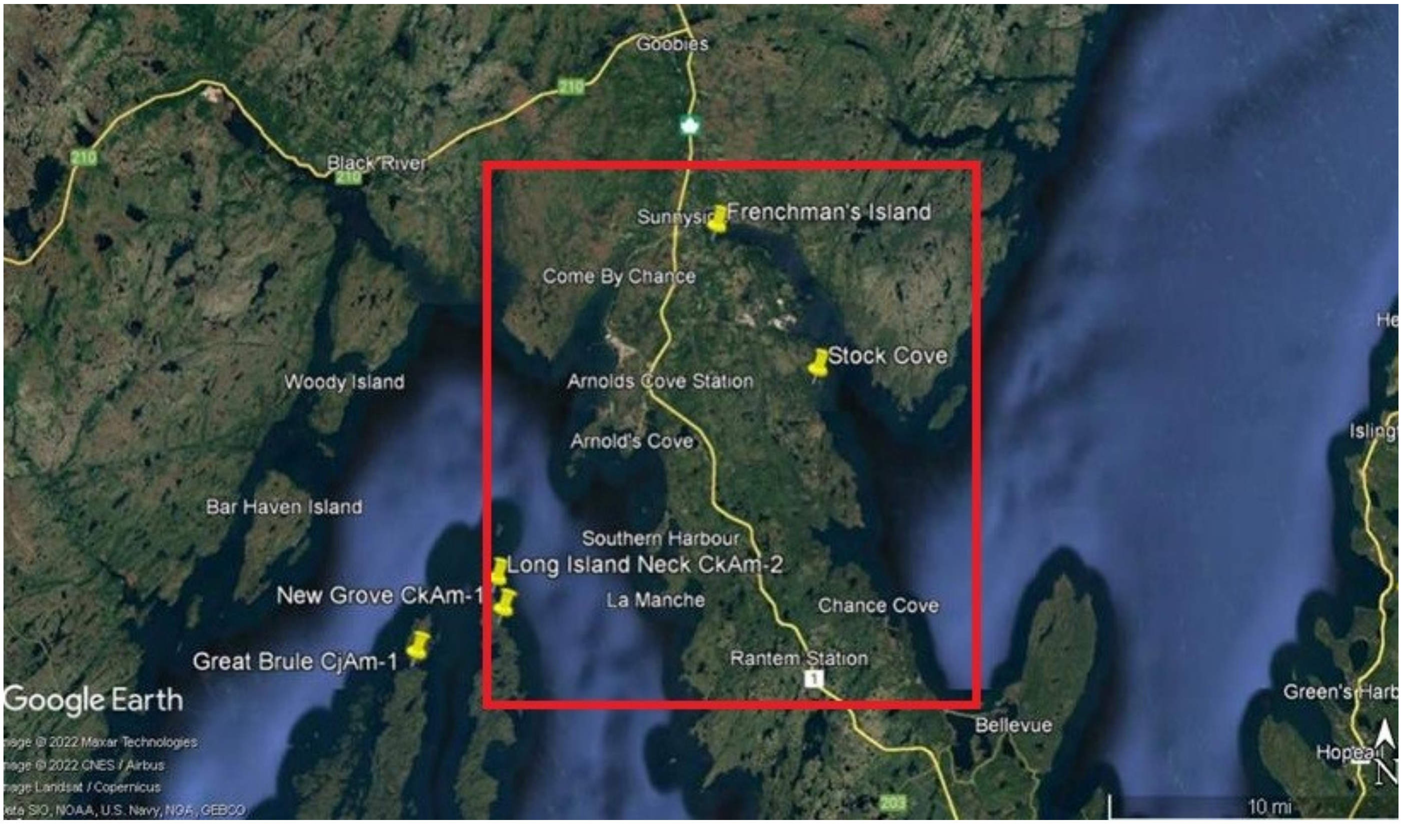


Figure 2: Google Earth image showing the Isthmus of Avalon (inside red box), between Frenchman's Island and Come By Chance. Trinity Bay is on the right, Placentia Bay to the left. The yellow pins mark locations of sites discussed in the report.

also present in the north end of Placentia Bay (Linnamae 1971, Penney 1984), indicating that the Isthmus of Avalon was a convenient passage between the north and south coasts of Newfoundland. With just 3.5 km (2.2 miles) separating Trinity Bay from Placentia Bay, the Isthmus of Avalon connected groups exploiting the resources of the north and south coasts of Newfoundland. Importantly, this narrow gap served to avoid the distance of about 645km (about 400 miles as the crow flies) to walk and/or paddle around the entire Avalon Peninsula from Trinity Bay to Placentia Bay. Ralph Pastore (1989) discusses Beothuk travel between Trinity Bay and Placentia Bay via the Isthmus of Avalon.

Historic references to this passage between the bays date to the early seventeenth century. When John Guy and his men sailed deep into Bull Arm in 1612, they discovered a "way cut through the woods" traversing the Isthmus of Avalon near present day Frenchman's Island (see Figure 2). Henry Crout, one of Guy's lead men, walked this trail with several other colonists. When they reached Placentia Bay, they came out at Passage Harbour (present day Come by Chance) where they saw several Beothuk mamateeks. Near these mamateeks they found a number of European-made items, including: "…a basket full of fish hooks, a fishing line and a lead, a caulking iron, a 'target', a staff, 'flentt stones'(probably chert for making stone tools), some skins, and a small copper kettle." (Gilbert 1990: 158). These European objects proved that, whether through trade or some other form of contact, the Beothuk of this region had access to European goods in the early seventeenth century, and most likely for some time prior to then.

In their raids along the English Shore in the late-seventeenth century and early eighteenth century, French soldiers also traversed the Isthmus of Avalon to transport English prisoners to their fort in Plaisance (Williams 1987). Reverend Edward Wix, an Anglican archdeacon, also traversed this passage when he visited communities in Trinity Bay and Placentia Bay in 1835. He describes the "ways or cross beams" over which French soldiers apparently dragged their boats when traversing the isthmus (Wix 1836: 45-46).

This study, serves as a synopsis of the Indigenous presence on the south coast of Newfoundland. A particularly beneficial piece of this report is its

broad list of written sources, all of which are available in the Centre for Newfoundland Studies at Memorial University. These sources provide a rich pool of data for anyone interested in the Indigenous presence along the south coast of Newfoundland.
Sfmills1960@gmail.com

References

Evans, Clifford
1981 Frenchmen's Island Site (ClAl - l). 1981 Preliminary Field Report. Manuscript report on file at the Provincial Archaeology Office.

Gilbert, William
1990 "Divers Places": The Beothuk Indians and John Guy's Voyage into Trinity Bay in 1612. Newfoundland Studies 6, 2 (1990).

Holly, D. C. Wolff, J. Erwin
2010 The Ties that Bind and Divide: Encounters with the Beothuk in Southeastern Newfoundland. Journal of the North Atlantic 3:31–44.

Linnamae, Urve
1971 Preliminary Report of an Archaeological Survey of Placentia Bay. Manuscript report for the National Museum of Canada.

Pastore, Ralph
1989 The Collapse of the Beothuk World. *Acadiensis*, Vol. 19, No. 1 (Fall), pp. 52-71.

Penney, Gerald
1984 The Prehistory of the Southwest Coast of Newfoundland. Masters of Arts thesis, Dept. of Anthropology, Memorial University.

Robbins, Douglas
1985 Stock Cove, Trinity Bay: The Dorset Eskimo Occupation of Newfoundland From a Southeastern Perspective. Masters of Arts thesis, Dept. of Anthropology, Memorial University.

Tuck, James A.
1976 Newfoundland and Labrador Prehistory. Archaeological Survey of Canada, National Museum of Man National Museums of Canada.

Williams, Alan
1987 Father Baudoin's War: D'Iberville's Campaigns in Acadia and Newfoundland 1696, 1697. Memorial University, Department of Geography, St. John's.

Wix, Edward
1836 Six Months of a Newfoundland Missionary's Journal from February to August 1835. London: Smith, Elder and Co., Cornhill, 1836.

Nunatsiavut Government Archaeology Fieldwork 2022

Lena Onalik, Corey Hutchings & Deirdre Elliott
Nunatsiavut

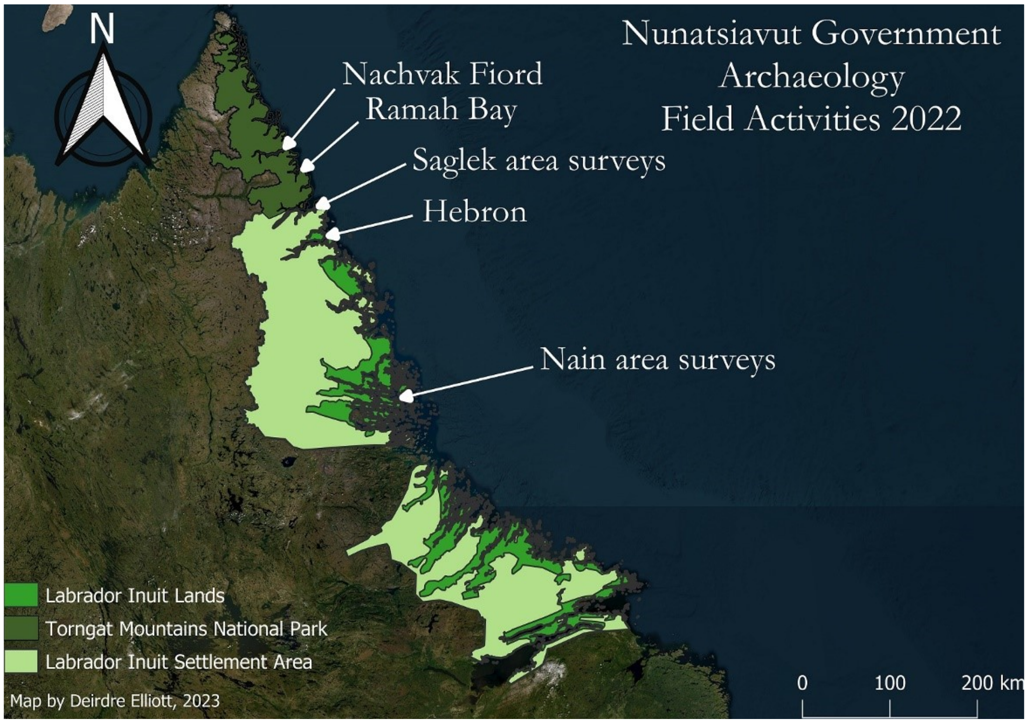


Figure 1: Locations of Nunatsiavut Government Archaeology Activities 2022.

Activities of Nunatsiavut Government Archaeology

Although COVID-19 continued to impact our own and researchers' activities, Nunatsiavut Government Archaeology saw in increase in archaeological activities in 2022 over the 2020 and 2021 pandemic years. Behind the scenes, regulatory and policy work continue to be among our core functions, along with planning and implementing archaeology and heritage projects and programs, and fostering partnerships with other researchers and institutions at local, provincial, federal, and international levels. In 2022, the Nunatsiavut Government Archaeology team reviewed 32 land use applications and 18 mineral referrals, and issued 13 archaeology permits. These numbers are about on par with those seen pre-COVID-19.

Heritage Forum

The annual Nunatsiavut Heritage Forum is scheduled to be held in Makkovik from March 2-6, 2023. The Forum had initially been scheduled for June 2022, but has been postponed thrice – once due to outbreaks of both COVID-19 and a particularly serious strain of influenza, a second time due to gale-force winds preventing travel along the coast, and a third time due to the sad passing of Gerald Mitchell Sr., the "Labrador Balladeer" and beloved artist from Makkovik. We are now exploring hybrid remote and in-person options for the Forum, in light of the increasing challenges of hosting events in this COVID-19 and climate-changing world.

In the Office and Around the World

In early 2022, NG Archaeology/Heritage purchased a 3D scanner, as part of our efforts to increase the accessibility of heritage materials in Nunatsiavut. We have to date scanned a small collection of Inuit Cultural Materials held by NG, as well as a small selection of Inuit Cultural Materials and Archaeological Materials from Nunatsiavut currently held at The Rooms and at MUN. Corey was also able to use the 3D scanner in the field to document historic petroglyphs at Ommatik (White Point) and at Ramah Mission (below). These scans will eventually be viewable online on the Nunatsiavut Stories website, and we hope to integrate 3D scanning into our best practices for object and site preservation.

In October 2022, Lena, Deirdre, and Mark Turner (on contract to manage digital archives) attended the Moravian Archives conference in Herrnhut, Germany. This gave us a glimpse of the kinds of archival records – and cultural materials – pertaining to Labrador Inuit that are held in Moravian archives and museums around the world, and provided us with a network of helpful archivist contacts.

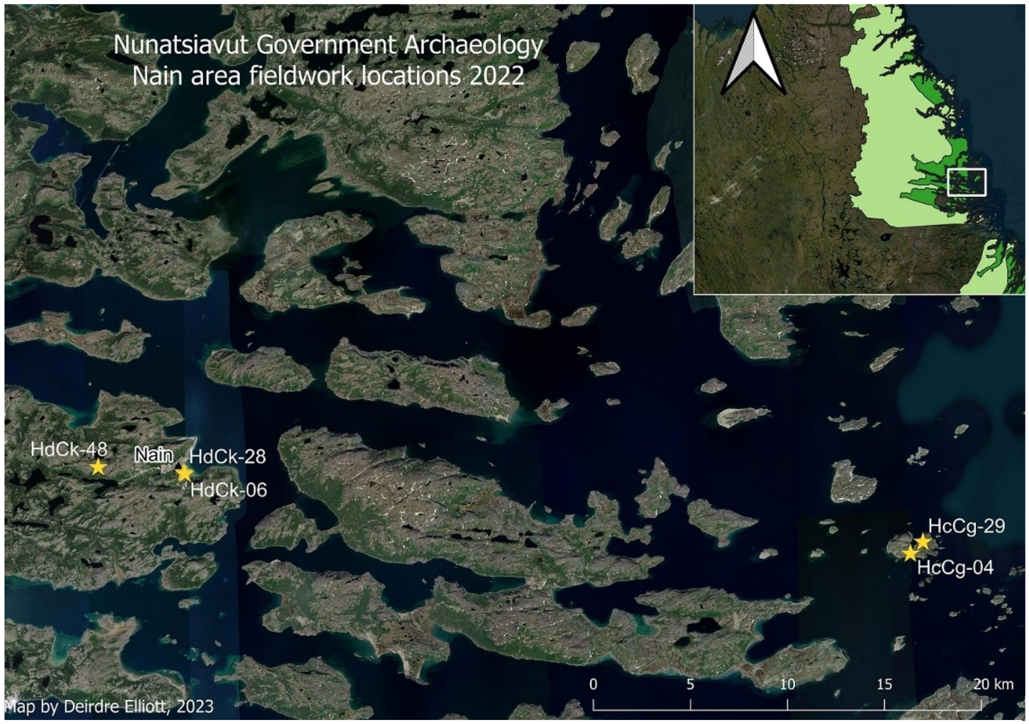


Figure 2: Nunatsiavut Government Archaeology Nain Area Surveys 2022.

Field Activities

Nain Windmills NG22.08

On June 16th, Corey Hutchings and Deirdre Elliott hiked north and west from the Nain water tower toward the area chosen for the proposed windmill installations. Along the way, we observed evidence of modern and historic land use - conspicuous lines of cobbles covering a plastic drainage pipe, names spelled in pebbles, modern caches, inuksuit, and a hunting blind overlooking a pond. In the immediate vicinity of the proposed windmill locations we observed one modern cache of tents (of a 1990s style), and one older, opened cache that once contained a complete caribou, whose bones have now been widely scattered down the slope. Continuing west, we climbed to a feature Corey had observed while snowshoeing in the spring. The cobble features, on a high point of exposed bedrock, are intriguing, and have been designated HdCk-48. They consist of two parallel lines of cobbles (or lichen shadows where cobbles once were), between 0.5 and 1 m wide and 8 m long (Figure 3), and an opened cobble cache with a loose brass survey marker inside, marked around the edge “GOVT. OF NEWFOUNDLAND & LABRADOR” and in the middle with “91G” over “NO 9107” (Figure 4). The marker appears to have once been used, as there are flattened hammer marks across its head and traces of epoxy along its shaft, but is not registered in the Newfoundland and Labrador Geodetic Network. Down the hill north of the cache was a slightly battered spool of copper (?) wire, of the kind and quantity used in geological exploration survey for locating ore bodies. The cobbles still in place along the parallel lines appear to have been in place for some time given the heavy and consistent lichen growth on them, and likewise some of the cobbles making up the cache. However, some of the cobbles in the cache can be matched (in shape) to the lichen shadows in the parallel lines. Our working hypothesis is that there once existed two cobble features with some antiquity (likely a cache and a feature that resembles a Kajak rest), and that geological survey activities in the early 1990’s made use of these cobbles to construct their own cache for survey materials.

Proposed Nain Airport Road NG22.08

On August 5th, Corey and Deirdre visited some of the geotechnical test pit and borehole locations that form part of the feasibility study for a new road to serve the proposed new Nain airport. As there are reported archaeological sites and known historic land use within or near to the footprint of the proposed road construction area, we decided to walk the portion of the route closest to Nain to obtain a sense of the activities to be conducted and their potential impact on heritage resources, prior to receiving

Figure 3: HdCk-48 parallel cobble feature, view west over chain of ponds.

Figure 4: Newfoundland and Labrador survey marker found in opened cache at HdCk-48.

Figure 5: Panorama of palaeo-beach ridges at Skull Island 24 (HcCg-29), view (left-right) southwest, west, northwest. Suspected Maritime Archaic terraces to the left and middle, 20th century and Pre-Inuit terraces to the right.

the final report of the HRIA conducted externally. According to hand-drawn maps from work conducted in the 1990s, two previously known archaeological sites are located within the project area (HdCk-06 and HdCk-28); however, their geographic coordinates on file were inaccurate, placing them outside of the area of concern. On August 10th, with Lena Onalik, we relocated the 2000 site excavation of HdCk-06 south of the Nain diesel power station (Penney 2002), and observed flakes along the footpath and around telephone poles north and east of the power station, prompting amendments to the coordinates on file for sites HdCk-06 and HdCk-28.

The route of the proposed road also follows the footpath through "Blowhole", a narrow valley between two hills leading from the Nain quarry through to Blowhole Pond. This is an area that is well-known locally for the high risk of avalanches in the winter, but nonetheless has seen historic and modern land use, as it is a popular area for fox trapping. A cobble cache of unknown age (though with heavy moss growth) was clearly visible from a borehole stake. Other borehole and geotechnical test pit locations we visited were in areas with low potential for subsurface archaeological features, but are located along a historic trail between Nain and Kauk (Hampson and Glover 2005), and in popular wooding areas.

