20th Anniversary Edition of the PAO Review!

Colony of Avalon Mansion House, Ferryland
400th Anniversary of the
Colony of Avalon
See Gaulton this volume

Found at Cupids
Half Groat coin
Reverse (top) and
Obverse (bottom)
See Gilbert this volume

2021 PAO Review

Provincial Archaeology Office
Tourism, Culture, Arts and Recreation
Government of Newfoundland and Labrador

April 2022 Volume 20

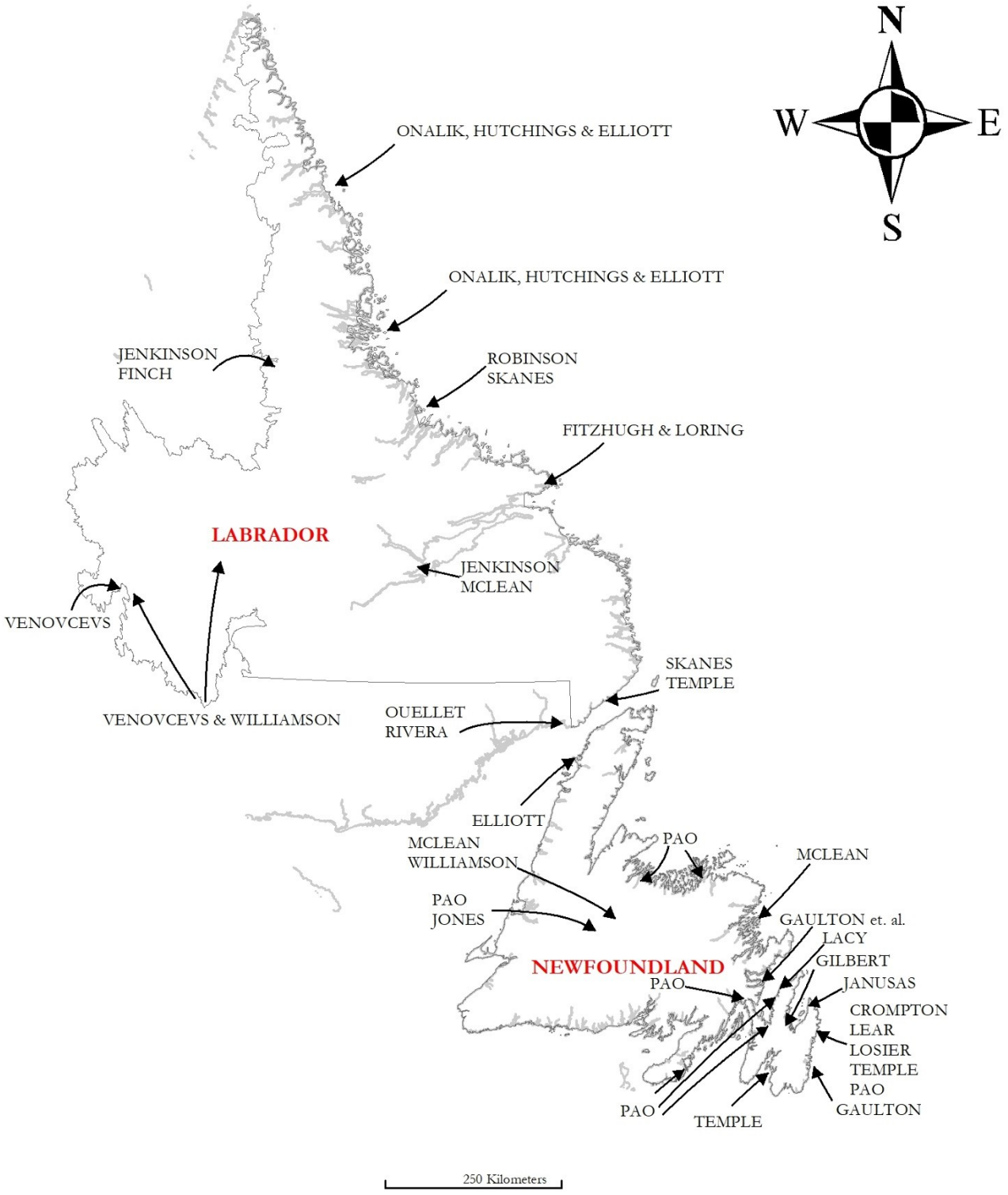
Cover: It was a significant year for European archaeology in Newfoundland and Labrador.

Top photo, excavation at Ferryland.
2021 was the 400th anniversary of the founding of the English colony of Avalon at Ferryland in 1621 by Sir George Calvert. The year was also the 30th season of continuous archaeological excavation, analysis and interpretation at Ferryland (See Gaulton, this volume).

Coins: This year was also significant for Cupids. During the 2021 field season they uncovered what may be the oldest English coin yet found in the country. The silver "Henry VII half groat" was minted in Canterbury in the final decade of the 15th century and is roughly the size of a ten-pence piece (See Gilbert, this volume).

Stephen Hull
Delphina Mercer
Editors

ARCHAEOLOGY IN NEWFOUNDLAND AND LABRADOR 2021



Stephen Hull
Provincial Archaeology Office

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20 Years of the Provincial Archaeology Office Annual Review

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

In 2002, the inaugural edition of the Provincial Archaeology Office (PAO) Annual Review began as a simple four-page newsletter that highlighted recent Newfoundland and Labrador-themed archaeological publications and an upcoming session at the Canadian Archaeological association Meetings in Hamilton, Ontario where the Port au Choix Archaeology Project was also celebrating 20 years of research under Dr. M.A.P. Renouf. The newsletter also included a brief update on the PAO's 2002 field investigations across the province and included a report on investigations at Big Brook on the Northern Peninsula. From these humble beginnings, the newsletter grew quickly to what it has become today, 300 page annual review of archaeology in the province that continues to span academic, community-based and cultural resource management investigations. The following year saw 21 brief articles, which included a number of photos across 19 pages. Still referred to as the "newsletter", the 2004 edition doubled again in size and began to take on a more formalized look and feel.

Re-named the Provincial Archaeology Office "Archaeology Review" in 2006, the 90-page publication included two dozen highly illustrated articles. In 2007, the review exceeded 100 pages and included a brief forward by Provincial Archaeologist Martha Drake, recognizing that the response from permit holders and researchers had greatly exceeded our expectations and that the intent of the inaugural newsletter had achieved its goal and that the Review provides "valuable insight into the workings of the archaeology community as a whole".

Over time, the archaeology reports submitted to the PAO became increasingly sophisticated, researched and referenced and were no longer a simple report on "what I did last summer" but rather full-fledged research papers that increasingly entered archaeological discourse and academic publication. As a resource, the Review has become an increasingly important record of archaeological activity in the province and a repository of research results previously relegated to the so-called "grey literature" of unpublished site reporting. Recognizing the importance of this literature, the PAO embarked on the "completion" of the *Archaeology in Newfoundland and Labrador Annual Report* Series, which had provided reports on field activities in the province from 1980 to 1986. An on-going project, Stephen Hull has combed the files of the PAO and compiled previously unpublished reports for 1987 to 1989, which provide access to previously little-known literature.

In 2017, Volume 15 reported on the 2016 field season and marked the passing of friend and colleague Ken Reynolds who had been an integral member of the Provincial Archaeology Office for over two decades. Marking the twentieth anniversary, the "Annual Review" has become an increasingly important means to disseminate archaeological information to both public and academic audiences and we hope, as originally envisioned, to help keep the archaeological community informed about what "we got up to last summer".

Some general trends in archaeological activity visible in the PAO Review

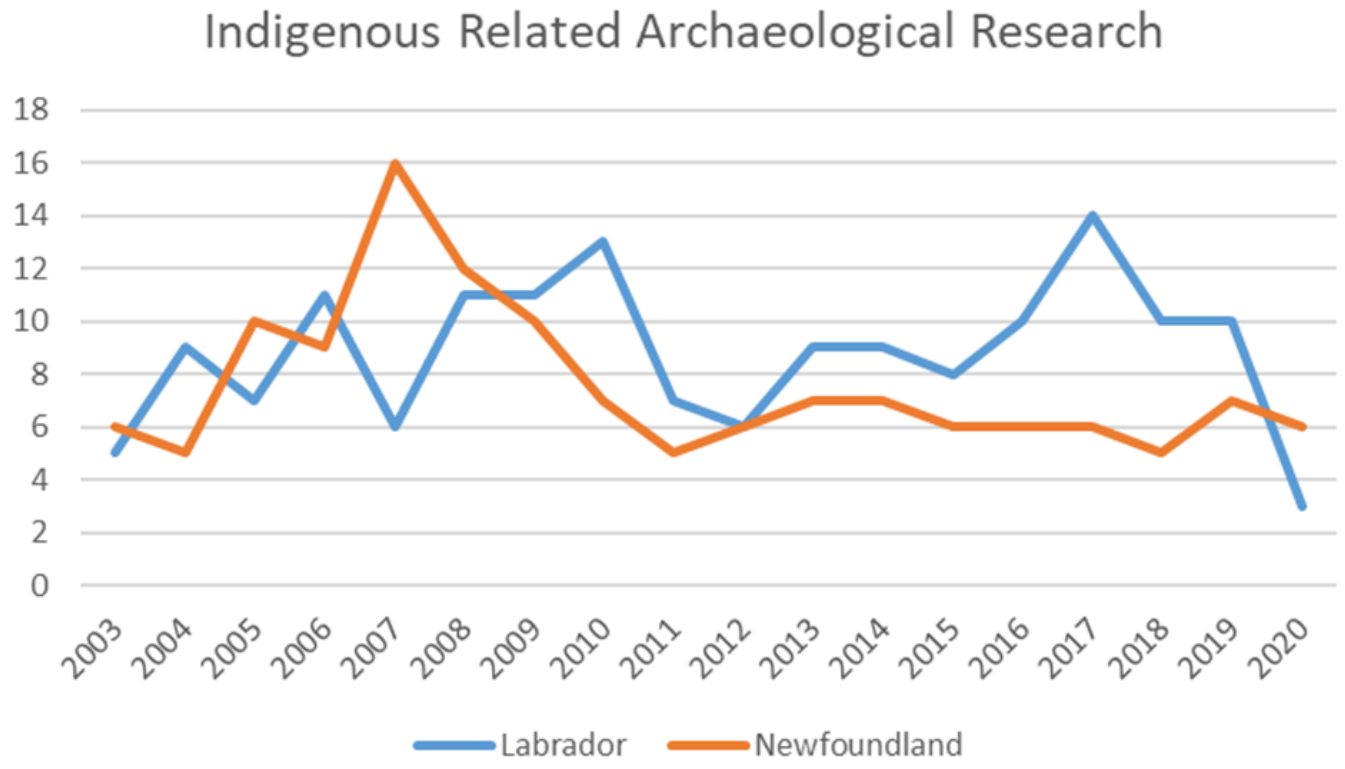
The 20th anniversary of the PAO Review provides an opportunity to look back at the research that has been conducted in Newfoundland & Labrador over this period to see if any interesting trends are apparent. A brief survey of the articles published in the Review over the past two decades was undertaken to consider whether or not there are any noticeable changes in relation to the prevalence of three things: 1) excavation; 2) survey and assessment; and 3) research focusing on Indigenous vs European histories. The idea was simply to consider how many projects are reported in the Review that relate to each of these three topics. Those numbers could then be compared to see how things have been developing. This was done out of simple curiosity, and as a casual intellectual activity.

The methodology employed for this exercise involved a simple review of each PAO Review volume and the use of excel spreadsheets to score each article based on the presence or absence of archaeological excavation (defined as digging going beyond archaeological testing), the presence or absence of a focus on Indigenous history, the presence or absence of a focus on European history, and the presence or absence of a survey or assessment component in a project. The total scores were then added up by year and displayed using line graphs. The results turned out to be interesting and are presented in Figures 1 to 4. Each graph presents information relating to Labrador and Newfoundland separately, to make the differences in research activity in each region visible.

Perhaps the most dramatic trend is a decrease in archaeological activity relating to Indigenous history on the Island portion of the province and a corresponding increase over the years in archaeological fieldwork relating to Indigenous history in Labrador (Figure 1). On the Island, there is a peak in relevant activity in 2007, with 16 projects involving some sort of focus on Indigenous history that year. By 2011, the number of related projects in Newfoundland falls to just five and stays below eight for the remainder timeframe considered. In contrast, the trend in Labrador goes in the opposite direction starting with just five related projects in 2003 and hitting a peak of 14 in 2017. Eight or more relevant projects in Labrador were reported in the Review in eight of the past 10 years. It would be interesting to try to explore possible reasons for these developments. In contrast, archaeological activity focusing on European history remains fairly steady from 2003-2020, though it is clear that such projects are far more common on the Island portion of the province (Figure 2).

There also appears to be an interesting trend away from archaeological excavation on the Island, while in Labrador the amount of excavation projects is fairly consistent over the years (Figure 3). The movement away from excavation in Newfoundland is something to consider in light of potential loss of historic resources to climate change related threats and metal detectorists, in addition to development. Survey and assessment related work has ebbed and flowed over the years, which is not surprising, with similar numbers of projects in Newfoundland and in Labrador most years (Figure 4). It is important to note that many of these survey/assessment projects had as much to do with economic and development factors as with developments within the field of archaeology itself. It is interesting, nonetheless, to see that the amount of work falling into this category is proportionally fairly consistent in both parts of the province.