Skull Island NG22.13

On August 17, Deirdre, Lena, and the NG Archaeology summer student Siegfried Merkuratsuk, visited University of Toronto post-doc Patrick Jolicoeur and his crew at Skull Island 1. Patrick noted a small pile of lithic debitage and tools on the surface next to an old test pit (or looter's pit), which we collected so that they might be considered alongside collections made from the site in the 1980s. It is unclear why these specimens had been left behind, but they include Ramah chert, grey mottled/banded chert, nephrite, slate, and soapstone debitage, a Ramah chert end scraper and biface fragments, and a broken nephrite burin-like tool. For more details on the Skull Island 1 excavations, see Jolicoeur (this volume).

After our quick visit at Skull Island 1, we hiked northeast (in hindsight, getting back in the boat would have been quicker) to an area we had targeted for survey based on satellite imagery and Canada DEM (digital elevation model) data, and there recorded a new multi-component site. Skull Island 24 (HcCg-29) sprawls across three or more ancient beach ridges between 10 and 20m ASL (Figure 5), 200m from the modern shoreline, and contains evidence of Maritime Archaic (possible), Dorset Pre-Inuit, and enigmatic mid-20th century activities (including a rusted welding cylinder cap and several in-place (and one on the surface) hefty ~60cm long tie-down stakes) (Figure 6). A nesting and very angry falcon prevented the capture of UAV aerial images, but we hope to return to the area next year to survey the surrounding islands.

Torngat Area of Interest

From July 11-20th Lena Onalik traveled to Nachvak as part of the Torngat Area of Interest research that was conducted with National Geographic Pristine Seas. The underwater research that National Geographic Pristine Seas did was to assist the Nunatsiavut Government with the Torngat AOI for an Indigenous Marine Protected Area to represent

Figure 6: Skull Island 24 (HcCg-29), clockwise from top left: cobble feature on highest ridge; Pre-Inuit grey banded chert sideblade; stem of Maritime Archaic stemmed point; iron tie-down stake (in place); iron tie-down stake (loose); welding gas cylinder cap.

Labrador Inuit interests in Nunatsiavut waters. Although the AOI is confined to the marine environment, the archaeology on land speaks to the deep history of the importance of the marine environment to Inuit life. Lena, and three Inuit elders, John Townley, Annie Lidd and Mary Tuglavina helped interpret the Inuit story for the research that National Geographic Pristine Seas were conducting in Nachvak Fiord. In addition to the elders, there were three Inuit bear guards, Derrick Pottle, Samantha Pilgrim and Joe Webb. Further assistance was provided by Sid Pain and Nunatsiavut Research hired Ephraim Merkuratsuk as wildlife observer. He stayed on the ship for the duration of the summer work conducted in Nunatsiavut and Hudson's Bay.

On the land excursions were restricted to the proximity of the ship and centred around the dive teams' daily activities and availability of the bear guards. We based our shore excursions on areas we knew there were archaeology sites. The first few days were spent near the mouth of Nachvak Fiord.

We had the wind to contend with for the first day on the land, July 12, but we were able to get ashore on the south side of the fiord on the eastern shore of the McCormick River at Ivitak Cove. This landing was on a low beach terrace where we found four historic tent rings and one disturbed cache spanning across 200m. There was a lot of seal skeletal remains along the shore, possibly polar bear feeding grounds. We were fortunate to land on a rising tide and char fishing was quite fruitful. We also saw one timid caribou at the mouth of the river. He ran away when he caught our scent. Once the elders had satiated their fishing efforts for the day, our group consisting of the elders, three film crew, two bear guards and two boat drivers returned to the ship.

Each day operated in a similar fashion. The priority was to get the divers out in the water first, and secondly to get on the land where there were known archaeological sites within proximity of the ship.

The next day, July 13, the divers were wanting underwater footage at the base of the razorback mountain range on the north side of the mouth of the fiord and near the shoals at the mouth of the fiord. We were stuck on the ship for much of the day, enjoying the views from the ship. Late in the afternoon we landed at Schooner Cove IgCv-01 which is described as a small station in the SRF. We also encountered IgCv-6 which describes features on both sides of the stream. The description in the SRF says there are tent rings and caches on the east side of the stream but these features were found on the west side of the stream. We were not able to find the slab lined cave that is described and did not venture up to the soapstone quarry.

July 14th, we spent on ship trying to connect to the ship's main internet. The National Geographic Pristine Seas Team had a top of the line internet capability installed on the ship which was supposed to work everywhere, but the Torngat Mountains put those capabilities to the test and we discovered that it was actually damaged.

The wind direction and shallow water prevented us from navigating into Naksaluk cove on July 15th. We spent the morning at a small cove to the east of Naksaluk cove in the lower Kammarsuit valley. This is where we found Naksaluk Cove 1, which is described in the SRF as Neo Eskimo, and Paleo-Eskimo dwellings, Inuit sod house, tent rings, ramah chert scatters, graves and caches on slope and terraces and whalebone found at the beach level. The graves and caches previously recorded were undisturbed, but have experienced disturbance since then.

In the afternoon on July 15th, we tried to go to Tinutjarvik Cove but a polar bear was feeding on arctic char in the river so we had to leave. We almost overlooked Nachvak Gravel Bar, IgCu-02, (which we passed on the way to Tinutjarvik Cove), but Nanuk eyes, Joe Webb and Derrick Pottle said, "looks like there might be something interesting there". It was difficult to get ashore by zodiac but was surprisingly calm once on shore. It was extremely exciting to find this site. The SRF describes approximately 40 stone structures- tent rings, multi-tiered boulder structures, caches, burials, Dorset sod houses, and pavements. Some of the tent rings nearest to the shore are starting to collapse due to storm surges. The beach is made up of large cobblestones which could easily crumble away with the rough tides. The beach runs across approximately 500m. Further back in the beach there are stone features with built up stone walls. It was just incredible. The views offer a great vantage point in and out of the fiord.

On July 16th the dive activity centred around the fork of Tasiujak and Talialuk (Talek) arms. Our shore party which consisted of Lena, the elders and a slowly growing number of dive crew and two bear guards went ashore at Nachvak Village, IgCx-03. It was a beautiful, sun splitting rocks kind of day with loads of mosquitos and sandflies. The National Geographic film crew who accompanied us each day on shore took the opportunity to speak individually with us about various topics including memories of Nachvak and the eviction of Hebron and Nutâk. Lena lead a small group to the remains of the sod houses. The grasses are growing high. The exterior walls of the houses on the side faces the ocean are starting to become exposed. The willows are growing larger on the back of the houses towards the cliffs above. The houses are intact, but starting to experience some slumping and rodent activity has exposed some of the rocks below the surface. The day ended with a group of eight people plunging into the water from the ship to wash off all the mosquito bites and blood.

On July 17th we went ashore at the mouth of Nachvak Brook where our group enjoyed some fishing and a boil up on shore. We made panitsiaks, (fried dough) which was cooked over the open fire, made tea and fried some of the daily catch. The site IgDy-01, which was documented by Kaplan in 1985 contains numerous tent rings a large cairn which measures approximately 6ft by 8ft and three rectangular structures which are still visible in the landscape. A small group of us walked up the river a short distance where we watched a mother and her flock of baby ducks swim downstream. A lonely caribou could not fight his curiosity and trotted down to the shore to show off for the camera crew and our small group of Inuit who drooled at the sight. It was another glorious day.

On July 18th, we ventured part way into Talialuk (Talek) Arm. We stopped at the half way point to wait for the basecamp helicopter which was picking up two of the film crew to do interviews with the Merkuratsuk's. They interviewed Eli, Maria, Benigna and Jacko about their family history in the Torngats.

In the afternoon, the group ventured to the mouth of the Palmer River. The dive team were doing work near the fork which meant that our group had to stick together because we only had two bear guards. The elders wanted to fish so we stayed on shore at the mouth for the afternoon. It proved to be a good idea as there were lots of fish caught. We were fortunate to have some caribou from the community freezer in Nain. We cooked this over the open fire, and had tea and two batches of panitsiak.

July 19th was our last day in the fiord. We headed out of Talialuk arm and the ship anchored again at Ivitak Cove. In the morning Annie, Mary and I accompanied the dive crew to learn about the various types of research the teams were doing. We learned how they put out their cameras to monitor below the surface which was similar to setting a fishing net but instead of a net it was ropes with expensive underwater cameras attached. Later in the morning we were unsure what to do, so we decided to go to a point of land where we thought it might be good for fishing for the elder's sake. The location did not have any archaeology sites. There was a waterfall which looked like it had a serious breach during spring runoff. We did some recordings with the film crew and the elders had a successful afternoon of fishing. This was our last day in Nachvak and it ended successfully. After a few hours at this site, the wind began to pick up. And it started to rain. We got picked up by the FRC (fast rescue craft) and enjoyed a bumpy wet ride back to the ship. It was an incredible week with the elders and National Geographic Pristine Seas research team. The next morning, July 20th, with fog and light rain showers the elders and I flew to basecamp by helicopter and caught a flight back to Nain shortly after. The ship continued north to Churchill, Manitoba, where the crew began their next AOI research.

Hebron Family Archaeology Project

The Hebron Family Archaeology Project took place between July 29 and August 5, 2022. This year, due to the increasing age of the elders, instead of having one elder and three family we asked the selection committee what they wanted. We knew we could take a maximum of four elders with our HFAP budget. The elders decided this is what they wanted. They said, "if our family wants to come, they will find a way." They voted for Alice Pilgrim, Martin Jararuse, Walter Piercy and Sophie Keelan. We also had Simon Kohlmeister, NG conservation officer and boat driver, as well as Levi Nochasak as bear guard. They are both Hebron relocatee's.

Throughout the week at Hebron, we did various activities including visiting the foundation of each of the elders former homes. We visited the church, walked around the site, we went to visit Kingmitok Island, fished in the bay. The Hebron Ambassador Project was taking place at the same time so we had further assistance from their crew. On Sunday, July 31, approximately 30 people came to Hebron from Basecamp and we held a church service that was led by the Ambassador, Gus Semigak. The Brass Band from Nain played for the first time in Hebron in possibly 63 years. It was a special day. Lots of tears of joy and healing were shed on this day.

The visit to Kingmitok Island was extremely interesting archaeologically. Not only did we find the tent ring that Sophie and her family camped in at the north end of the island, we also found new Pre-Inuit sites that have not been previously recorded. The island is rich with sites and further investigation of the island is recommended.

During the HFAP of 2021, when we went fishing up to Hebron Bay, on the way up we learned about two very interesting features associated with legends of the region. One is the woman and child turned to stone, and the other is the wolves turned to stone. The legend of the woman and child is they were saved from starvation by being turned to stone so they would not suffer a tragic death. The legend of the wolves turned to stone is about wolves who were about to attack a camp and the old shaman saved the women and children by turning the wolves to stone. There are pinnacles on the hillside visible from the water. Further information can be found in the NG permit report. These sites were visited again in 2022 and more research into the legends is required.

We see this project as a very meaningful way to bring elders back to their homeland. It is a way to connect young and old together and share stories of the past and of our way of life. It has now been 64 years since Hebron was relocated therefore the elders are this age and older. If we continue to support their return home, we have to be mindful of their age, health and capabilities. There are currently 46 remaining relocatee's from Hebron and 28 from Nutak.

Torngat Base Camp (IcCq-11) NG22.09

At the request of the Torngat Park superintendent a small archaeological survey was conducted in advance of a infrastructure project. On the initial

Figure 7: Negative test pit at Torngat Mountains Basecamp and Research Station site IcCq-11, view northeast over St. John's Harbour.

walk over of the proposed project area, located to the west of the camp, a number of Ramah Chert flakes were found in a caribou trail that leads from base camp to the head of St. John's Harbour. The nearest reported site IcCq-11 is generally poorly understood and is based on surface remains, and lithic scatters. This is further confused by significant disturbance caused by the construction and later removal of 1950s US military infrastructure in the area including roadways and buildings. As the proposed project was small and contained within a 3x3m square, it was decided that the affected area could be tested and cleared with little risk to heritage resources (Figure 7). A grid of 9 test pits were dug by trowel over the proposed footprint with no cultural material being encountered and a tenth negative test pit was dug to the south of the caribou trail adjacent to the other pits. The lack of any cultural material in these pits despite the nearby surface scatter of lithics suggests that lithic material is likely being washed down the caribou trail from an unknown site at higher elevation.

In an attempt to clarify the extent of IcCq-11 and identify the potential site at higher elevation, a map of the general area was made using a drone. It is hoped that this map may be used in conjunction with future test pitting to gain a better understanding of the archaeology in the vicinity of basecamp.

Ugjuktok Survey 22.37, NG22.09

In early 2022, Nunatsiavut Archaeology received a land use request for the area north of Ugjuktok Fjord. Ugjuktok Fjord marks the southern and western termination of the larger Saglek Fjord. Despite the extensive survey and number of important sites in Saglek, Ugjuktok has seen limited survey and only a single site near the mouth of the Fjord has been reported. Through support from Parks Canada, a short helicopter survey was conducted (Figure 8). The survey began at the elevated meadow at the start of the river valley that empties into the north side of the fjord. This flat area roughly 10ASL is the location of the only known sites in the area and requires additional walking survey and mapping as a number of tent rings and other features are visible from the air. From here we followed the river valley roughly west where it rises sharply for the first 6km until reaching a relatively level area with a large (>3km) narrow lake that is the source of the river. Though no cultural features were spotted in this quick overflight, both the head and foot of this lake should be considered high potential for any proposed development in the area.

We continued the survey southwest from the lake, the land sloping steeply downward until meeting a broad valley with a small river at the westernmost shore of Ugjuktok. Where this river empties into the fjord is marked by low lying wetland that has low archaeological potential. On the opposite southern shore another broad river valley with similarly wet conditions mark the end of the Fjord. On a point of land on the east side of this valley a number of cultural features were noted from the air (Figure 9). On landing, features consisted of a number of rectangular stone walls as well as various stone cairns or caches. The walls are noteworthy in the large size of the rocks used as well as being stacked multiple courses high in places. Dimensions of any individual structure was hard to determine as there appears to have been repeated rebuilding events. No artifacts were found in association with the features, making cultural affiliation difficult, but based on size and shape they are likely historic Inuit structures. Further investigation of the point revealed a paleo-shore line at 10 meters above sea level. Though this area was heavily vegetated a number of Ramah chert flakes were seen in exposed soils surrounding boulders. No structural features were recognized and no diagnostic tools were found, but based on the location and elevation a cultural affiliation of Archaic is suspected. Time at this new site (designated IbCv-01) was limited but it does seem that it may have important information about

Figure 8: Ugjuktok helicopter survey track and results.

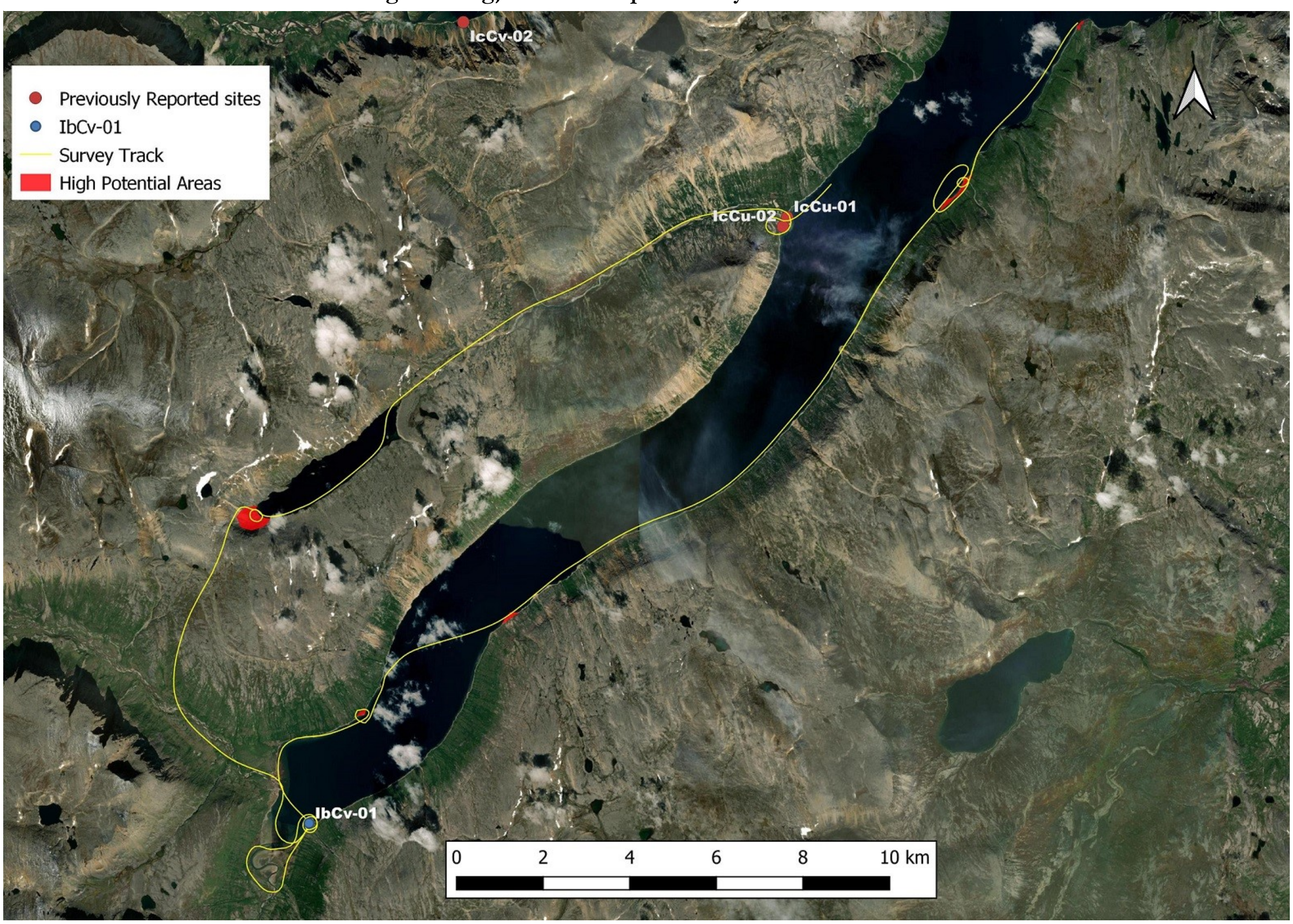


Figure 9: IbCv-01 (new site), view northwest with cobble structures in centre of photo.

locations for Archaic sites. These areas were recorded and future survey in the area can now be focused.