Figure 1: Number of projects, which include a focus on Indigenous history in Newfoundland & Labrador.



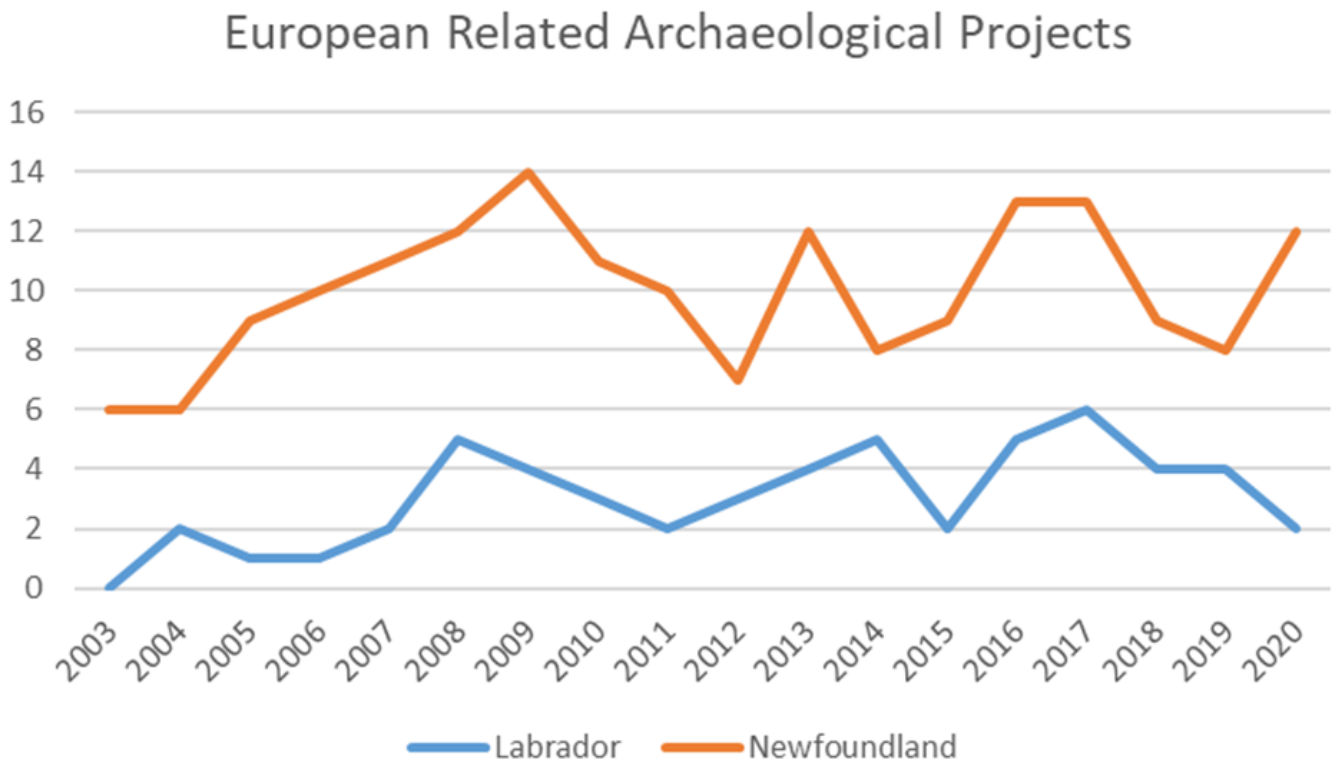
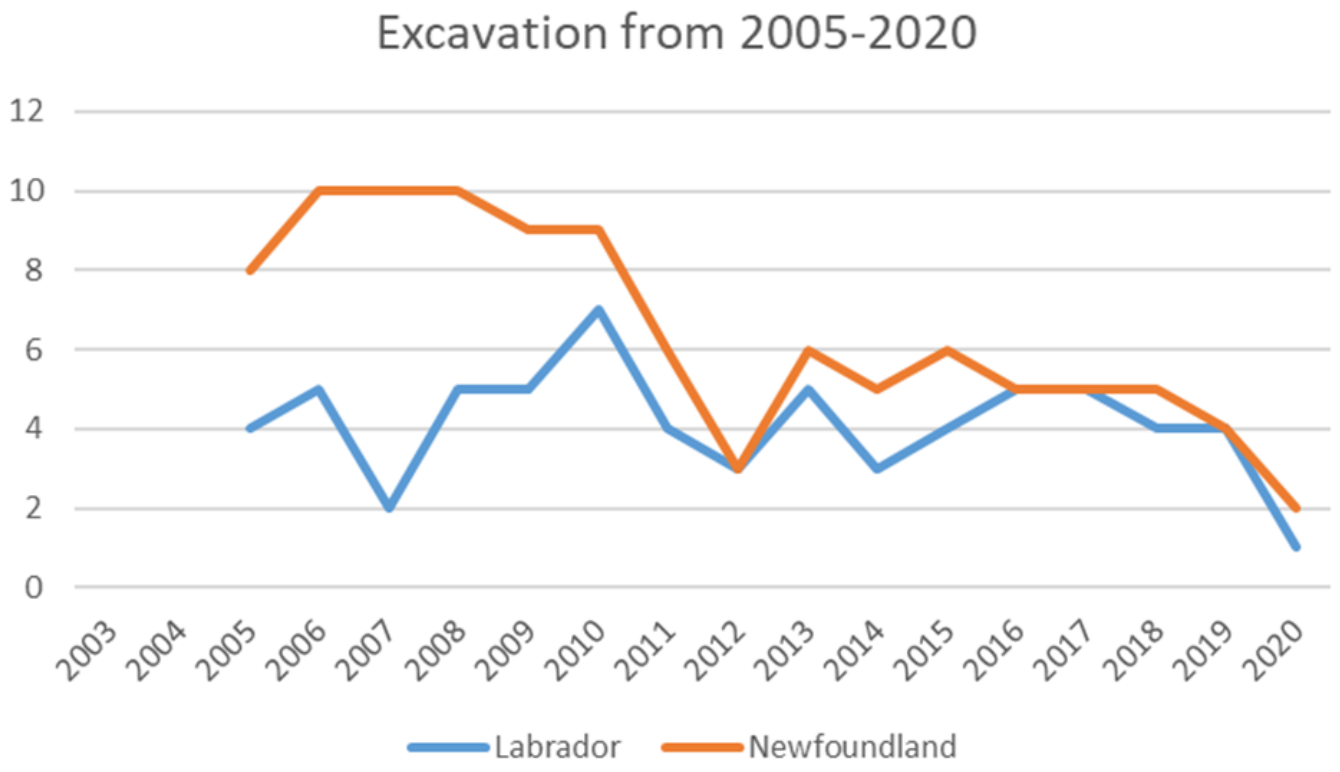


Figure 2: Number of projects, which include a focus on European history in Newfoundland & Labrador.