White Point 22.37

On August 19th, Corey and Parks Archaeologist John Higdon visited Ommatik 1 (IcCp-48) to document the historic-through-modern petroglyphs there, which consist mostly of personal names and the year inscribed on soft brown cobbles (Figure 10). The oldest visible inscription is dated 1884, and names continue to be added to present. Individual stones were 3D scanned, in some cases revealing underlying names and dates that had not been visible with the naked eye.

Little Ramah Bay

Through cooperation with and under permit by Parks Canada, Nunatsiavut Government Archaeology had the opportunity to revisit three known sites that had not been revisited since the 1970s to gauge current impacts of climate change effects as part of the Climate Change and Archaeology in Nunatsiavut project. These sites were selected due to their proximity to an archaeology assessment being done at Ramah Mission. It is hoped that these sites can serve as concrete examples for gauging both the accuracy of legacy data and the real impacts of climate change on similar and similarly-situated sites.

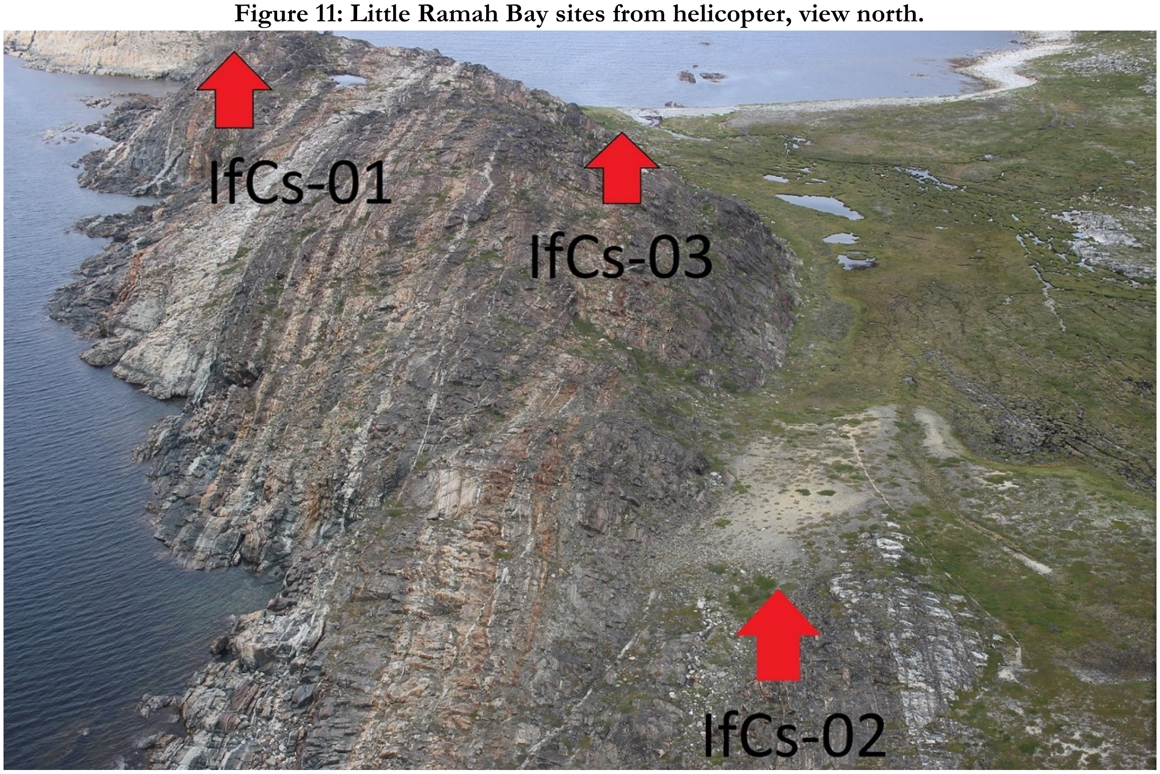
The three sites, Little Ramah Bay 1, 2, and 3 (IfCs-1, IfCs-2, IfCs-3), are all located on or near a point of land on the eastern side of the entrance to Little Ramah Bay (Figure 11). The three sites were

settlement patterns in this area and a more complete investigation of the site should be completed.

The remainder of the survey of the fjord consisted of identifying areas of high archaeological potential along the shores of the fjord. With the exception of a promising point of land near the western end of the Fjord, the north shore appeared to be too steep for sites. The southern shore had numerous locations that seemed ideal for Inuit sites as well as the flat elevated paleo beach ridges that seem likely

Figure 10: Ommatik 1 (IcCp-48), view east with engraved stones in foreground.

Figure 11: Little Ramah Bay sites from helicopter, view north.



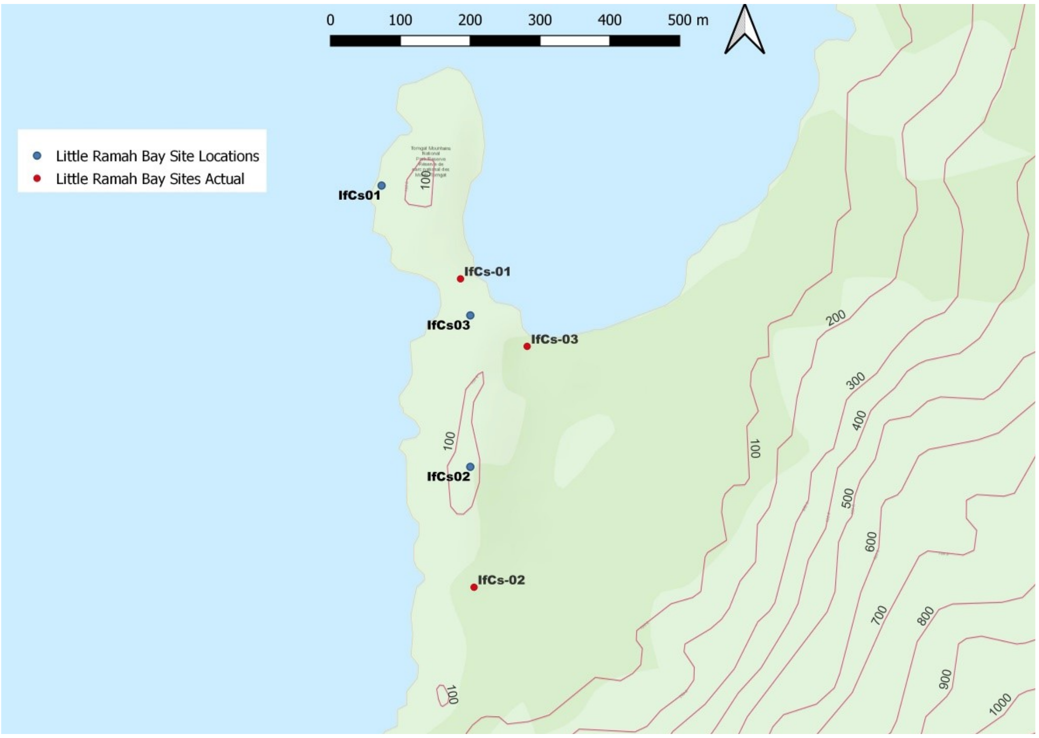


Figure 12: Little Ramah Bay sites, coordinates from previous Site Record Forms vs. actual site locations (contour interval in feet).

originally reported in 1977 by William Fitzhugh as part of the Torngat Archaeology Project, with 1 and 3 having being revisited in 1978 also under Smithsonian permit. Each of the sites saw minimal test pitting and limited artifact collection. All of the sites were identified as having a Dorset component.

The three sites were visited on August 15 with less than two hours on the ground. The first issue encountered was that the coordinates for these sites as per the site record forms were off between 40 -200 meters. These errors in the site locations were not consistent between sites and do not appear systematic or related to map projection (Figure 12). Though the given site coordinates are incorrect, Kaplan's sketch map of Little Ramah Bay 3 accurately depicts the site and its location (1983: 619).

Little Ramah Bay 1 is located on the peninsula on a low, flat grassy section situated between rocky hills. The site is 5-7m ASL with the edges sharply sloping down a rocky face to the sea (Figure 13). Little Ramah Bay 1 is identified as a mid-passage Dorset structure over laying a pre-Dorset site. Large amounts of debitage are visible on the surface along with large structural stones that are likely related to the features reported by Fitzhugh. A significant amount of debitage could be seen washing over both the eastern and western edges of the site, and large pieces of flotsam including a Walkman cassette player were noted, indicating that waves are at least occasionally breaking over the site.

Little Ramah Bay 2 has the least amount of documentary information available of the sites on the peninsula. The original site record form and report suggest a tentative cultural affiliation of Dorset but with no site description. After the field season Nunatsiavut Government Archaeology were in contact with The Rooms for the catalog of artifacts collected. This catalog contained a number of microblade fragments as well as a tip-fluted point consistent with the Dorset cultural designation. This catalog had additional information in that it mentioned "Inside Feature" as the provenience for the artifacts collected. What is assumed to be this feature was observed during this visit and appeared only as a 2.5-3 meter incomplete ring of stones. This feature is located in a 50x100 meter flat sandy area situated 80 meters east of the shore at a height 12m ASL. A large amount of debitage and some fragmentary tools were seen throughout this flat area both inside and outside the feature, possibly suggesting additional features that are not visible at the surface. At present this site seems stable and is of least concern of the three Little Ramah Bay sites.

The nearby Little Ramah Bay 3 showed more striking erosion effects. Most noticeably the edge of the site adjacent to the beach is actively breaking loose and eroding (Figure 14). The site is discussed by Kaplan in her 1983 PhD dissertation where she concludes that the site marks a short Inuit occupation post-1850 that was constructed on top of and from sods from an underlying Dorset site. A mix of historic artifacts and lithic debitage are present in the col-

Figure 13: Little Ramah Bay 1 (IfCs-1, centre) from helicopter, view southeast with IfCs-3 just visible at top of photo. Note abundance of driftwood strewn across the site by wave action.

Figure 14: Little Ramah Bay 3 (IfCs-3), view west, showing erosional undercuts and bank failure in front of Inuit sod houses. Veronica Flowers and Parks Canada archaeologist John Higdon with RTK in background.

lapsing soil and the exposed stratigraphy shows an occupation layer. In comparing current conditions to the map produced by Kaplan, the area in front (east) of the sod houses looks to have lost 3-6 meters of ground as the gravel beach that is currently there is not present in her map. Added to this is the fact that a stream that runs to the east of the houses has shifted course much closer to the site, leaving little room before this part of the site is eroding on two sides.

Climate Change and Archaeology in Nunatsiavut

In 2019, Nunatsiavut Government Archaeology secured a $138,000 grant from the federal Climate Change Preparedness in the North program to assess the real and potential impacts of climate change on archaeological sites in Nunatsiavut and to purchase weather-monitoring stations to be installed at key sites to better understand the range and rate of these impacts on the ground. Five HOBO weather monitoring stations were purchased in early 2021, equipped with sensors to capture wind speed and direction, rainfall, ambient temperature, pressure, and humidity, solar radiation (sunlight), snow depth, and soil temperature and moisture. Two of these have now been deployed around Nain, and the remainder will be deployed in 2023 at other key locations along the coast.

In addition to the work in the Torngat Mountains National Park described above, we are currently working with the NL Air Photo Map Library to acquire historic and recent air photos of sensitive areas of coastal Nunatsiavut. These high-resolution photos will enable us to track the real extents and rates of coastal erosion through time to better focus our mitigation efforts, and in exceptional cases may allow for the identification of archaeological sites and high potential areas for targeted surveys.

Conclusion

We are looking forward to a busy 2023 season, with preemptive surveys in areas with increasing land use, targeted investigations in under-surveyed areas at high risk of erosion and other climate change impacts, and the pilot year of our community climate change-monitoring project, Adaptive Archaeology. We also hope to see the completion of a comprehensive study of the feasibility of constructing and operating a dedicated repository for artifacts, cultural materials, and archives within Nunatsiavut.

Acknowledgements

We extend our sincerest thanks to all those who made our 2022 fieldwork possible, productive, and enjoyable: Jamie Brake, Stephen Hull, John Erwin, and Delphina Mercer at the PAO; Lori Temple and Elaine Anton at The Rooms; John Higdon, Gary Baikie, and logistical support staff at Parks Canada; NG Conservation officers Simon Kohlmeister and Richard Maggo, and summer student Peter Dicker; and NG Archaeology summer student Siegfried Merkuratsuk.

References

Hampson, Thomas, edited by William Glover
2005[1934] HMS Challenger's Wintering Party, 1933-34: A Labrador Journal. The Northern Mariner/Le marin du nord 15(1): 27-74.
Kaplan, Susan A.
1983 Economic and Social Change in Labrador Neo-Eskimo Culture. PhD Dissertation, Bryn Mawr College.
Penney, Gerald
2002 Historic Resources Impact Assessment (Stage 1/Stage 2): Proposed Diesel Generating Station, Nain. Report on file, Provincial Archaeology Office of Newfoundland and Labrador, St. John’s, NL.

Holocene climate and human impacts at L'Anse aux Meadows, Newfoundland, based on lake sediment proxy analysis

Matthew Peros[1], Emilie Gauthier[2] & Jeannine St-Jacques[3]
[1]Bishop's University, [2]Université de Franche-Comté, [3]Concordia University

Introduction

We worked at L'Anse aux Meadows National Historic site and briefly in the surrounding region between August 14-21, 2022. To do this work we received permits from Parks Canada (AM-2022-43278) and the Provincial Archaeology Office (permit 22.43 – L'Anse aux Meadows area). The objectives of the work were to undertake lake sediment coring of sites within the region to study past climate and vegetation changes during the Holocene, and especially the Common Era (the last 2000 years). This work is being done in collaboration with Paul Ledger and Véronique Forbes (Memorial University of Newfoundland) in support of their efforts at the archaeological site itself.

Figure 1: Coring on the platform at Black Duck Pond with the Livingstone Piston sampler.

Methods

Our sediment coring utilized three different devices: 1) a percussion-driven interface corer to capture the watery sediments at the interface between the water column and the top of the sediment; 2) a Livingstone piston sampler for recovering deeper, more consolidated sediments; and 3) a Russian peat borer for extracting very fibrous, organic-rich sediments. Each of these devices produced cores approximately 5 cm in diameter. The first two devices were deployed using a floating platform constructed from plywood and inflatable rafts (Figures 1 and 2); the Russian Peat corer was used from the surface. Once extracted from the sediments, each core was wrapped

Figure 2: Preparing the interface corer at the small pond north of the National Historic Site (51.603602°N, -55.519226°E).

and transported out of the field for shipment to Bishop's University, where they are currently stored in a refrigerator. As each site was visited, we were very careful to not create too much disturbance and we expect that our environmental impact was extremely limited to negligible.

The sites

Our team (see Appendix B) visited and took samples from four lakes and one wetland (Figure 3):

1. A single core at the center of an unnamed pond, just to the north of the National Historic Site boundary, at 51.603602°N, -55.519226°E (in less than 1 m of water). **Total core length is less than 60 cm**;
2. A single core at the center of "Skin Pond" (near its narrowest point), at 51.585488°N, -55.536553° E (in less than 1 m of water). **Total core length is less than 60 cm**;
3. An "interface" core at Black Duck Pond, at 51.579104°N and -55.530308°E (in 5 m of water). **Total core length is less than 60 cm**;
4. A second, longer core sequence (consisting of both an interface core and a series of Livingstone core drives), at 51.577141°N and -55.528677°E, also at Black Duck Pond (in approximately 18 m of water). **Total core length for the longer sequence it is approximately 4 m;**
5. A single core sequence (consisting of both an interface core and a series of Livingstone core drives) at "Grace's Lake" (unofficial name), just outside the National Historic Site boundary, at 51.570306°N, -55.481948°E. **Total core length is approximately 4 m;**
6. A core (using a Russian Peat borer) from the wetland located at 51.594455°N, -55.527669°E. **Total core length is approximately 2 m.**

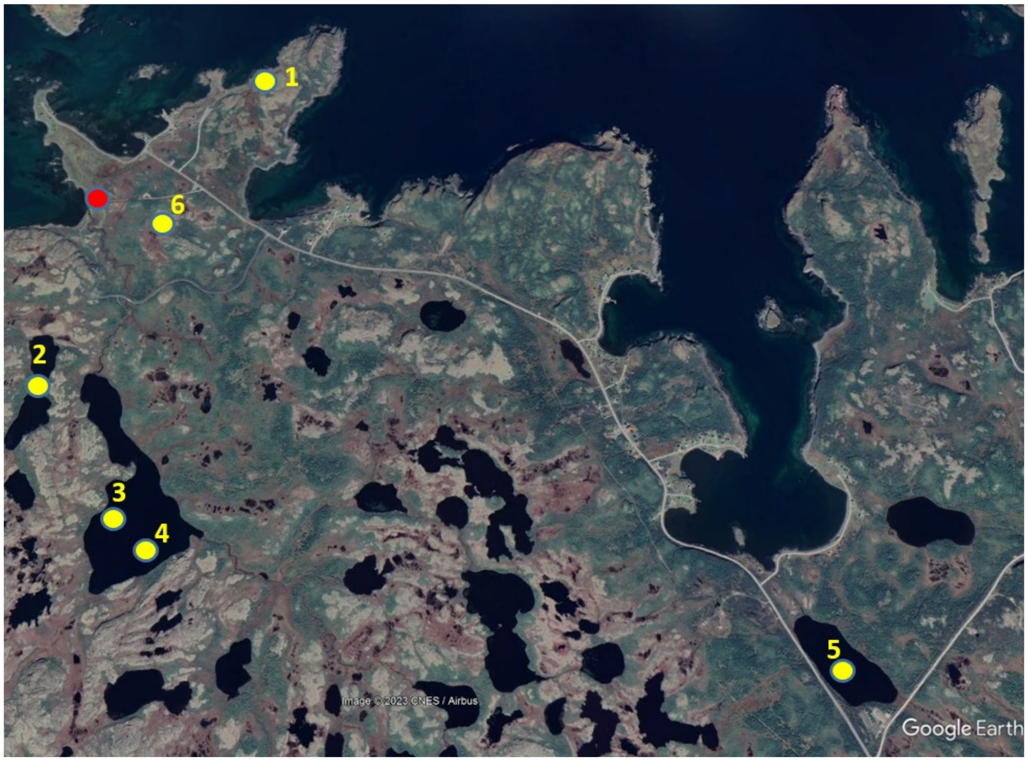


Figure 3: Google Earth image of the region with yellow circles showing locations of sediment cores. The red circle corresponds to the Norse site.

Each of these sites was targeted due to a combination of proximity to the known archaeological site (s), their measured depths (we wanted as deep lakes as possible), and accessibility due to our heavy equipment. In the end, both the small pond and Skin Pond were found to be very shallow and neither contained very thick sedimentary packages (less than 1 m each), suggesting that these water bodies have a relatively recent history and are not very old. Black Duck Pond and Grace's Lake, however, possibly due to their depth, contained considerably more sediment, so more time was focused on those locations. In addition, we cored the wetland just east of the Norse remains (with permission of Gabrielle Charette), because we anticipated that a longer (and hence older) sedimentary sequence would exist here – and recovered two meters of sediment from this location.

Preliminary results

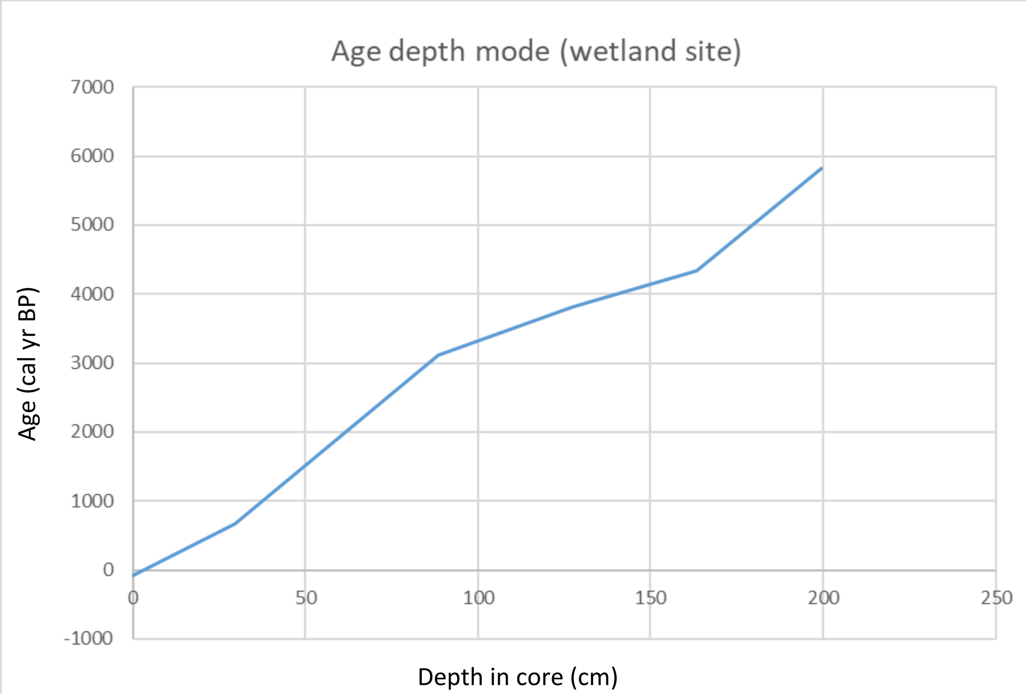
We began analyzing the cores in September 2022. This work consisted of non-destructive magnetic susceptibility measurements on all cores, estimates of sediment composition using Loss-on-Ignition techniques, and we submitted a number of samples for radiocarbon dating. It is too early to make any interpretations on the cores, although the longer sequences we collected at Black Duck Pond and Grace's Lake consist of very organic rich sediment overlying a base of fine, mineral-rich sediment, which probably represents clay of glacial or marine origin (i.e., marking the onset of lake formation). Thus, we expect that from these locations we recovered complete (or near complete) sedimentary sequences. Indeed, near the base of the core from Black Duck Pond, we also found what appeared to be fish (probably sculpin – benthic fish) bones (Figure 4 and 5), which probably date to the early Holocene (6-10 ka) given their depths in the core. However, at this point it is unclear what their significance is.

As mentioned, we have already submitted nine samples for radiocarbon dating: four from the Black Duck Pond and Grace's Lake cores (to Beta Analytic in Florida) and five from the wetland core (site 6) to the A.E. Lalonde Laboratory in Ottawa. The dates from site 6 have been returned and we have generated a preliminary age-depth model showing the relationship between depth and age in the core, as shown in Figure 6. This preliminary data indicates that these sediments span the last six thousand years and are probably uninterrupted.

Next steps

The main analytical work on the cores will be undertaken by two graduate students under our supervision: Elia Roulé and Charlotte Whyte, and will begin in spring or early summer 2023. The specific cores they work on will in part be dependent on the dating results that we obtain this winter, but their efforts will likley be focussed on high-resolution pollen analysis to reconstruct climate and vegetation change over the last few millennia at several of the sites. In

Figure 4: Top and Figure 5: Bottom. Possible sculpin bones.



Coring operation

addition, a new member of the team (George Drummond, Concordia University, who was not present for the fieldwork), has been undertaking charcoal analysis on the wetland core to document local and regional fire activity. The work is still in progress but should be finished by April 2023.

Field Team

Professors

Matthew Peros (Bishop's University)
Emilie Gauthier (Université de Franche-Comte, France)
Jeannine St-Jacques (Concordia University)

Postdocs/students

Natasha Roy (UQAM)
Elia Roulé (Université de Franche-Comte, France)
Charlotte Whyte (Concordia University)
Alexandre Pace (Concordia University)
Cesar Arturo Vera (Université de Sherbrooke)

Sikumiut Environmental Management Limited 2022 Historic Resources Activities

Roy Skanes
Sikumiut Environmental Management Limited (SEM)

Figure 1: The Exploits River Project Area.

Roy Skanes of SEM completed two Historic Resources Impact Assessments (HRIA) in the province in 2022 - one on the south shoreline of the Exploits River in central Newfoundland and another within and near the community of Nain in northern Labrador.

Exploits River

The HRIA on the Exploits River was completed for the proposed development of a parcel of shoreline property for cottage construction. The wooded land where development could occur is situated on the south shore of the river, approximately 1.25 km downstream of the Sir Robert Bond Bridge on the TCH (Figure 1).

The proposed project will involve subdividing the property into 16 waterfront cottage lots ranging in width from 28.45 m to 43.79 m. The principal access to the development will be from the TCH and Sandy Point Road, the latter of which will connect with a new, east to west-oriented gravel road that once fully constructed, will extend along the complete length of the property's southern boundary and provide access to each of the cottage lots. Figure 2 shows the conceptual layout of the proposed development, as well as the various buffer zones that must be maintained along the water frontage.

Background research completed for the HRIA suggested that while there was some potential that the Project Area had seen intermittent usage during the precontact and historic periods, the overall topographic conditions and the nature of the shoreline suggested that the likelihood of any prolonged occupation was low. Additionally, it appeared from a review of available sources that the parcel of land to be developed had been investigated archaeologically in the 1990s, with negative results (Schwarz 1992). Thus, the information acquired through background research suggested that the historic resources potential of the property was low.

Despite the level of investigation completed during the HRIA field study, which involved a thorough visual inspection of ground conditions throughout the property and the excavation of test pits on dry, level terrain theoretically suitable for past human settlement, no materials or locations of archaeological significance were located. Because the potential that

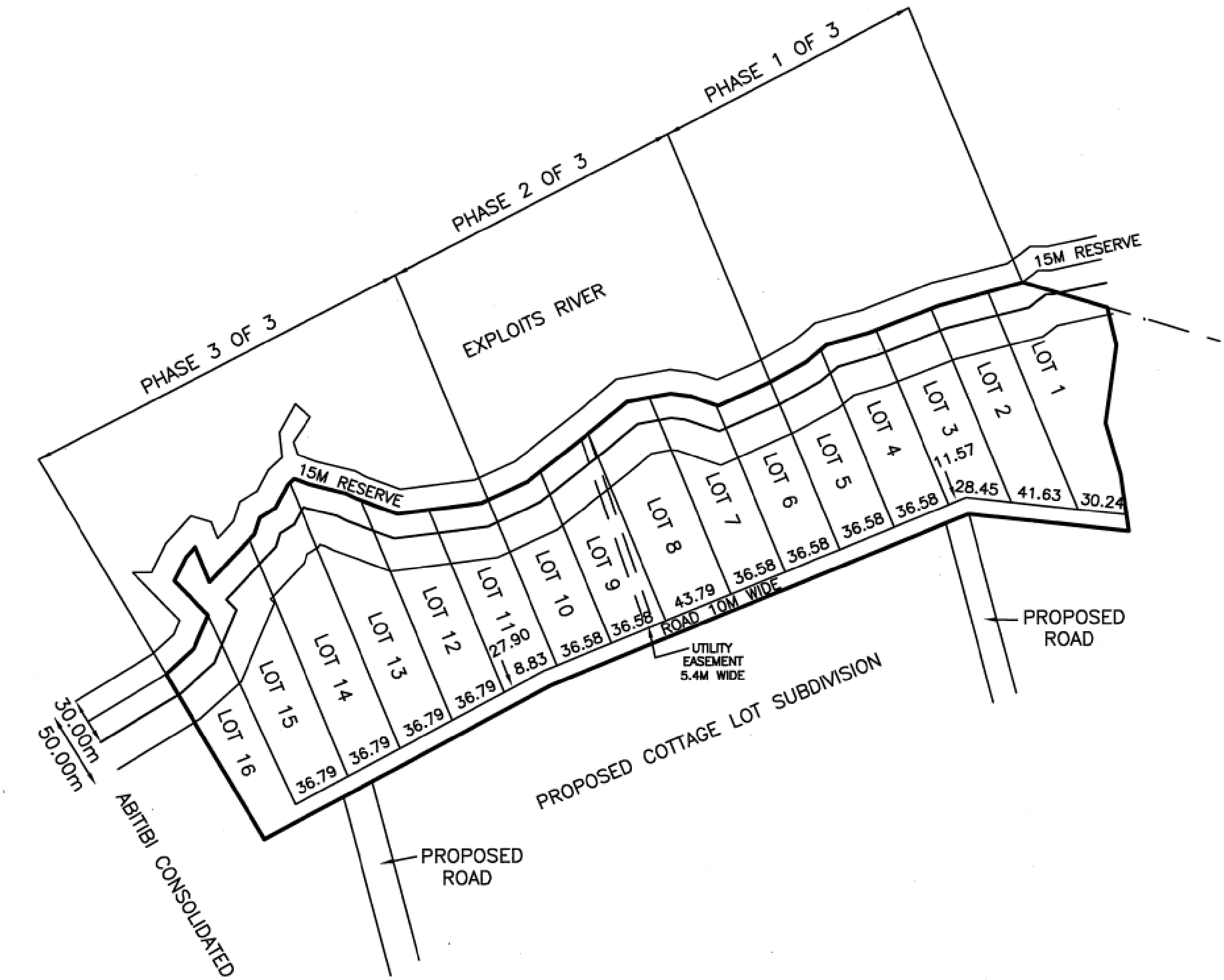


Figure 2: Proposed layout of the Cottage Lot Development on the Exploits River shoreline.

archaeological material is present is low. No further documentary or field research was recommended.

Nain

The Nunatsiavut Government is proposing to construct a new certified airport for the Inuit community of Nain in northern Labrador to replace the existing infrastructure that is reportedly undergoing stress due to climate change. The new facility will have a gravel airstrip of 5,000 feet long (1,524 m) and 100 feet wide (30.48 m), with a surface area of approximately 1,300 m2 set aside at the landing site to accommodate any future development requirements. Construction of an access road to connect Nain with the new airport will also be part of the project.

Preliminary groundwork for the project in 2022 would involve completion of 90 geotechnical boreholes and test pits along the route of the proposed access road from Nain and throughout the area west of the community where the airstrip and associated infrastructure will be situated. Additionally, several small and moderate-sized waterbodies were identified by the geotechnical team as potential locations where, if needed, water could be drawn and transported by helicopter to work sites in large plastic totes and used for cooling drills positioned in areas away from adequate water sources.

Following a review of Project details by the Nunatsiavut Archaeological Office (NAO), the proponent was informed that each of the 90 locations where geotechnical investigations would be conducted should be subject to a HRIA prior to commencement of tree and brush clearing and any other type of ground activities related to the work. Additionally, once the locations of the potential water sources had been confirmed, the proponent requested that assessment of these be added to the HRIA work-scope as a precautionary measure to help reduce the likelihood of any project-related interactions with historic resources.

Fieldwork completed as part of the 2022 HRIA saw the discovery of archaeological materials in a single shovel-dug test pit situated close to where geotechnical test pit 35 would be situated. The site, assigned the Borden Number HdCk-47, is located near the edge of a level but narrow and elevated point of well-drained, forested and lichen-covered terrain at 37.68 m asl and approximately 1.75 km north of the shoreline of Kauk Harbour. The site overlooks a series of small and moderate-sized adjoining ponds and low-lying boggy area. It seems likely that the site at the time of occupation may have been situated on an elevated point of land that projected out into saltwater (Figure 3).

Figure 3: Location of Precontact Period archaeological site HdCk-47.

Figure 4: Sample of quartz flakes recovered from HdCk-47.

Findings at HdCk-47 included 24 quartz flakes and 29 fragments of other quartz debitage (Figure 4). Though it has not been confirmed due to the limited sample recovered, the materials unearthed and the elevation of the find above asl – 37.68 m – could indicate a relatively early Maritime Archaic occupation. It is worth noting as well that several of the sites previously recorded archaeological in the Nain area that contained lithic assemblages dominated by quartz, and which were situated on former shorelines at similarly high elevations asl, were dated to *circa* 6,000 - 7,000 years BP (Hood 2008, Fitzhugh 1978). However, it is important to note that confirmation of the age and cultural affiliation of HdCk-47, as well as other critical aspects such as site size, function, and seasonality, can only be arrived at once further testing and recording, and research and analysis of the total body of site data is completed.

Because significant disturbances to cultural materials could have occurred at HdCk-47 if the location was sampled for geotechnical purposes, the worksite was relocated to higher ground away from the archaeological find and completely off the level terrace/ridge where the positive test pit was situated.

In accordance with recommendations made by the project archaeologist to the proponent and NAO in a series of daily fieldwork updates and a preliminary report, geotechnical work proceeded at all identified Project locations, with the sole exception of where the archaeological site was discovered. In summary, the geotechnical team reported no unexpected findings or inadvertent impacts to archaeological materials during the 2022 field program, and the work at the borehole, test pit and water source locations proceeded on schedule and without any delays related to interactions with historic resources of any description.

References

Fitzhugh, W.W. 1978. Maritime Archaic Cultures of the Central and Northern Labrador Coast. Arctic Anthropology, 15(2): 61-95.

Hood, B. 2008. Towards an Archaeology of the Nain Region, Labrador. Edited by William W. Fitzhugh. Contributions to Circumpolar Anthropology 7, Arctic Studies Center, National Museum of Natural History, Smithsonian Institution.

Schwarz, Fred. 1992. Archaeological Investigations in the Exploits Basin - Report on the 1992 Field Survey. Unpublished report prepared for the Exploits Valley Tourism Association. Copy on file at the PAO St. John's, NL.

Preliminary recording and interpretation of Devil's Cave, Conception Bay North

Bryn Tapper & Barry Gaulton
Memorial University

Figure 1: The Devil's Cave site located on the south side of the rocky escarpment.

Devil's Cave or Devil's Rock (CjAh-39) is located some 500m behind, or north of, the community of Bishops Cove and at the southeastern outskirts of the community of Upper Island Cove in Conception Bay North. Here, many names, initials and dates are incised on rock surfaces within and adjacent to a small cave-like crevice on the boulder and scree-littered southern slope of a rocky hill (Figures 1 and 2). The crevice is formed by very large angular boulders that rest against one another to create a space that one or two individuals, at most, could enter at a time. Upper Island Cove resident Everett Lynch first brought the site to our attention in 2018. According to Lynch, his father discovered the crevice as a boy back in the 1940s on his way berry picking; at that time, the interior rock surface already contained many inscriptions. Referred to colloquially as Devil's Cave or Devil's Rock, this location has been, and continues to be, a gathering place for young people from one or more of the nearby communities of Bishops Cove, Spoon Cove, and Upper Island Cove.

In spring 2022, 3D structured-light scanning (SLS) was conducted on the inscriptions located along the south-facing sloping surface inside the crevice (see Tapper et al. 2022). This report details the processes involved in the preliminary scanning, results of the 3D modelling, and tentative interpretations on who carved their names on the rock at Devil's Cave, when, and from what community(s) they resided.

An Einscan Pro 2X Plus Structured-light 3D Scanner was used to capture surface details of the interior rock surface (Figure 3). Structured-light scanning (SLS) generates accurate 3D datasets, which provide important quantitative information relating to the dimensions and current condition of the inscriptions. Data capture and post-processing of the 3D models was undertaken using EXScan Pro software. The Handheld Rapid Scan setting and Texture Scan alignment mode was used to produce a colour-aligned 0.25mm resolution surface model of the inscriptions (Shining 3D 2019: 41). The model was imported into Meshlab (Cignoni et al. 2008) and visualised using the Radiance Scaling Plugin (Vergne et al. 2012) to produce an enhanced 2D rendition of the inscribed panel (Figure 4). This enhanced image was used as the basis for a manually produced interpretative line drawing of legible inscriptions (Figure 5). The line drawing is not a complete record of all the inscriptions — many remain faint or obscured by later carvings.

Only the south-facing sloping surface forming the 'front' of the crevice was scanned during the site visit — covering an area 1.74m long by 1.40m wide. The space inside the crevice at Devil's Cave is tight and does not provide sufficient room to set up a camera and tripod required to record the inscriptions using methods such as Highlight-Reflectance Transformation Imaging. Instead, the 3D scanner was calibrated and used to capture as much of the detail of the inscriptions as the space allowed. The two main challenges to implementing the scanning work were 1) positioning the scanner and 2) controlling ambient light (see McPherron et al. 2009). It was a bright, sunny day during the data capture and therefore a black tarpaulin was required to cover the entrance of the crevice to block ambient light and shade the interior. SLS is compromised when bright sunlight 'washes out' the rock surface and prevents the scanner from identifying and measuring surface texture and topog-

Figure 2: Dr. Peter Whitridge in the Devil's Cave crevice during an earlier site visit in 2018.

Figure 3: South facing surface inside Devil's Cave.