Figure 3: The number of projects involving archaeological excavation from 2005-2020 in Newfoundland & Labrador.



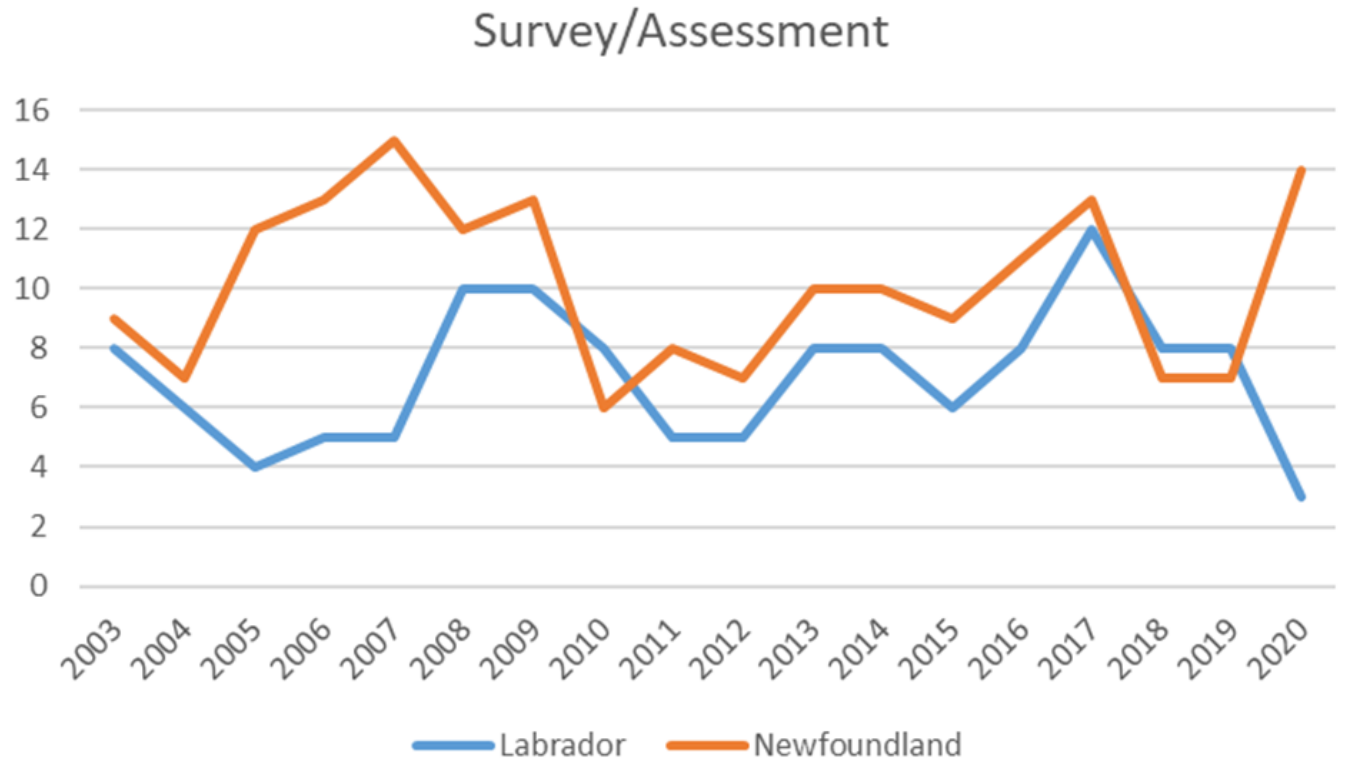


Figure 4: The number of survey/assessment based projects from 2003 to 2020 in Newfoundland and Labrador.

The regional divergence that appears in 2020 relates to Covid-19 restrictions rather than general research trends.

Once again, despite the logistical challenges presented by Covid-19, which included working from home, the PAO reviewed 2670 land use applications (See table below), issued 60 archaeological permits and 10 Paleontological permit applications in 2021. We also awarded seven Archaeology Research Grants.

There are so many figures and maps in the PAO submission for the Review that the caption for

2021 Land Use Referrals.

Type of Land Use Applications	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Crown Land	2046	2178	1818	1774	1466	2542	1813	1579	1217	1749
Environmental Assessment	60	51	40	54	48	73	48	67	51	68
Mineral Exploration	288	213	301	285	339	355	354	371	380	725
Quarry	243	217	306	455	618	207	150	120	131	53
Aquaculture	10	10	7	8	1	1	23	4	10	8
ILUC	60	39	38	45	71	51	33	30	44	31
TCII Proposals (ACOA, etc)	6	3	2	5	3	1	0	2	1	
Engineering Consultants	20	21	35	13	9	36	29	16	21	14
Other Projects	17	15	10	10	8	7	2	0	4	0
Zoning Regulations (Service NL)									4	
Atlantic Canada Certified Sites Programs									2	2
NL Hydro									2	9
NL Towns									0	11
Total	**2813**	**2817**	**2626**	**2711**	**2613**	**3333**	**2509**	**2239**	**1865**	**2670**

each figure will be prefaced by the permit number that the PAO member was working under.

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Permit 21.37 Gander Bay

Barry's Brook

Throughout the summer of 2021, Reverend Allan Brake of Gander Bay spoke with members of the Hodder family about a source location for red ochre near the mouth of Gander River that he had heard about over the years. In doing so, he was able to learn details about the precise location of the source on Barry's Brook, which flows into the bottom of Gander Bay on its eastern shore. On July 26, a local individual brought Rev. Brake to the site via ATV trails where large amounts of brilliantly colored ochre were observed throughout a marsh that flows into Barry's Brook. Later in the summer, there was an opportunity to conduct an archaeological survey of the area under permit 21.37.

On August 16, Rev. Brake and Jamie Brake walked up Barry's Brook from its mouth to visit the red ochre source using a route that would likely have been used by Indigenous groups, if this source was in fact utilized by the Beothuk or their predecessors. A number of well-stocked salmon pools were noted during the walk, the fish easily visible due to unusually low water during the summer of 2021. Large freshwater mussels were also observed along the brook.

Interestingly, the ochre source was easily found when red-stained river boulders were encountered along with a very conspicuous red stream which 'bleeds' into the main brook from a marsh abutting its western bank (Figure 1). A walk along this red stream led to various pools, holes and exposures of red ochre in a variety of hues and intensities occupying an area at least 250 m in length, 20-50 m wide and probably extending much further than that into the forest surrounding the marsh. There are ATV/snowmobile trails at the site and some evidence of recent prospecting. The remains of old bridges made of locally cut trees are partially submerged in two places along the stream. No testing was conducted during this visit, but the saturated soil in the area may

21.37 Figure 1: Ochre flowing into Barry's Brook.

21.37 Figure 2: Looking west at a small part of the deposit.


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21.37 Figure 3: Air photo of part of the ochre source flowing into Barry's Brook near the top of the image. View NE.

be conducive to good preservation (Figure 2 and Figure 3).

Ochre was clearly highly important to the Beothuk who painted themselves and all of their belongings with it. Its presence in this particular area is also significant because of an early 18th century reference by George Skeffington, an English salmon fisher who established operations on four rivers between modern day Gambo and Horwood in 1719 (Marshall 1996:251). The loss of access to prime fishing locations on these important rivers resulted in a violent response from the Beothuk who damaged salmon works, and killed Englishmen associated with fishing stations on these rivers on at least two occasions (Marshall 1996:64-65). These are the first written records for the killing of Europeans by the Beothuk (Marshall 1996:64). Unfortunately, we do not know for sure which river, or rivers, these events occurred on as the relevant records do not contain this information. That said there are two pieces of evidence that suggest that Gander River is the most likely candidate: 1) local oral history discussed in our Review article for the 2020 field season, and 2) the fact that Skeffington "… complained again in 1724 about interference by natives, who had killed yet another of his men. The point of conflict was a red ochre location in a fishing area frequented by the Indians twice a year" (Rollmann 1994:16). Marshall points out, probably correctly, that "Though the killing was perpetrated by Beothuk, who had come to collect ochre, the conflict clearly centred on access to salmon" (Marshall 1996:65). While it is tempting to dismiss Skeffington's statement about ochre being the reason for the Beothuk presence, as a means of downplaying or denying that the Beothuk had previously relied on salmon from these rivers, the ochre at Barry's Brook suggests there may have been a grain of truth to it. In any case, this accessible source location and the local oral history about a Beothuk attack on Robert Gillingham and his crew near the mouth of Gander River suggest that this was the probable setting of at least one of the documented violent encounters between the Beothuk and Europeans in the early 18th century. The continuing use of Gander Bay (and possibly the river) by the Beothuk into the 19th century also attests to the importance of the area to them.

Gander River 3 or Summer Houses, DhAp-01

In the very early morning hours of August 21, Rev. Brake and his sons Dan and Jamie re-visited summer houses by canoe under permit 21.37. The site almost certainly relates to an early 18th century salmon post

operated by George Skeffington and has potential for shedding light on the use of the area by the Beothuk and earlier Indigenous groups. The trip was planned to correspond with a rising tide, which made an enormous difference in the amount of time and effort required to reach the site. In 2020 it took nearly three hours to reach Summer Houses, paddling against the tide (see Brake et al. 2021), whereas in 2021 it took about a half an hour.

The main purpose of this visit was to try to get air photos of the site, including the remains of salmon works in the river, using a small drone. This trip was successful and we were able to further document the site in this way. While Jamie operated the drone, Dan paddled over the works for scale and noted large iron spikes underwater associated with stone features. On the terrestrial portion of the site, we also observed cultural material in tree-throws. Our previous comments about the excellent research potential and condition of the site remain true.

References

Marshall, Ingeborg
1996 *A History and Ethnography of the Beothuk*. McGill-Queen's University Press, Quebec.
Rollmann, Hans
1994 Thy Real Friend George Skeffington. In *The Journal of the Friends Historical Society*, 57(1):13-20.

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Permit 21.31

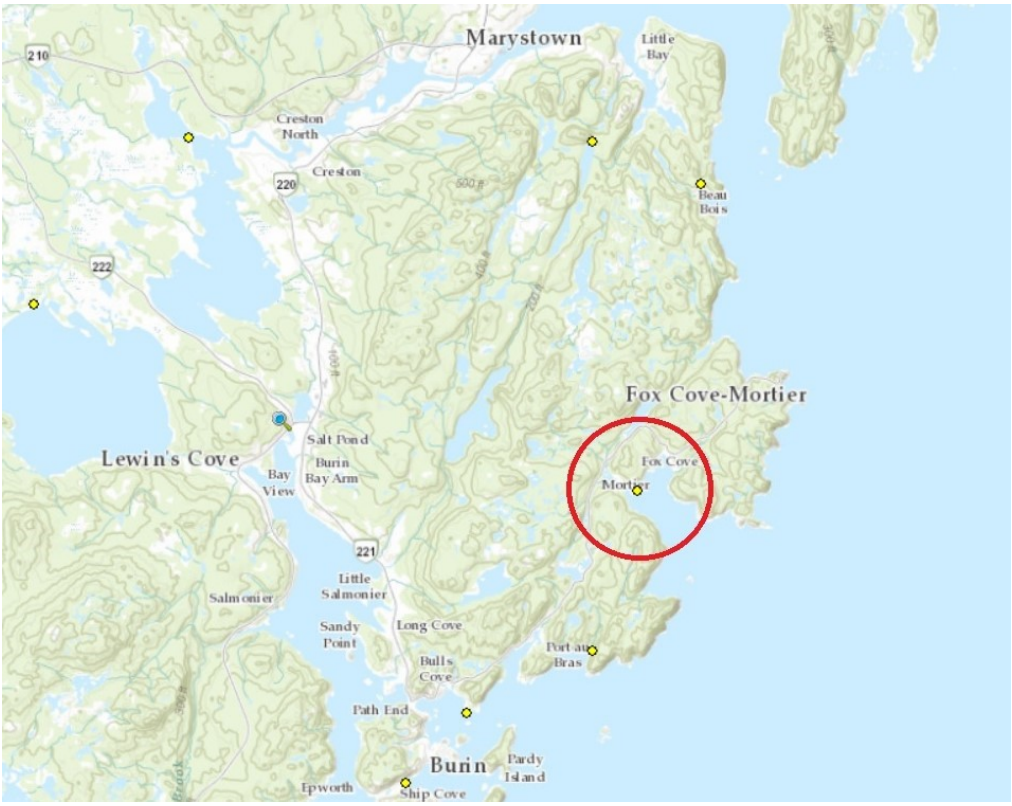
Report on the Fox-Cove-Mortier Survey and Testing of the Little Mortier Guns (CgAs-01)

The Town of Fox Cove-Mortier contacted the PAO and expressed interest in the investigation of their local history, and particularly as it relates to the Little Mortier Guns (CgAs-01) site (known locally as Garrison Point). To this end, the town's local heritage committee requested that the PAO visit the site in 2021 to explore the possible presence of earthworks, to assist in the identification of cannon barrels, and to work with the town to identify ways to interpret the site. In response, the PAO conducted a survey of the site on July 26, 2021. The survey included drone mapping, recording of cannon dimensions and limited subsurface testing to determine if there were any in-situ remains.