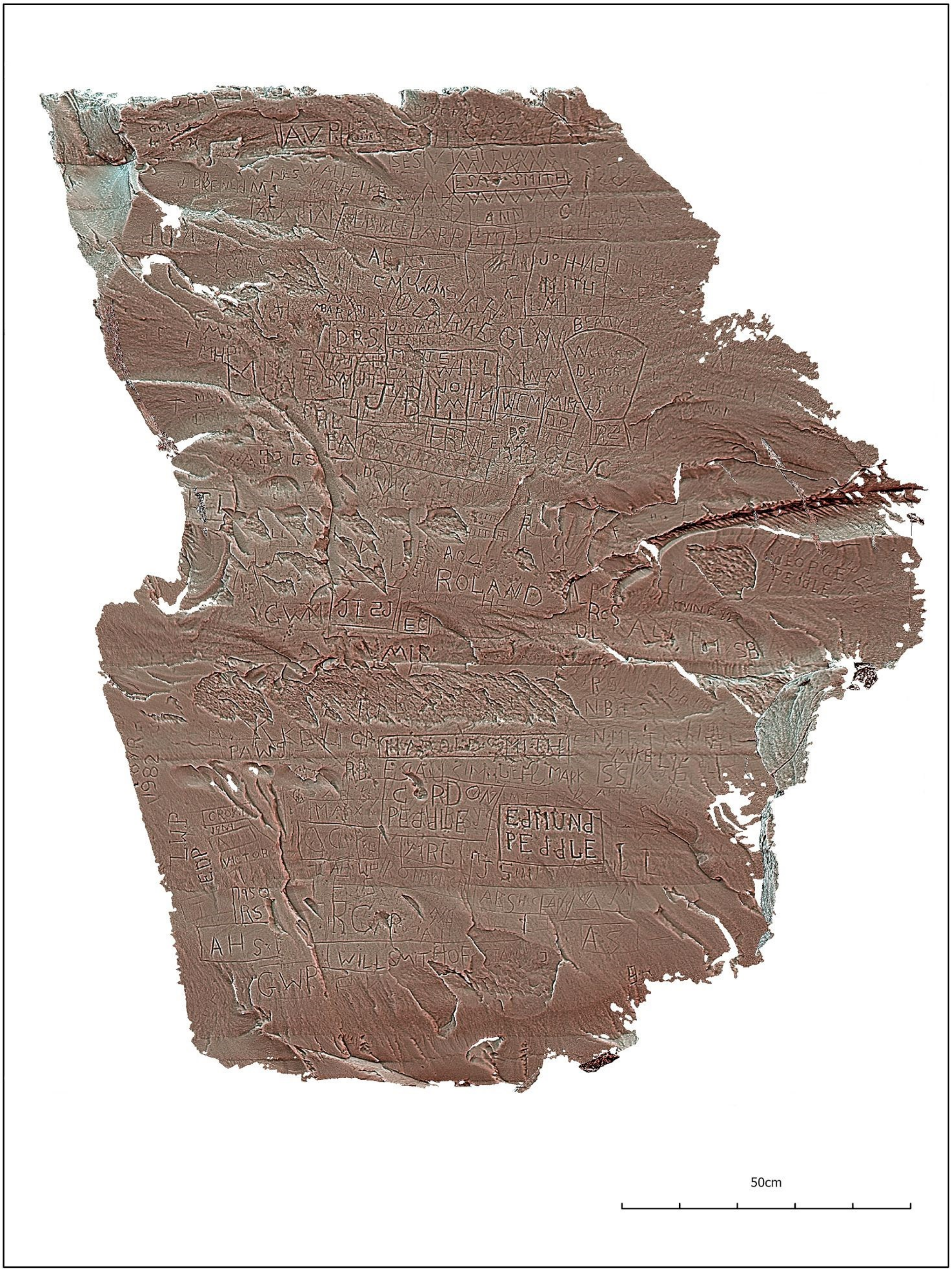


Figure 4: Meshlab Radiance Scaling rendition of the 3D model of the Devil's Cave inscriptions.

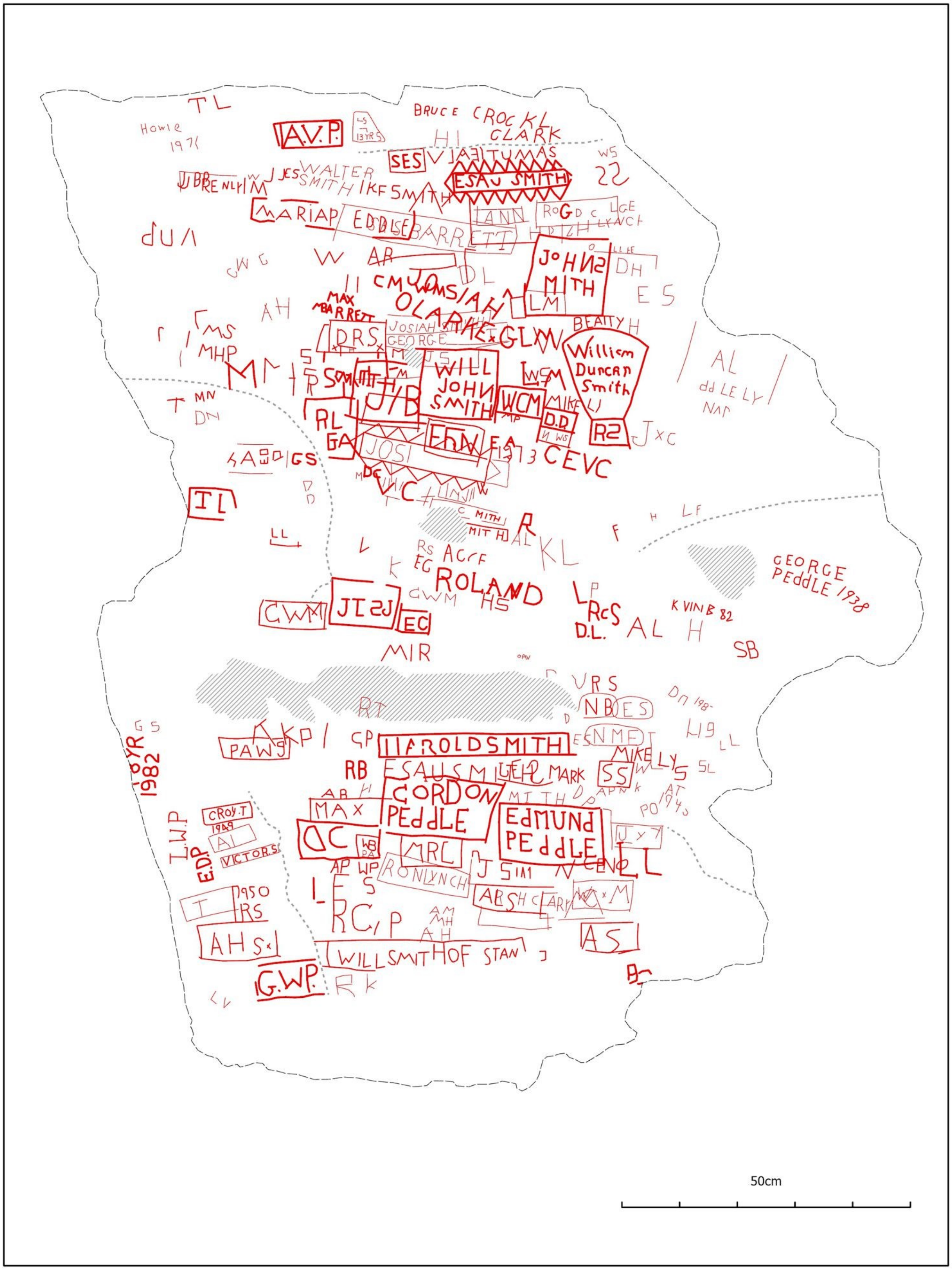


Figure 5: Line drawing interpretation of Devil's Cave inscriptions.

Figure 6: Distinctive crossed bar in the letter A in 'CLARK' and in the illegible name directly below.

raphy. Positioning the scanner also proved challenging. Because the scanner's lens has a limited depth of field (+/-10cm), it must be positioned at a fixed working distance, between 30 and 51cm, from the rock surface (Shining 3D 2019: 46). For the best results, the scanner's Texture Mapping alignment mode requires that surface detail first be captured from a perpendicular position, which facilitates the alignment of images, particularly when the same surface is also scanned from less favourable oblique positions. On the right-hand side of the panel, where the roof of the crevice narrows, surface detail could only be captured at an acute angle resulting in the poorer definition of some of the inscriptions found in this part of the 3D model.

Most inscriptions have been incised from within the crevice, and most lettering runs horizontally although some initials are set at angles or, more rarely, vertically. Most lettering is uppercase. As is commonly found in mid-late 19th-century inscriptions from the Avalon Peninsula, many names and initials are bounded or 'boxed' by lines (Gaulton et al. 2021, in press; Gaulton et al. 2022). The majority are male names although two examples of female names are present. Generally, inscriptions respect natural faulting in the rock surface and avoid rough areas of spalling. ALL the inscriptions represent personal names, sets of initials, single letters, and dates — probably relating to individuals from local communities.

Common incised surnames include the following:

Smith (at least 12 examples): e.g. Esau Smith (x2), Josiah Smith, Walter Smith, John Smith, William Duncan Smith, Ike(?) Smith, Harold Smith, Will Smith, Will John Smith and C. Smith).

Peddle (x4): e.g. Edmund Peddle, Gordon Peddle, George Peddle (associated with the date '1938'), and possibly, Maria Peddle.

Lynch (x3): e.g. Ron Lynch, Lynch, and possibly, Mike Ly[nch?].

Barrett (x2): e.g. Barrett and Max Barrett.

Single occurrences: e.g. Bea[tt?]y; (Josiah) Olarke [Clarke?]; Clark; (J) Brenly?, and possibly, Bruce Crock[er?] are also identified.

Multiple occurrences of given names include the following: Ann, George, Howie, Josi[ah]?, Kevin 82, Mark, Max, Mike LI., Rog[er?], Roland, and Victor S.

Numerous initials make up the palimpsest. Many of the last letters of these initials may indicate individuals that belong to some of the families listed above. Common examples include the following: AH (x3); AL(x3); CM(x2); ES (x4); GS(x2); JES(x2); LM (x2); WS(x2).

Large prominent examples of initials include AHS; AVP; AS; CWM; DRS; GWP; JB; MRL; NB; RB; RS; SES; SS; TL; WCM.

Figure 7: Reversed letters N and S in the name JOHN SMITH (left), and initials JT SJ (right).

Most of the inscriptions appear to date to the mid and late 20th century with legible dates including: 1938; 194-, 1949, 1950, 1971?, 1973?, 198-, 1982. However, the lettering style of several personal names suggests that this may have been a site that was also visited in the late 19th century and/or early 20th century. The name 'JOSIAH CLARKE' includes the distinctive crossed bar in the letter 'A' – this stylisation is recorded elsewhere in late 19th-century inscriptions from the Avalon Peninsula (Gaulton et al. 2021, in press). The fact that this inscription superimposes two other names, 'JOSIAH SMITH' and 'GEORGE', suggests that these names predate the former. The crossed bar in the letter A also appears in the surnames of 'JOSIAH SMITH, 'CLARK', 'BARRETT' and in an illegible name with several reversed letters (Figure 6).

There are numerous instances of reversed letters in the names and initials — especially in the letter's 'N' and 'S' (Figure 7). Another distinctive trait is the combination of upper- and lower-case letters in some names e.g. GEORGE PEddLE, GORDON PEddLE and EdMUNd PEddLE. At Devil's Cave a distinctive form of bounding includes the addition of zigzag or 'toothed' lines around the bounding box of two names 'ESAU SMITH' and 'JOS- - -' (Figure 8).

To determine more about these individuals, the communities they originated from and when (approximately) they carved their names inside the crevice at Devil's Cave, we consulted early- to mid-20th-century nominal census records from the communities of Bishops Cove, Spoon Cove, and Upper Island Cove. Transcriptions of the 1921, 1935, and 1945 census records from the Harbour Grace District were available through the Newfoundland's Grand Banks website (http://ngb.chebucto.org/C1921/121-dist-idx.shtml). Nominal census records for the area do not exist for the 19th century. Census records following Newfoundland's confederation with Canada in 1949 have not yet been consulted; therefore, this report represents a partial analysis and interpretation of the inscriptions at Devil's Cave.

As noted previously, surnames Smith, Peddle, Barrett and Lynch are the most common inscriptions on the 'front' surface inside Devil's Cave. A direct parallel can be seen in the 1921 Bishops Cove census, with Smith (32), Peddle (5), Barrett (8) and Lynch (3) comprising 48 of the 61 households listed. Surnames Menchions (6), Clarke (3), Adams (1), Drover (1), Mercer (1), Mugford (1) and Williams (1) are also noted in the census records. The above surnames and their relative frequencies remain constant in later censuses, with the inclusion of new families such as Jones and Petten in 1945. Review of the 1921, 1935 and 1945 censuses from Spoon Cove failed to connect any of its residents with the inscriptions currently recorded at Devil's Cave. For nearby Upper Island Cove, only one resident could be tentatively connected to an inscription using the same census records. Below is a list of the names and ages of nearby residents who are likely associated with the inscriptions.

All census records are from Bishops Cove unless noted otherwise.

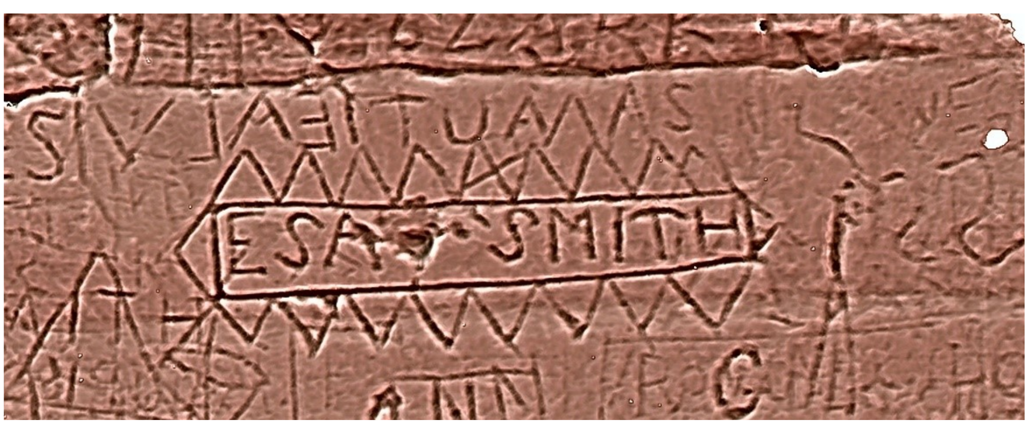
Esau Smith: 14 in 1921 census.

Harold Smith: 7 in 1921 census; 2nd Harold Smith 32 in 1921 census.

Ike Smith (short for Isaac): Isaac Smith 26 in 1921 census, also listed as 40 in 1935 census and 51 in 1945 census (enlisted for service in WWI in 1918 at age of 23); 2nd Isaac Smith 15 in 1935 census; 3rd Isaac Smith 4 in 1935 census, also listed as 13 in 1945 census; 4th Isaac Smith 6 in 1935, also listed as 16 in 1945 census.

John Smith: 21 in 1921 census, also listed as 35 in 1935 census; 2nd John Smith 2 in 1921 census, also listed as 15 in 1935 census; 3rd John Smith 3 in 1921 census, also listed as 17 in 1935 census; John T.

Figure 8: Distinctive zig-zag or 'toothed' lines bounding the name 'ESAU SMITH'.



Smith 41 in 1935 census; John E. Smith 39 in 1935 census (also had son John I. Smith 12 in 1935 census); John F. Smith 50 in 1945 census.
Josiah Smith: 59 in 1921 census; 2nd Josiah Smith 15 in 1935 census.
Walter Smith: 15 in 1921 census; 2nd Walter Smith 21 in 1921 census; 3rd Walter Smith 39 in 1921 census (from Mass. USA); Walter Smith 50 in 1935 census.
William Duncan Smith: William D Smith 6 in 1921 census; 2nd William D Smith 50 in 1935 census (had sons John 23 and William 20), also listed as 60 in 1945 census; William D Smith 30 in 1935 census.
Wil Smith of Stan: William G. Smith 13 [son of Stanley Smith 41] in 1935 census. The inscription "Wil Smith of Stan" was likely inscribed to distinguish this William from the numerous other William Smiths living in Bishops Cove in the 1930s-40s. Census records from 1935 and 1945 include similar notations, for example "William, of Nath", "Archibald, of David", and "Joseph, of Wm."
Will John Smith: William J. Smith 38 in 1921 census; 2nd William J. Smith 10 months in 1921 census.
C. Smith: Cyril Smith 46 in 1921 census; Cavell Smith 2 in 1921 census.
George S(mith?): George Smith 57 in 1921 census; 2nd George Smith 17 in 1921 census; George Smith 8 in 1935 census; 2nd George Smith 13 in 1935 census; 3rd George Smith 8 in 1935 census.
Victor S(mith?): 15months in 1935 census, also listed as 11 in 1945 census; 2nd Victor Smith 6 in 1945 census.
Edmund Peddle: 17 in 1921 census also listed as 31 in 1935 census and 42 in 1945 census. 2nd Edmund Peddle 52 in 1921 census (father of George Peddle 22, listed below).
Gordon Peddle: 36 in 1935 census; 2nd Gordon Peddle 12 in 1935 census.
George Peddle 1938: 22 in 1921 census, also listed as 36 in 1935 census; 2nd George Peddle 33 in 1935 census.
Maria Peddle: unable to match with listings in census records.
Ron Lynch: Ronald Lynch 4 in 1921 Upper Island Cove census, also listed as Ronald David Lynch 18 in 1935 Upper Island Cove census.
Mike Lynch: Michael Lynch 5 in 1945 census.
Max Barrett: 12 in 1945 census.
Sas(?) Barrett: unable to match with listings in census records.
Josiah Clarke: 6 in 1921 census; 2nd Josiah Clarke 7 in 1921 census, also listed as 20 in 1935 census; 3rd Josiah Clarke 31 in 1921 census, also listed as 44 in 1935 census and 55 in 1945 census.
JES (Smith?): John E. Smith 8 in 1921 census.
WCM (Menchions or Mercer): William C. Menchions 18 in 1935 census.

If we were to project its recent use — as evidenced by carbonated beverage cans, beer and alcohol bottle fragments, cigarette butts, and various plastic and aluminum waste — as a gathering place for youth and young adults from one or more adjacent communities back in time, then it can be assumed that the names, initials, and dates at Devil's Cave were incised by individuals in their teens and early 20s. Its isolated location some 500m behind the residences in Bishops Cove lends support to the assertion that Devil's Cave was a place to socialize and/or potentially partake in clandestine activities.

Based on the above information, many identifiable inscriptions on the interior surface of Devil's Cave were incised during the first half of the 20th century, with both census records and underlying, partially obscured inscriptions hinting at an inception date in the early decades, if not latter part of the previous century. Activity at Devil's Cave seems to have been particularly prolific during the 1920s-30s when Esau Smith, Harold Smith, Isaac Smith, Josiah Smith, Walter Smith, and several William Smiths, along with Edmund Peddle, Gordon Peddle, George Peddle, and Josiah Clarke were teens/young adults living in Bishops Cove. Youth from Upper Island Cove became aware of Devil`s Cave and/or started interacting socially with youth from nearby Bishops Cove at this location as early as the 1930s, if the Ron Lynch inscription is the same as that listed in the 1921 and 1935 censes. This closely matches the remembrances of Everett Lynch's father, who came across the cave and inscriptions as a boy in the 1940s.

Those who carved their names or initials inside and around the crevice at Devil's Cave from the 1950s to the present will be a topic for future study.

References

Cignoni, Paolo, Marco Callieri, Massimiliano Corsini, Matteo Dellepiane, Fabio Ganovelli, and Guido Ranzuglia. 2008. "MeshLab: an Open-Source Mesh Processing Tool." *Sixth Eurographics Italian Chapter Conference*. 2008, pp.129-136.

Gaulton, Barry, Bryn Tapper, Lester Green, and Donna Teasdale. 2022. "Halfway Rock, Southwest Arm, Trinity Bay." Provincial Archaeology Office 2021 Annual Archaeology Review 20: 88-97.

Gaulton, Barry, Bryn Tapper, Donna Teasdale, and Duncan Williams. 2021, in press. "The Avalon Historic Petroglyphs Project: preliminary investigation of historical graffiti and petroglyphs on Newfoundland's eastern Avalon Peninsula." *Northeast Historical Archaeology* 50.

McPherron, Shannon P., Tim Gernat, and Jean-Jacques Hublin. 2009. "Structured light scanning for high-resolution documentation of in situ archaeological finds." *Journal of Archaeological Science* 36 (1):19-24. doi: 10.1016/j.jas.2008.06.028.

Shining-3D. 2019. User Manual: Einscan Pro 2X / 2X Plus / EP EXScan Pro Software V3.3.02. https://it3d.com/wp-content/uploads/download-files/manual/en/EXScan-Pro-User-Manual-V3.3.0.2.pdf.

Tapper, Bryn, Barry Gaulton, Donna Teasdale and Oscar Moro Abadia. 2022. Upper Island Cove: 3D structured-light scanning of the petroglyphs (CjAh-29) and 'Devil's Cave' inscriptions (CjAh-39). Technical report on file at the Provincial Archaeology Office, NL

Vergne, Romain, Romain Pacanowski, Pascal Barla, Xavier Granier, and Patrick Reuter. 2012. "Enhancing surface features with the Radiance Scaling Meshlab Plugin." Computer Applications and Quantitative Methods in Archaeology (CAA), March 2012, 417–421. Southampton, United Kingdom.

Blair Temple Associates Limited 2022 Activities

Blair Temple
Consulting Archaeologist

Figure 1: Tiny pharmaceutical vial from late 17th century deposit on Springdale Street.

JAG Hotel Expansion, St. John's

Excavations continued in 2022 at the JAG Hotel expansion site on the corner of Springdale Street and Water Street, St. John's. The primary construction excavations were completed in 2021, with excavations for utility services remaining for 2022. Several of these excavations occurred along Water Street, some exposing extensive disturbance caused during the Harbour Interceptor Sewer project in 2008 and 2009 (GPA 2010). One such excavation – in front of the existing JAG Hotel – exposed a post-1846 fire fill deposit, likely related to post-fire roadwork.

The most significant find was a late 17th/ early 18th century deposit on Springdale Street. Finds were near exclusively tobacco pipe fragments, with complete (or near-complete) bowls dating c. 1680-c. 1720). The lowest portion of the deposit contained burnt wood, suggesting a large fire. The date of the cultural material is consistent with both the French attack of 1697 and another in 1705. The 1697 attack is a probable explanation, as attackers had captured a nearby, unnamed fort, and while holding it burnt numerous structures in the general area.

Bay Bulls Wharfing Development

Data-recovery excavations during a wharf development exposed a deep deposit of organic material, notable stratified layers of wood chips, sticks and branches, and other debris. This is probably the same deposit identified in 2021 during data-recovery excavations a few metres to the north (ChAe-15; BTA 2021).

The first of two excavations produced no datable artifacts (i.e. ceramics, tobacco pipes), but did produce organic artifacts such as cask or barrel fragments, one with interesting linear markings, and leather fragments. The most significant find were fragments of a reed mat, possibly one of the best-preserved early examples yet identified in the province. The other test excavation exposed small quanti-

Figure 2: Piece of Reed mat excavated during data-recovered testing at ChAe-15.

ties of fragmentary artifacts, most seemingly later 17th to early 18th century, consistent with finds from 2021. Some interesting wood artifacts included a possible thumb or sling cleat, and a wooden fid (used for splicing rope).

Additional testing elsewhere in the property (unrelated to the wharf development), identified evidence of a former late 19th occupation.

Exploits River Geodesic Dome Development

In May, Blair Temple and Bryn Tapper assessed a parcel of land for a proposed geodesic dome development, part of an existing chalet business along the Exploits River, west of Grand Falls. Portions of the study area were found to have been extensively disturbed by a gravel pit beginning in the 1970s. Other than mid 20th century logging infrastructure identified to the east (outside the study area), no other historic resources were identified.

Quidi Vidi Lake Bike Pump Track, St. John's

In August and October, BTA monitored excavations for a bike pump track on the north shore of Quidi Vidi Lake. This section of the lake's shoreline contained several structures during the early 1940s, part of the American presence at Fort Pepperell during World War II. These structures were removed by 1948. Excavations for the pump track identified no historic resources. The ground had been scraped down to sterile, either for the structures' construction or after their removal. Monitoring excavations for a trail from an adjacent parking lot to the track, did identify a small section of *in situ* concrete (of uncertain function), and subsurface traces related to a former road, or surface "scaring" left from a former structure. No trace of the area's late 18th to mid 20th century agricultural history was identified.

South Penguin Island

In July, Blair Temple and Lori Temple conducted an archaeological reconnaissance of South Penguin Island, off the Straight Shore, c. 11.9 km east of Musgrave Harbour (c. 3.9 m from the mainland). The island has a large breeding population of birds, notably puffins, terns, herring gulls and razorbills. The presence of the birds, and countless active burrows and nests, would prove quite cumbersome during field assessment. South Penguin Island has no documented historic occupation. Much of the island's history involves their treacherous shorelines, shoals, and shipwrecks in the area, resulting in the construction of a lighthouse on nearby North Penguin Island in 1890.

A lens of bird bone was identified by bird biologists in 2018 eroding onto the beach, and archaeological testing in 2020 identified lithic material near the lens, though no clear association could be established (Elliot 2021). The same area was tested again in 2022, more lithic material recovered, but this cultural material was recovered inland a couple metres beyond the bone, and again, no association could be confirmed.

Additional surface and subsurface survey of the remainder of the island identified no further historic resources. The island's rocky shoreline makes it very difficult to land on in a boat, and other than 20th century campfires and evidence of bird scientists (and a gunflint recovered by Elliott in 2020), there is little evidence of historic usage.

Government House Pathway, St. John's

Small portions of pathway excavations begun in late 2021 remained unfinished and were completed in January 2022. This pathway was designed to meander throughout the grounds, drawing people to the numerous trees planted by members of the Royal Family, Heads of State, and other Government officials. This unfinished portion lay primarily within the centre of the Government House grounds, and like those from 2021, excavations were quite shallow and encountered mixed fill.

Heart's Ease Beach Tour

In July, BTA conducted an archaeological tour of Heart's Ease Beach for the Southwest Arm Historical Society and Random Trails. The three archaeological sites on the tombolo beach and "island" were discussed, within the context of the regions pre- and post-contact history. One attendant, local histori-

Figure 3: Eroding shoreline along the island's western shore. The bird bone lens is visible at centre.

an Mr. Leslie Dean, whose ancestors were among the last residents of the community, identified several late 19th and 20th century locations of historic resource potential and interest. Mr. Dean also submitted two Maritime Archaic artifacts to The Province, collected many years ago. Additionally, he identified the location of these finds, and his donation was very much appreciated. The talk was well received and highlighted the excellent work being done by the local historic society.

Figure 4: Eastern end of Hearts Ease Beach. Mr. Dean in foreground.

References

Blair Temple Associates Ltd.

2021 "Bay Bulls (Riverhead) Data-Recovery Excavations (ChAe-15)". Report on file at the Provincial Archaeology Office, St. John's.

Elliott, Deirdre

2021 "Archaeological Reconnaissance of South Penguin Island". On file at the Provincial Archaeology Office, St. John's.

Gerald Penney Associates Ltd

2010 "Harbour Interceptor Sewer Project, Phase I Construction/Excavation Monitoring 2008-09. APPENDICES". On file at the Provincial Archaeology Office, St. John's.

2022 Report on The Rooms Archaeology and Indigenous Peoples Collections

Lori Temple
Collections Manager, The Rooms

Figure 1: Obverse and reverse of the gold Henry VI quarter noble.

Operations here at The Rooms are returning to near normal as we all learn to live and work with Covid-19. As a result, we are now once again able to allow in-person access to the collections on a regular basis.

Highlights of 2022 include:

A gold Henry VI quarter noble, minted in London between 1422 and 1427, was found by a member of the public during the summer of 2022. This exciting find was submitted to the Provincial Archaeology Office and then transferred to The Rooms collections as per the Historic Resources Act.

In partnership with Parks Canada, The Rooms collections from 19 sites around the Red Bay Area were inventoried and digitized by Parks contract employee Ellen Power.

Volunteer Sydney Chizmeshya worked on sorting, rehousing and cataloguing faunal material

Figure 2: Bay Bulls area ceramics after treatment

from Avayalik Island 1 in preparation for new research.

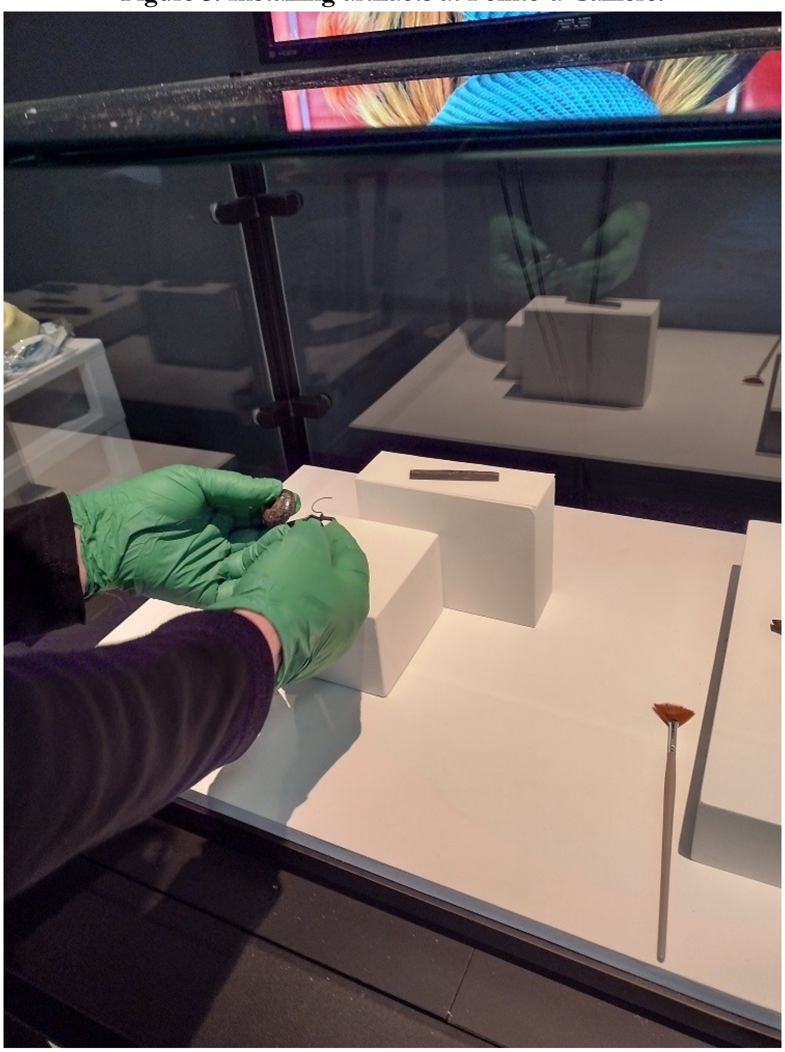
Fleming College intern Brittany Mitchell worked on cleaning, desalinating and repairing a number of coarse earthenware vessels from the Bay Bulls area that had been submitted to the Province and are now part of The Rooms collections.

Statistics for Archaeology and Indigenous Peoples Collection in 2022 include:

- 115 requests received for information, loans, research visits, tours and photograph use.
- 17 researchers used the collections and archaeology lab.
- Over 20 museums throughout the province displayed archaeology artifacts from our collections through our Community Loans program. The Rooms also continues to support exhibitions across the country including facilitating the loan of a selection of Norse artifacts from L'Anse Aux Meadows for display at Pointe-à-Callière as part of their exhibit "Vikings-Dragons of the Northern Seas" open April 14, 2022 to Oct. 10, 2022 and visited by 368,000 people.
- Archaeology artifacts were transferred to The Rooms via the Provincial Archaeology Office through 11 submissions from archaeologists and members of the public representing 499 artifacts and samples from 16 sites.

Anyone wishing to access our collections for research can contact Lori Temple, Collections Manager for the Archaeology & Indigenous Peoples Collections at (709) 757-8076 or by email at LoriTemple@therooms.ca

Figure 3: Installing artifacts at Pointe-à-Callière.



A trip to Boyd's Cove with a drone

James Williamson
Memorial University

Figure 1: Boyd's Cove from the North.

On the 3rd of September 2022, I used a drone to map the Boyd's Cove archaeological site as part of the fieldwork for my Ph.D. thesis, "Mapping Beothuk House-pits in the Exploits River Valley". My Ph.D. project aims to discuss cultural differences among the Beothuk within the Exploits River Valley (ERV). I took 638 photos to create a 3D model of the site and processed these to produce GIS data to analyze the site (a visualization of this can be seen in Figure 2). These photos were then processed to prepare a 3D model, from which it was used to produce spatial data. The spatial data will be used in a cluster analysis of house pits to examine morphological differences between house pits in the ERV. The photogrammetric survey was a success and allowed me to prepare and digitize house pits and their interior features from the site. The usable data on the site is being applied to my analysis of the house-pits in the ERV as outside data.

Site Description

Boyd's Cove is a northeastern protohistoric site (Betts and Hrynick 2021) with 11 Beothuk structures described as houses (Pastore 1985). Pastore investigated the site between 1981 and 1985 and excavated several features during this time (Pastore 1981; 1982; 1983; 1984; 1985). He also roughly dated the site to the period AD 1650-1720. In Newfoundland archaeology, the site has provided essential data on the history of the Beothuk (Pastore 1992). Archaeologists found examples of Beothuk iron points, which have aided research into their chronology and culture (MacLean 1989). The Beothuk produced these artifacts using nails from European boats and fishing stages (Pastore 1987). The type primarily found at this site were teardrop-shaped points, an earlier version of points found in the ERV in interior Newfoundland (McLean 2003). The faunal material found at this site also held useful information about Beothuk subsistence, as it shows that they ate birds, bears, and shallow water fish as well as caribou (Cumbaa 1984) and had a much more varied diet than interior sites suggest (Rowley-Conwy 1990).

However, the Beothuk house-pits' morphology is the critical component of my research. There were eleven house-pits on this site, of which two were long houses, and the rest were roughly oval-shaped, aside from House 6/F. Of the features on the site, Pastore (1985) excavated Houses 1, 3, 4, and 11, while the others had test pits dug in their centers and entrances. House 8 was not digitized because it

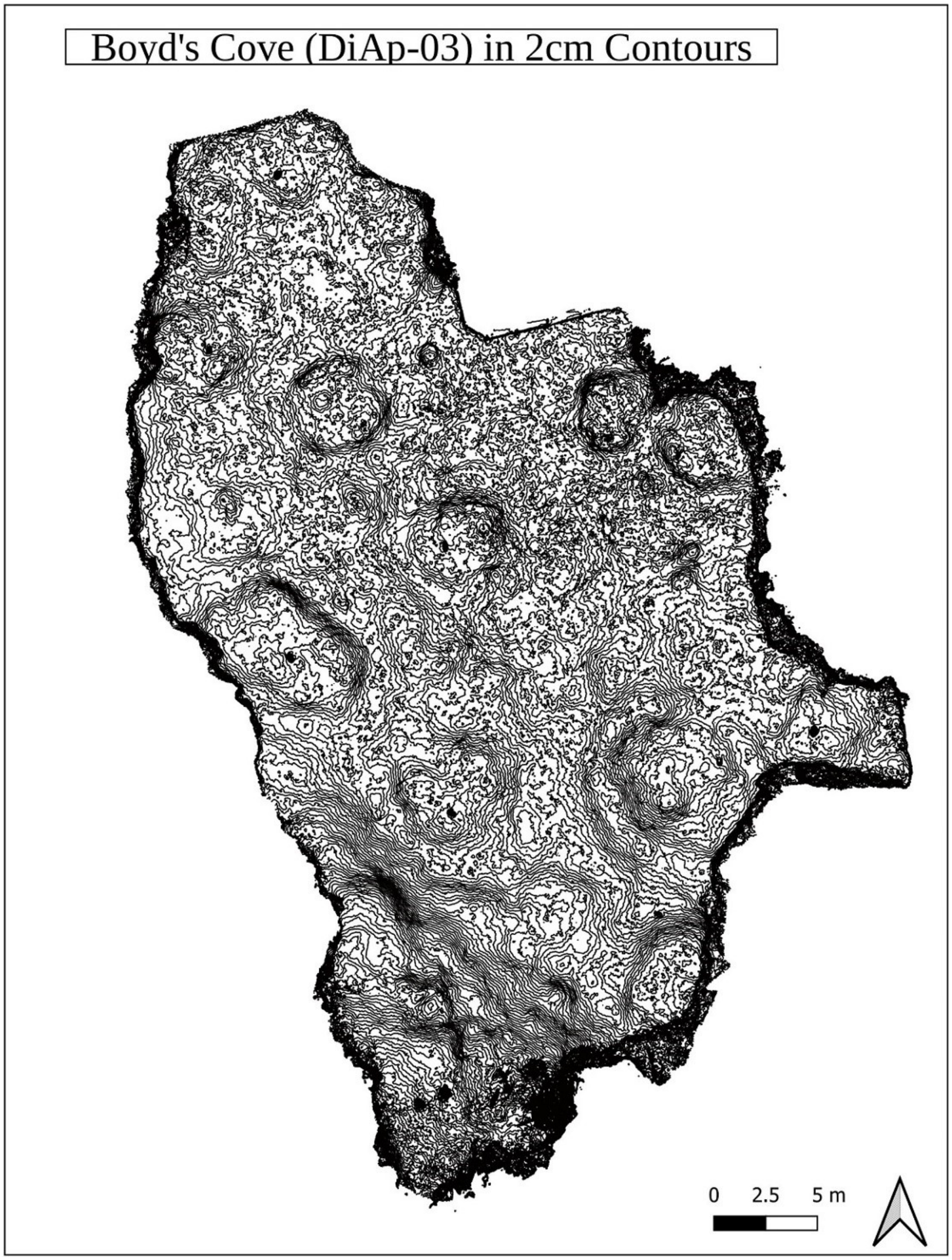


Figure 2: The site with contours at 2cm.