Fox Cove-Mortier is located in Placentia Bay on the Burin Peninsula, about mid-way between Marystown and the Town of Burin. In 1976 the communities Fox Cove, Mortier and Tides Cove, joined to form the incorporated community of Fox Cove-Mortier. According to M.F. Howley, Mortier was historically referred to as "Little Mortier" to distinguish it from Mortier (which was renamed Marystown in 1909).

The open coves, sheltered arms, good anchorage and points of access to lands suitable for settlement, and the area's close proximity to excellent fishing grounds all contributed to the early individual

21.31 Figure 1: Site Location "Little" Mortier Guns (CgAs-01).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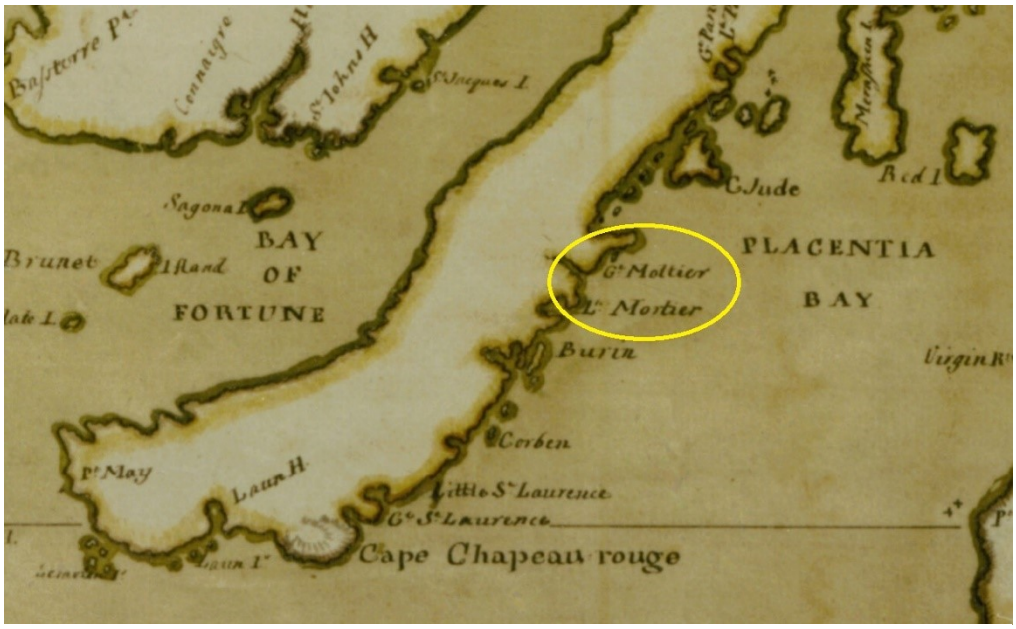
settlements of this area (Encyclopedia of NL Vol. 2, pp.353). "Little" Mortier's narrow sheltered 4km long harbor was also said to have served as shelter for large ships laid up for the fishing season" (ibid). Situated at Garrison Point at the head of the harbour, the site of Little Mortier Guns (CgAs-01) likely provided protection of these valuable assets.



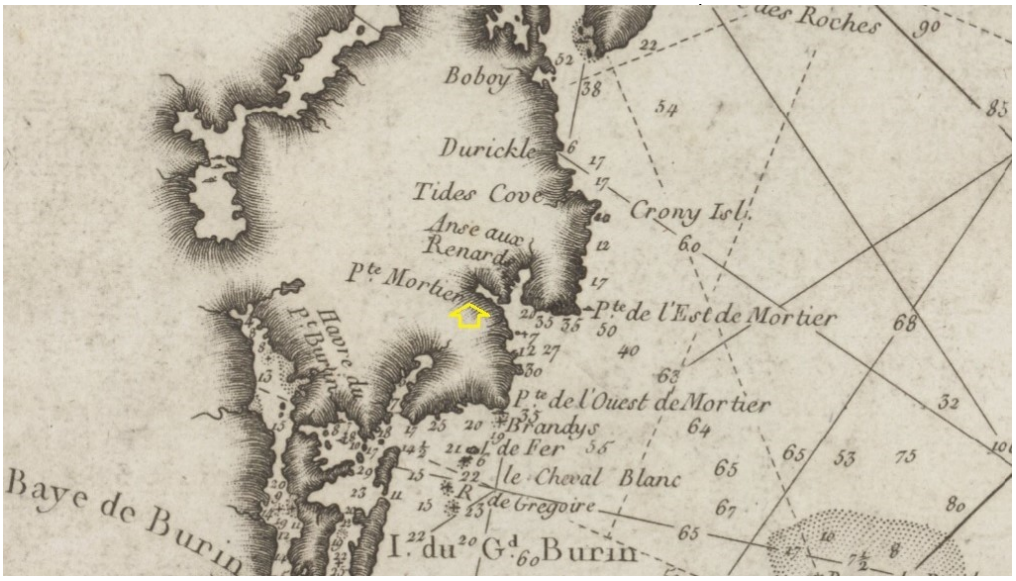
21.31 Figure 2: Excerpt from the 1763 Cook Plan.
Source: https://collections.mun.ca/digital/collection/maps/id/699/rec/77

Early Mapping and Place Names

The Burin Peninsula was visited by a variety of European fishing fleets as early as the 16th century (Losier *et al.* 2021), however it was not until 1718 that English settlement began with the establishment of the Christopher Spurrier's shipbuilding company at Ship Cove (NL Encyclopedia Vol. 1 pp.289-90). Historically, the communities of Fox Cove, Mortier, Duricle and Tides Cove were settled by the 1830s (Newfoundland Encyclopedia Vol. 2, pp. 354). However, most late 18th century charts include some of these place names. For example, a 1763 map credited to Capt. James Cook and entitled "A Sketch of the Island of Newfoundland" has only a few place names along the Burin Peninsula, but of these, included are L. Mortier and G. Moltier suggesting the importance of both locations (see Figure 2). The prefixes G + L presumably refer to Great and Little to distinguish the two place names, although seemingly not required, unless "Moltier" was a transcription error – and that both are "Mortier".

Michael Lane's 1772 "Chart of the Bay of Placentia" indicates the place names, Little Mortier (yellow arrow), Fox Cove, Durickle and Tides Cove (Figure 3). Similarly, a 1784 map from the French Pilot Guide to Newfoundland also indicates the place names: Anse aux Renards (Fox Cove), Mortier (yellow arrow), Duricle and Tides Cove (Figure 4).