Method

This project aims to find relationships between houses within the ERV, to improve our understanding of how the Beothuk lived in the Exploits River Valley through social network analysis. To prepare a set of consistent measurements of these features, I used image-based modeling with the photos taken by drone, which I will then compare using cluster analysis.

As a note, the individual house-pits are renamed from number to letter to prevent their number from becoming a data point in the analysis. Changing numbers to letters transforms the data from an implicit to an explicit string. Where I have not used the house-pit as a data point, I used a combination of letters and numbers to describe them in Figures 4 and 6.

Making the Model

1. I prepared the 3D model using an image-based modeling photogrammetric method. Photogrammetric recording involves five steps (Pierrot Deseilligny et al. 2020; Agisoft LLC 2022):
2. Photographic Acquisition- taking the photos

was too irregular. Figure 3, the second site diagram, shows the labeled excavated features (plus feature 8) and the digitized features. The excavated long house, House 4, included a long hearth. The other house-pits at the site were regularly sized oval-shaped houses (as seen in Figures 2 and 3). Amongst these features were several clustered house-pits sharing walls, which only occur on four other sites in Central Newfoundland: South Exploits, Red Indian Falls (RIF), and Indian Point (McLean 2013; Williamson, Speller, and Jones 2021).

3. Registering the Photos- placing the photos in a comparative 3D space
4. Creating a dense cloud- Populates the point cloud with extra data
5. Sample a mesh from the Dense Point Cloud.
6. Create a DEM and orthophoto from the 3D model, and export these to a common raster format.

I flew the drone in two different gridded patterns over the site, with extra photos at different heights, and manually took 638 photos. I included coverage above and below the tree canopy and around the site's edges. The goal was to maintain coverage of more than nine photos per pixel, the maximum number measured by Agisoft Metashape (Agisoft LLC 2022). Agisoft registers the photos against each other by comparing their positions to create a close view of the site within a relative space (Pierrot Deseilligny et al. 2020). This creates a sparse cloud based on tie points (Agisoft LLC 2022). After Metashape calculated the sparse cloud, it generated a dense cloud. The calculation was performed using a quarter of the total data from the photo, using half the length and width of the photos in pixels. The process produced a dense cloud with 51 million points. I used Agisoft to generate the mesh on the high settings, which sample the number of points to a fifth. This model was then used to generate a DEM and an Orthophoto. I compared measurements within the model with known measurements to ensure accuracy. I also deleted unnecessary areas of the 3D model, such as the trees, which would complicate or distort the 3D model.

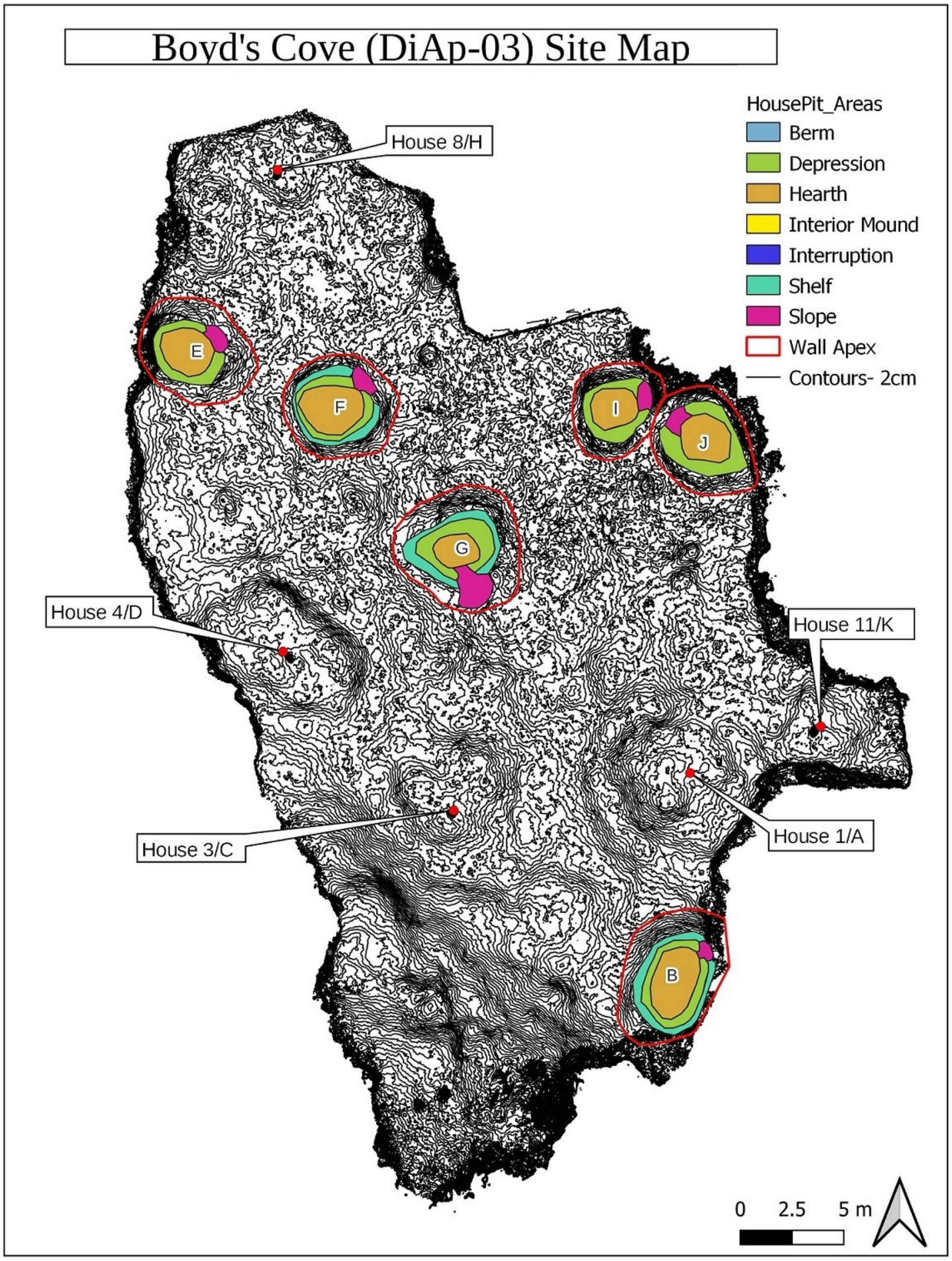


Figure 3: Site Map, showing the shapes of the different features present on the site.

GIS Processing

After the photogrammetric processing, I imported the model into QGIS, where it was analyzed to find the edges of the house-pit and the interior features (QGIS.org 2020). The model was reprojected into ESPG3857 (Maptiler Team 2019) because this is a projected coordinate system rather than a cartographic one, thus showing the actual shape of features in a large scale. The DEM has a resolution of 1cm, a good measurement density for the site. I based the analysis on raster comparisons and digitized the edges of each interior feature. In other situations, DEM visualizations use (Hillshades Horn 1981) and varied recalculation (Stular et al. 2012). However, a simple method based on slope overlaid with aspect (direction of slope) (QGIS.org 2020) in different colors to draw out topographic details was preferred in this case. This view can be seen in Figure 4, which shows the shape of the features and the fact that the overlaid raster depicts the point of changing slope. The slope-over-aspect method depicts micro-topographic details (minor differences of less than 10cm). I then digitized

Figure 4: Visualization of the site with overlaid rasters for microtopographic analysis.

translate these shapes into data frames, to which a clustering analysis can be applied (Pebesma 2018; R Core Team 2013). A preliminary comparison of the areas within the wall apices of the house-pits, including these features, has been prepared for this analysis (Figure 6).

Results and Discussion

While I recorded the Beothuk component of the site, only some features provided data. The completely excavated house-pits can be seen in figure 5, where the map of the Boyd's Cove site (Pastore 1985) shows the house-pits overlaid onto the site map. Pastore (1985) excavated four of the 11 houses, meaning these features will likely be unusable. Houses 4 and 8 were too dissimilar, suggesting that the rebuilding of House 4 needed to preserve the topography of the feature. House 8 also does not look like a clear house-pit and has more similarities with features at sites such as RIF 2, a site upriver of Badger (Williamson, Speller, and Jones 2021; McLean 2011), and the possible longhouse at Aspen Island 2 (McLean 2014). House 8 was too irregular to be used in this analysis.

the features from the interior working out. I also compared the features with the original drawing of the site. Turning the areas into shapes is an interpretive step that allows the areas to be analyzed as tabular data and compares data that can be directly related to the geographical shapes. The features will be digitized again to help standardize the measurements. I prepared the measurements using an ellipsoidal measurement, meaning that the measurements are corrected to actual distances rather than direct measurements from the map. Following this, R will be used to

The digitized features were all oval and were typically below the average in size of the ERV house-pits (see their comparative distribution of sizes against other sites in Figure 6). Size has typically been suggested to be linked to the house-pits' age because larger houses tend to have more sides and be later, according to the current typology (Marshall 1996, 199). Altogether, this suggests a great deal of variety in the size of house-pits in the region, and these features have some similarities to the Nimrod's Pool sites. When the artefactual material was analyzed, it

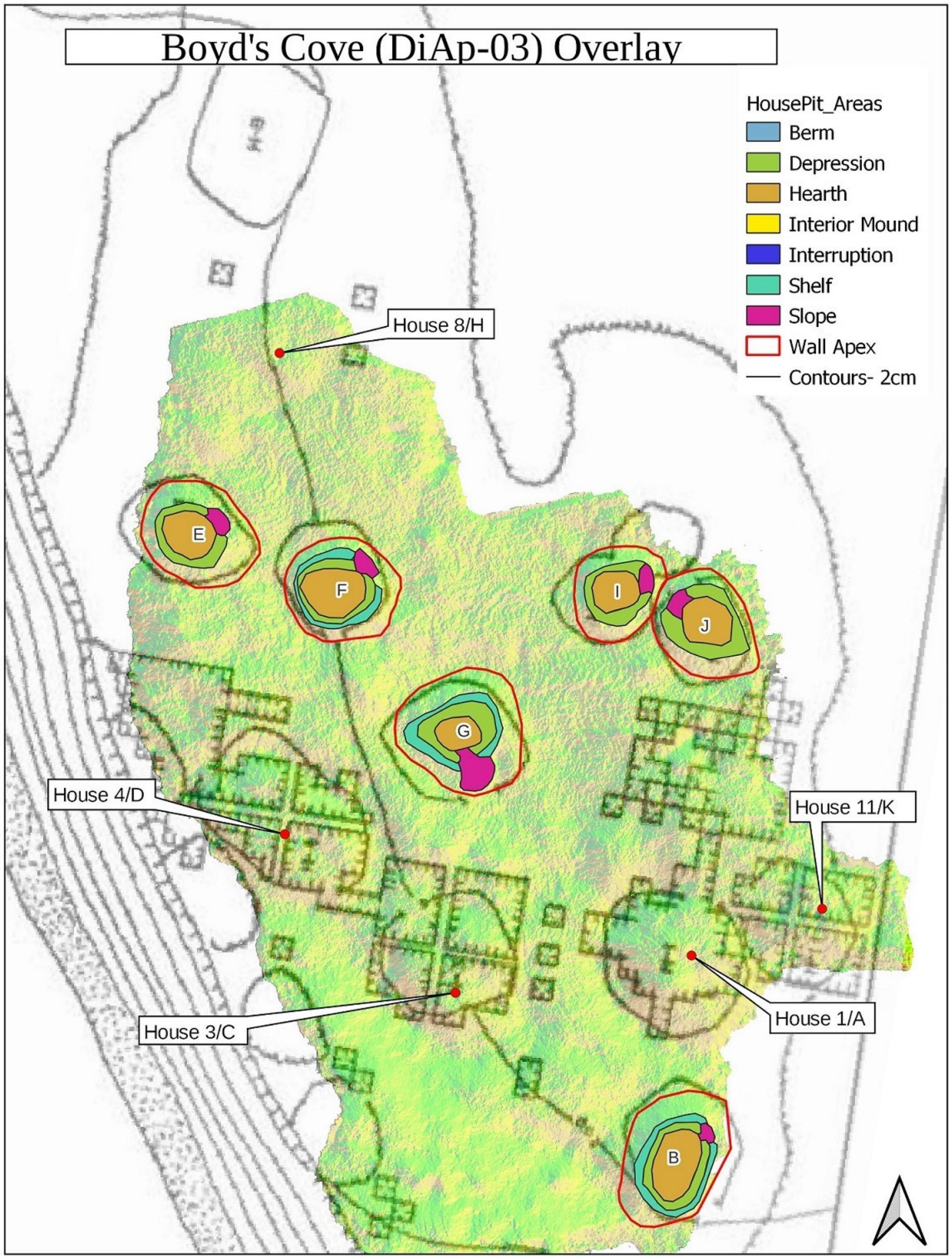


Figure 5: Overlay site map displaying the location of each feature.

also became clear that Boyd's Cove represents the beginning of the change toward later styles of artifacts (McLean 2003). This can be seen in the simpler and likely earlier type 2 points found at Boyd's Cove and the later type 2 points found in the Exploits sites.

The difference between the large-scale mapping and the site drawing, which can be seen in Figure 5, shows that the illustration from Pastore (1985) cannot be used to generate data points. The difference between House 8 and House 4 makes this clear. Pastore describes the reburied features at House 4 as similar to House 8; however, their topography is entirely different, and the location of House 8 is completely different from its location on the map. Overall, this means that the map is useful as an indicative view of the site, but not as a recording of the archaeological topography described as archaeological features, and thus cannot be used to generate data for the site.

Conclusion

The recording of the site allowed me to prepare valuable data. While the site shows some issues using historical analyses for inferences into the archaeology of Beothuk house-pits, the textual feature examinations remain valuable. Distance analyses are cluster analyses (Carlson 2017), and outside data could provide analytical information about house pits within the ERV region.

Acknowledgments

Thanks Michael for getting me there. Also, to Don Pelley, the PAO, and my supervisors, thanks for your help. I would like to acknowledge the financial support of the PAO, ISER, and the Smallwood Foundation.

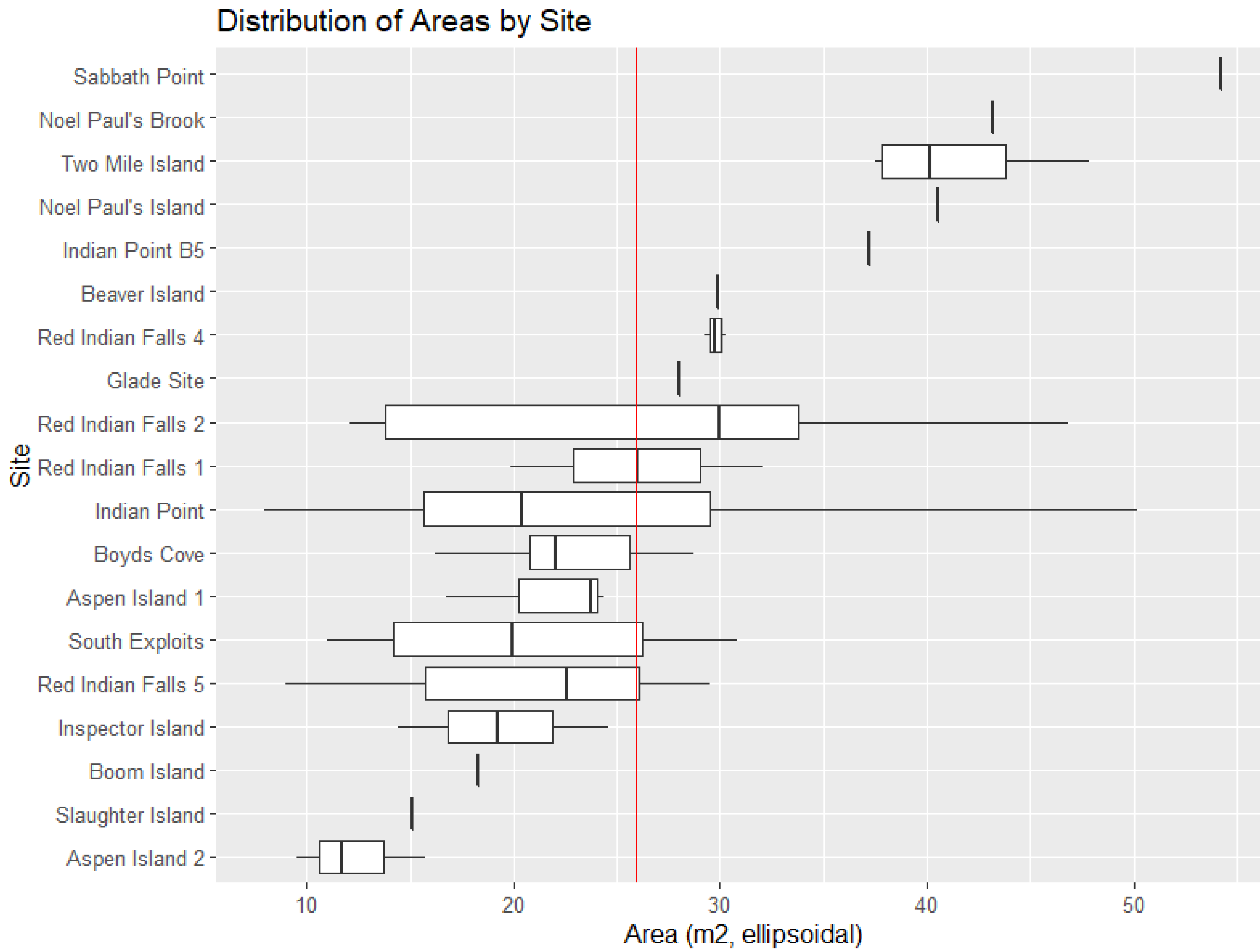


Figure 6: Boxplot of house-pit areas by site, red line showing the mean.