21.31 Figure 3: Excerpt: Lane's 1772 Plan of Placentia.
Source: https://collections.mun.ca/digital/collection/maps/id/309/rec/6



There are also a number of variations on the name "Mortier" found on earlier mapping, including "B der Martirer" (Bellin 1757-1764); "Les Martyrs" (1741 Buache); "B. des Martirs" (Robert de Vaugondy 1749); "Martir" (Moll 1703). Notwithstanding the earlier names, from which Mortier seems to be derived and the similarly named settlements of Mortier and Little Mortier, the earliest unambiguous ref-

21.31 Figure 4: 1784 Excerpt: Plan des Côtes des Terre-Neuve.
Source: https://collections.mun.ca/digital/collection/maps/id/183/rec/4

erence to the Little Mortier Guns site comes from a Newfoundland Quarterly article by Archbishop M.F. Howley. In his article on place names, Howley stated, "The name Mortier is, of course, the French name for Mortar, a species of short cannon, very much in use in the old forts which are found studding our coast in all directions. The outlines of the fort at Mortier are still quite clearly defined, and some of the old cannon and pieces of ordnance are still to be seen covered with rust and imbedded in the moss" (Howley 1912:2). These guns appear to have been part of the defense of Placentia Bay as evidenced by a handful of contemporary 18th-19thC accounts relating to the defense of the Burin Peninsula, particularly following the American Revolution, and during the War of 1812. For example, a company of soldiers was stationed at Burin between 1800 and 1805 and fortifications were constructed at "Shalloway, Parson's Point, Man-O-War Hill, Cook's Lookout…and other strategic locations" (Encyclopedia of NL, Vol.1, pp. 291).

Sergeant John Young's Encounter at Mortier

A letter dated August 1, 1780 from Rear-Admiral Richard Edwards to Governor George Germain describes the successful repelling of a "Privateer of considerable force" from Mortier by local powers led by Sergeant John Young of the 8th Regiment (see Figure 5).

As the name Little Mortier is clearly established on contemporary mapping by the 1780s, it seems most likely that Young's heroics were in Mortier Bay to the north. Notwithstanding this, it is probable that the guns at Little Mortier were a contemporary fortification on the basis of the threats to the fledgling communities in the vicinity.

Andrew Sherburne's March to Mortier

Another contemporary description comes from American privateer Andrew Sherburne whose company was intercepted by two Newfoundland schooners near Miquelon in 1781 (see Figure 6). Initially sent as prisoners to Grand Bank, it was decided that they should be delivered to British authorities in Placentia upon the discovery of their "documents of commission". Their journey, described by Sherburne, included a stop in "Cornish" (likely the present day community of Garnish, and the home of Charles Grandy, who they had encountered earlier in their journey). The following day they were taken up river "six or eight miles" (presumably the Garnish River) and then on foot across the cape to Placentia Bay – estimated to be a journey of about 20 miles in total. The overland journey included a visit to a gun battery that he

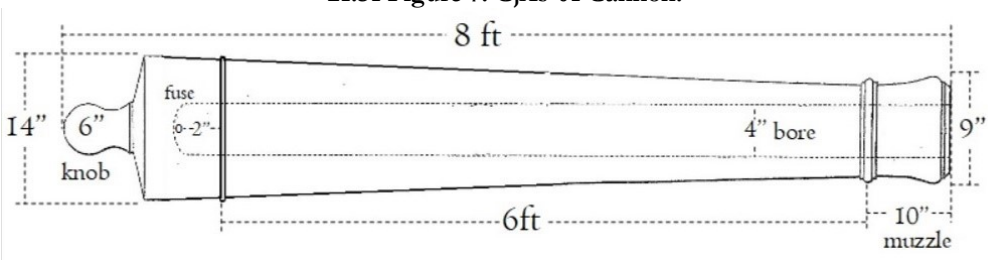
And here I must beg leave to mention Serjeant John Young of the 84th Regiment, to your Lordship, whose conduct at Mortier, where he was Recruiting in the Spring, in heading and Encouraging the Inhabitants to defend themselves against a Privateer of considerable force, deserves much commendation, as she was by that means obliged to quit the Harbour with the loss of upwards of Twenty Men.

21.31 Figure 5: Excerpt of Sergeant Young's Encounter with Privateer's at Mortier.
Source: Edwards to Germain, 1 August 1780 (CO 194/35).

21.31 Figure 6: Excerpt of Andrew Sherburne's visit to the "Morteer" Gun Battery.
Source: Sherburne, A. 1831 Memoirs of Andrew Sherburne:
A Pensioner of the navy of the Revolution written by Himself. Providence, H.H. Brown.

I ate a few mouthfuls of the fish without oil, and a small piece of ship bread, and very gladly returned to my bed of boughs again, and slept soundly all night. In the morning, we had to walk four or five miles to the little battery, (I think the place was called "Morteer;") but our walk was much more distressing than it had been the day before; we were very stiff when we began our march; our feet were exceedingly sore and our way extremely rough. We had to pass over a promontory, the ascent was difficult and tiresome, and the descent even dangerous: in some places very steep, and in others almost perpendicular. We had to catch and hold fast on the bushes, to prevent falling headlong upon the rocks below. Having arrived at Morteer, they fired one of their pieces of artillery for joy, that some Yankee

21.31 Figure 7: CjAs-01 Cannon.



thought was called "Morteer" and where they "fired one of their pieces of artillery for joy, that some Yankee prisoners had fallen into their hands" (Sherburne 1831:52-53).

Again, it seems clear from Sherburne's description of their journey's route, and their intended destination (Placentia), that the shortest course would not have placed them at the Little Mortier Guns site, but rather in Mortier Bay to the north. Despite the lack of any confirmed contemporary references to the Little Mortier Guns site, there is good supporting evidence for the nature, purpose and date of this site as a colonial-period merchant defensive battery. More in -depth archival research will likely reveal evidence for the origin and function of this site.

Previous Archaeological Investigations of the Little Mortier Guns (CgAs-01) Site

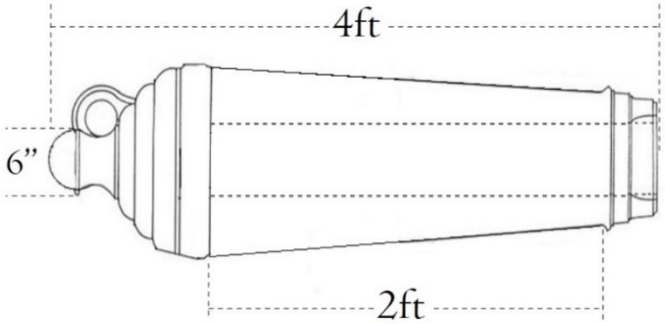
As a possible colonial-period merchant battery of several guns, direct evidence for the nature and extent of the site remains largely missing, as there were no obvious visible features reported from previous archaeological visits. Initially reported by the Newfoundland Marine Archaeological Society (NMAS) as an underwater site in 1982, three cannons were reportedly laying underwater adjacent the terrestrial portion of the site and that they were likely toppled over from their original placements. More specifically, the NMAS report stated that "Several cannons had been reported to have been found by divers at the foot of steep cliffs near to Mortier" and that searches "revealed the remains of three severely abraded iron cannon in 3 to 4.5 m of water" (NMAS 1983:198).