References

Agisoft LLC. 2022. 'Agisoft Metashape User Manual, Professional Edition, Version 1.8'.

Betts, Matthew W., and M. Gabriel Hrynick. 2021. *The Archaeology of the Atlantic Northeast*. Toronto ; University of Toronto Press.

Carlson, David L. 2017. *Quantitative Methods in Archaeology Using R*. Cambridge Manuals in Archaeology. Cambridge: Cambridge University Press. https://doi.org/10.1017/9781139628730.

Cumbaa, Stephen. 1984. '"Divers Furres and Deeres Fleshe"- Animal Use by a Late 17th Century Beothuk Population at Boyd's Cove, Notre Dame Bay, Newfoundland'. Zooarchaeological Report. Ottawa: National Museum of Man.

Healy, Kieran. 2017. 'Fuck Nuance'. *Sociological Theory* 35 (2): 118–27. https://doi.org/10.1177/0735275117709046.

Horn, Berthold. 1981. 'Hill Shading and the Reflectance Map'. *Proceedings of the IEEE* 69 (February): 14–47. https://doi.org/10.1109/PROC.1981.11918.

MacLean, Laurie. 1989. 'The Beothuk Adoption of Iron Technology'. M.A. Thesis, Unpublished, St John's: Memorial University Newfoundland.

Maptiler Team. 2019. 'EPSG:3857: WGS 84 / Pseudo-Mercator -- Spherical Mercator, Google Maps, OpenStreetMap, Bing, ArcGIS, ESRI'. Documentation. Espg.Io. 2019. https://epsg.io/4326.

Marshall, Ingeborg. 1996. *A History and Ethnography of the Beothuk*. London: McGill-Queens University Press.

McLean, Laurie. 2003. *A Guide to Beothuk Iron*. St. John's, NL: St. John's, NL : Archaeology Unit, Memorial University of Newfoundland.

———. 2011. 'An Archaeological Assessment of Red Indian Falls, Beothuk Archaeological Sites'. Unpublished report on file. St John's: Provincial Archaeology Office, Newfoundland and Labrador.

———. 2014. 'Salvage Archaeology at Aspen Island -2 (DfAw-05) In Nimrod's Pool, Exploits River'. Archaeological Report 14.26. St John's: Provincial Archaeology Office, Newfoundland and Labrador.

———. 2016. 'Final Report for an Archaeological Survey of the Four Mile Rapids Site (DfAv-01) and the South Bank of the Exploits River Opposite the Grand Falls-Windsor Boat Launch'. Archaeological Report 16.11. St John's: Provincial Archaeology Office, Newfoundland and Labrador.

Pastore, Ralph. 1981. 'Preliminary Report of a Survey of Eastern Notre Dame Bay'. Archaeological Report. Archaeology in Newfoundland and Labrador. St. John's, NL: Provincial Archaeology Office, Newfoundland and Labrador.

———. 1982. 'A Preliminary Report on Investigations at Boyd's Cove-1; A Boethuk and Recent Indian Site in Notre Dame Bay, Newfoundland'. Archaeological Report. Archaeology in Newfoundland and Labrador. St. John's, NL: Provincial Archaeology Office, Newfoundland and Labrador.

———. 1983. 'Excavations at Boyd's Cove, Notre Dame Bay- 1983'. Archaeological Report. Archaeology in Newfoundland and Labrador. St. John's, NL: Provincial Archaeology Office, Newfoundland and Labrador.

———. 1984. 'Excavations at Boyd's Cove- 1984: A Preliminary Report'. Archaeological Report. Archaeology in Newfoundland and Labrador. St. John's, NL: Provincial Archaeology Office, Newfoundland and Labrador.

———. 1985. 'Excavations at Boyd's Cove: The 1985 Field Season'. Archaeological Report. Archaeology in Newfoundland and Labrador. St. John's, NL: Provincial Archaeology Office, Newfoundland and Labrador.

———. 1992. *Shawnadithit's People: The Archaeology of the Beothuks*. St John's: Atlantic Archaeology.

Pebesma, Edzer. 2018. 'Simple Features for R: Standardized Support for Spatial Vector Data'. *The R Journal* 10 (1): 439–46. https://doi.org/10.32614/RJ-2018-009.

Pierrot Deseilligny, Marc, Ewelina Rupnik, Luke Girod, and Jeremie Belvaux. 2020. *MicMac, Apero, Pastis and Other Beverages in a Nutshell.*

QGIS.org. 2020. 'QGIS Geographic Information System'. Open Source Geospatial Foundation Project. http://qgis.org.

R Core Team. 2013. *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. http://www.R-project.org/.

Rowley-Conwy, Peter. 1990. 'Settlement Patterns of the Beothuk Indians of Newfoundlan: A View from Away'. *Canadian Journal of Archaeology* 14.

Stular, Benjamin, Ziga Kakolj, Kristof Ostir, and Laure Nuninger. 2012. 'Visualization of Lidar-Derived Relief Models for Detection of Archaeological Features'. *Journal of Archaeological Science*, no. 39: 3354–60.

Williamson, James, Jeffrey Speller, and Natasha Jones. 2021. 'Surveys of Beothuk House-Pits in 2020'. Archaeological Report. Annual Archaeology Review 2020. St John's: Provincial Archaeology Office, Newfoundland and Labrador.

The Maritime Archaic Occupation of Inspector Island: New Survey and Evidence

Christopher B. Wolff[1], Donald H. Holly, Jr.[2], Kayla Farley[1], Zach Huelskamp[2] & Augustus Lovett[1]
[1.] University at Albany (SUNY), [2.] Eastern Illinois University

The Inspector Island Site (DiAq-1) is a multicomponent site that was first identified, and later excavated, by Ralph Pastore in the 1980s (Pastore 1982, 1987). The site is located on the south side of Inspector Island in Notre Dame Bay. Pastore (1982, 1987) was focused on the Beothuk and Little Passage occupations at the site, although during excavations and test pitting at the site, he unearthed Groswater and Maritime Archaic artifacts on an upper terrace overlooking the primary Beothuk site area (Figure 1). His crew also found Maritime Archaic artifacts on the adjacent beach. Before our research on Inspector Island in the summer of 2022, there had been no systematic investigation of the Archaic components at the site. Our first objective, therefore, was to relocate the terrace where Pastore and his team had identified an Archaic presence and conduct test excavations of the site to assess the nature and extent of the Maritime Archaic occupation of the island and Notre Dame Bay more broadly.

This research is part of a larger ongoing project to assess the timing and nature of the earliest colonization of the island by Maritime Archaic peoples (Wolff and Holly 2017, 2018), and in this context, Pastore's discoveries on the upper terrace offered hope that the site might contain an *in situ*—perhaps extensive—Maritime Archaic habitation component. If so, the site would add significantly to our understanding of the Maritime Archaic colonization and occupation of the island. Additionally, if the Maritime Archaic occupation at Inspector Island proved to be as rich and extensive as we hoped, data from the site could be compared with the handful of other unequivocal Maritime Archaic habitation sites on the island as a way to assess the formal or informal spatial organization of domestic space. Finally, we posited that the proximity of the Archaic occupation to the better studied Little Passage/Beothuk presence on the site would provide an opportunity to understand Archaic activity in comparison to that of later periods in a very similar landscape. Such information could help us evaluate and understand diachronic variation related to environmental shifts at various periods in the island's history.

Methods

To this end, we used a total station to set up a 1 x 1-meter grid across the site area to map the topography of the site and conduct systematic test excavations across the upper terrace, where Pastore (1982, 1987) had located in-situ Maritime Archaic material. The provenience of all debitage, ceramic sherds, glass sherds, informal tools, and faunal remains were docu-

Figure 1: Excavation of the Upper Terrace of Inspector Island Site.

Figure 2: Ground slate point (upper left), ground slate bayonet fragment (upper right), gouge (lower left), whetstone (lower right).

The good news is that the site yielded evidence of various cultures, including European, Beothuk and Little Passage, Paleo-Inuit Groswater, and most significantly, Maritime Archaic. The Maritime Archaic occupation was extensive: artifacts and features were found wherever we tested or excavated on the upper terrace, encompassing an area of at least 250 m². In the course of our focused excavations, we recovered 51 formal tools from a total of 10 m², most of which were related to the Maritime Archaic occupation. This number may increase when we analyze the debitage. The site is relatively shallow, with the Maritime Archaic occupation mostly found 15-25 cm below surface, overlaid by a thin layer of Groswater materials in some units, itself below an often disturbed and mixed strata of Beothuk and European materials. The Maritime Archaic artifacts included ground stone tools (e.g. celts, bayonets, gouges, and adzes), whetstones, preforms, scrapers, and projectile points (Figure 2). We also recovered a handful of Little Passage/Beothuk points, iron nails and fragments and significant frequencies of European objects, mostly broken iron fragments, ceramic sherds, and broken glass, but also some intact bottles and fishing gear. The European materials seem to date to the 19th and 20th century based on our initial analyses. All artifacts are currently undergoing further analysis.

We recovered over 100 unidentifiable iron fragments, none of which appears to have been modified on initial assessment. The bulk of these specimens are badly oxidized and corroded and would

mented, either individually or in bulk samples, by 50 x 50-centimeter quadrants by stratigraphic level. The provenience of formal artifacts was documented to the nearest centimeter using a Total Station. All excavated material has been curated and is currently undergoing analysis at the Northeast Archaeology Lab at the University at Albany.

Results

As part of our ongoing interest in understanding the timing of the colonization and settlement of the island by Maritime Archaic peoples, one major aim of our excavation was to collect organic materials that could be used for radiocarbon dating. We were also hoping that preservation would be good enough to yield faunal remains that could help us understand subsistence strategies and environmental conditions at the time of occupation.

UGAMS#	Material	δ13C,‰	14C age, years BP	±	calBP (95.4%, 2-sigma)
62057	charcoal	-24.64	510	20	511-545
62058	charcoal	-25.05	1100	20	957-1058
62059	charcoal	-24.98	540	20	521-624
62060	charcoal	-27.91	10410	35	12059-12586

Table 1: AMS Radiocarbon Dates from Inspector Island Site from Summer 2022.

need to be submitted to X-ray analysis in order to identify modification. We also collected over 200 pieces of debitage, around 50 animal bone fragments, and over 80 fragments of shell. The shell seems to mostly be confined to the upper European strata of the site, and are likely the remains of relatively recent boil-ups of local mussels, which are readily available in the nearby tidal zone.

There was evidence of hearth activity and significant amounts of charcoal in a few places across the site, and fire-cracked rock was noted in many of the units. Unfortunately, the dates we have received from the site did not fall within the Archaic period (see Table 1). We received two AMS radiocarbon dates on charcoal from a transitional area between strata that calibrate to the early 16th century. Another AMS date from charcoal that we thought based on the context was from the upper part of the Archaic stratum calibrates to around 1,000 years ago, and so was likely associated with the Little Passage occupation. This unit will need to be assessed more closely to get a better handle of its context. The fourth date came back as a calibrated median probability of over 12,000 years ago, and was likely contaminated in some manner.

Discussion

The upper terrace is a multicomponent area of the Inspector Island site, but with extensive evidence of a Maritime Archaic occupation. It appears that the entire upper terrace was utilized by the Maritime Archaic, although at this time we do not know if their use of this area represents a significant single occupation or multiple seasonal occupations. The extent of the material we found across the site suggests the latter, but this would need to be confirmed with additional research and dates. The faunal remains recovered from the Archaic strata are highly fragmented and we suspect they are unlikely to provide precise seasonality information, but analysis is ongoing.

The Archaic assemblage is the most substantial component of the site area and appears to largely have been focused on the manufacturing and use of ground stone tools. Initially this suggests to us that the site was a place where watercraft were being manufactured (see also Pastore 1987:14) and used. A handful of bayonets and ground stone points additionally suggest that some marine mammal hunting was staged at the site. The site offers great potential for future research on the Maritime Archaic. An extraordinary advantage of the site is that there is a discreet Maritime Archaic level that can be easily reached, and perhaps completely excavated over the course of a month or so.

There is a thin, discontinuous lens of Groswater Paleo-Inuit artifacts overlying the Archaic materials in the areas we excavated. In between the Archaic and Paleo-Inuit materials there is a thin to non-existent natural layer, which could mark a period when there was very little soil formation—perhaps a time when colder, Arctic-like conditions prevailed and few deciduous trees grew in the area. In some places, it appears that Groswater or later Little Passage peoples may have dug down into the Archaic strata and disturbed it.

As already mentioned, the Little Passage and Beothuk occupation appears to have been centered on the lower terrace, just above the shoreline (Pastore 1982, 1987), although we encountered Little Passage and Beothuk material in the upper strata of many of the units we excavated on the upper terrace. McLean (2015) additionally, has recently identified a Beothuk housepit near the Inspector Island site, suggesting that the Beothuk occupation at Inspector Island was possibly more extensive than previously thought. Perhaps there were satellite areas associated with the main occupation area, or used to accommodate additional occupants when the lower terrace was in use. There is clearly potential here for further excavation.

Finally, there is significant amounts of European material on the site that dates from the 18th century to the present day. Today, a cabin sits on the upper terrace. Its owner and/or other visitors have done significant damage to the site. A large gaping hole, perhaps intended to function as a septic system, has been excavated approximately a meter deep into the earth adjacent to the cabin and Maritime Archaic artifacts are visible in the cut face of this feature. The owner also has dug drainage ditches upslope behind the cabin, which is likely to have damaged portions of the site as well. Modern trash is strewn across the site, and a generator and an outdoor cooking area are situated on the upper terrace. That said, there appears to be substantial areas of the site that are undisturbed, and for the moment at least, offer tremendous research potential.

References

McLean, Laurie
2015 Observations concerning Beothuk Housepits. Paper presented at the annual meeting of the Canadian Archaeological Association, St. John's, Newfoundland.
Pastore, Ralph
1982 A Preliminary Report of a Survey of Eastern Notre Dame Bay. In *Archaeology in Newfoundland and Labrador 1981*, pp. 152-173, Provincial Archaeology Office, St. John's, Newfoundland and Labrador.
1987 Excavations at Inspector Island, 1987: A Preliminary Report. Unpublished Report at the Provincial Archaeology Office, St. John's, Newfoundland and Labrador.
Wolff, Christopher B., and Donald H. Holly, Jr.
2017 Early Colonization of Eastern Newfoundland: A View from Stock Cove, Trinity Bay. Provincial Archaeological Review 15: 236–242.
2018 The Peopling of Stock Cove: Digging Deeper into the Archaic, Groswater, and Dorset Occupational History of the Site. PAO Archaeological Review 16: 267–271.

RECENT PUBLICATIONS & THESIS

Archer, J.D.
2021 *Smoky, Noisy, Bloody, Violent, and Smelly: The Seventeenth-Century Detached Kitchen at Ferryland, Newfoundland.* MA, MUN.

Cameron, Ashley
2022 *Archaeological Material Analysis of FjCa-51, Area 11, Sheshatshiu, Labrador*. MA, MUN.

Carlson, Ivan
2022 *The Genesis of Labrador's Indigenous Landscapes A Review of Research Approaches and Current Knowledge*. MA, MUN.

De La Plante, Jake
2022 *Re-examining the Lives of an 18th Century Garrison at Admiral's/Fort Point, Trinity, Newfoundland*. MA, MUN.

Drake, Kassandra L.
2022 *The View From The Sea: Unravelling The Mystery Of The Star Of The Sea Church—A Community-Based Approach*. Hons.

Garlie, Megan Elizabeth
2022 *An isotopic investigation of the diet and origins of 18th- and 19th-century individuals from Newfoundland and Louisbourg, Nova Scotia*. MA, MUN.

Holly, Donald H., Christopher B. Wolff, & Stephen Hull
2021 The Struggle Was Real On the End of the Archaic On the Island Of Newfoundland and Labrador. In *The Far Northeast 3000 BP to Contact*, Edited by: Kenneth R. Holyoke, M. Gabriel Hrynick pp. 23-48. Mercury Series, Archaeology Paper 181. Canadian Museum of History and the University of Ottawa Press, Ottawa.

Losier, Catherine
2022 Maritime Archaeology at Department of Archaeology. *The Journal of Ocean Technology*, Vol 17, No. 2

Pier-Ann Milliard
2023 *A beetle-based palaeoecological reconstruction of human-environment interactions in Kivalekh, northern Labrador*. MA, MUN.

Robinson, Sarah
2022 *Inuit Understandings of Space: An Oral Historical and GIS Approach to Toponyms with Knowledge Holders in Hopedale, Nunatsiavut*. MA, MUN.

Venovcevs, Anatolijs
2022 Ambiguous Matter: The Life of Mine Waste. *Journal of Contemporary Archaeology* 9(1):39-63.

Wolff, Christopher B.
2022 The Longhouses of the Maritime Archaic: Increasing Complexity or Regional Resistance. In *More Than Shelter from the Storm: Hunter-Gatherer Houses and the Built Environment*, edited by Danielle Macdonald and Brian Andrews. University of Florida Press.

If you have any comments or suggestions for the next Archaeology Review please contact Stephen Hull.

PROVINCIAL ARCHAEOLOGY OFFICE
Department of Tourism, Culture, Arts and Recreation
St. John's, NL
A1B 4J6

Jamie Brake
Provincial Archaeologist
(709) 729-2462
JamieBrake@gov.nl.ca

John Erwin
Archaeologist
(709) 729-5581
JohnErwin@gov.nl.ca

Delphina Mercer
Archaeologist
(709) 729-4142
dhmercer@gov.nl.ca

Stephen Hull
Archaeologist
(709) 729-0493
shull@gov.nl.ca