Considered possibly as part of a shipwreck, the NMAS Annual Report further described the three cannons as "positioned on boulder ledges on a steep slope" but found no evidence of an associated wreck, despite searching the general area to a depth of 21 m for over eight hours. The NMAS also noted a single cannon was also found at the top of the adjacent cliff overlooking the site, and that it was similar to those found underwater. It was concluded that the three cannons found underwater were likely part of 18-19th century land fortifications of the local merchants that were likely tipped over the cliff from gun placements. The site was revisited by Neil Burgess in 2020 under Permit 20.26. Burgess described the terrestrial site as being located in a small forest clearing that was bordered to the south by 10m sea cliffs and containing a rusty cast-iron cannon (without a gun carriage) lying on the grass next to a tree and a partially buried rusty cast-iron carronade in a shallow excavation about 8m to the west-southwest.

Summary of the PAO Survey Results

On July 26, 2021, PAO staff met with local representatives of the Town and Heritage Committee who kindly provided transportation and accompanied us to the site. Situated in a small forest clearing bordered on three sides by 10m high sea cliffs, the clearing measured approximately 8m X 10m in area, and showed evidence of previous excavation. A preliminary visual survey of the surface of the site was con-

21.31 Figure 8: Carronade.



ducted both on-foot and with the aid of aerial photography. Six test pits were excavated, all of which were sterile.

Of note were the two pieces of ordnance previously reported by Burgess, the basic dimensions and position of which were recorded using handheld tapes. The first of the two is a heavily corroded eight-foot long cast-iron cannon lying on the grassy surface adjacent a large tree (see Figure 7). With its 4.3” diameter bore this cannon can be identified as a 9-Pound gun based on Borgard's standardized ordnance (https://www.arc.id.au/Cannonballs.html). Its position on the ground and its orientation (away from the water) indicates it was not in its original location. A local informant indicated that the cannon’s current position was the result of an unsuccessful attempt to remove the cannon a few years earlier confirmed this.

The sketch below 21.31 Figure 7 is an approximate representation of the ordnance for discussion purposes and dimensions are rounded to the nearest inch. No inscriptions, heraldic designs or other foundry markings were visible on the gun that might provide a more definitive identification. As a generic 9-Pound gun, this ordnance is described as a “Cast Iron Smoothbore Muzzleloading Gun”, and the “fourth of four guns that stood on this site, the other three were pushed off the cliff they overlooked and are now underwater” (Skaarup 2021, Location No. 999). Although Skaarup provides no reference relating to this description and the other ordnance said to have been pushed off the cliff, it seems likely this information was provided by Stephen Hull of the PAO who is acknowledged by the author for providing detailed records about cannon in Newfoundland and Labrador both onshore and underwater.

The other gun, identified as a carronade, is a short version of a standard cannon developed in the late 18th century for “close quarters combat” (https://www.arc.id.au/Cannon.html). It is located approximately eight metres to the southwest of the cannon, nearer the cliff edge in a partially excavated state (see Figure 8). Owing to its current state of corrosion, it was determined this rusted cast-iron carronade was recently unearthed by an unknown excavator (likely by a metal detectorist owing to the number of unfilled pits in the area).

The sketch of the carronade below 21.31 Figure 8 is also only representative of the actual specimen. The ordnance measures approximately 4 feet in length and because of its current partially buried state, no diameter or bore measurements were possible. Owing to the recent looking ground disturbance and the bright orange colour of the surface corrosion of the object, it appears that the carronade was recently excavated. Recently described as a “Cast Iron Smoothbore Muzzleloading Carronade, partially buried and heavily corroded about 8 meters south-southwest of the SBML gun” (Skaarup 2021, Location No. 999), it is uncertain whether Skaarup made this observation personally and/or was responsible

21.31 Figure 9: Site Plan, Location of Ordnance and Test Pit Locations.

for its excavation, as there is no source or reference for this information.

Site Plan, Cannon and Test Pit Locations

In view of the fact that none of the previous recorded site visits to the terrestrial portion of this site included much in the way of anything other than a description of the cannons, it was important that our site visit included testing, mapping and recording of any evidence that could further reveal the nature and extent of the site. To this end, we conducted both ground surface and subsurface examination of the site.

Despite the fact that at least three cannon may have been displaced from their original locations along the cliff edge, there is little evidence of erosion that may have been the cause, and that they likely found their way into the water as a result of human intervention – and perhaps as a way to more easily retrieve them. The two remaining ordnance, consisting of the cannon and carronade provide the only direct evidence of the use of this site. Other than the clearing, which suggested past use of the site, there were no other visible surface features to suggest the

site's extent or use. Likewise, and quite surprisingly, none of the six test pits contained any traces of any material culture, historic or otherwise. This curious lack of material culture suggests that the battery saw little use and more particularly was likely an unmanned civilian fortification, as the establishment of any troops at this location would have left considerable evidence. By comparison, occupied gun batteries contain an abundance of cultural material, and even those that have been heavily disturbed by recent activities have provided ample evidence of their original use, and especially when troops were barracked on site.

Conclusions and Recommendations

There are few physical remains at the site and some degree of recent disturbance, suggestive of metal detecting activities. As a result, the potential for archaeological field investigations by way of excavation seems limited. A reexamination of the underwater portion of the site might prove useful in the relocation of the cannon for further comparison, but that would likely only confirm the strong likelihood that they originated on the land portion of the site. Notwithstanding these limitations, the Little Mortier Guns site may still yield valuable information, particularly through research of additional documentary and archival sources – which may eventually reveal the origin, date and use of the site. In particular, further research of documents from the British Colonial Office, British War Office, and National Map Collection are good places to begin. In this regard, it is noted that all of the research conducted for this report relied solely on digitized sources that were available on-line, and that there is good potential to discover mapping which has yet to be digitized at places such as the Provincial Archives at The Rooms and the Public Archives of Canada.

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Permit 21.05 & 21.30
Report on Archaeological Activities at Government House Summer 2021
Background

Situated on 22 acres of land between the former sites of Fort William and Fort Townshend, Government House is one of the oldest historic properties in St. John's. Commissioned by Sir Thomas Cochrane, Governor from 1825 to 1834, the house construction was completed in 1831 as a condition of his appointment (www.govhouse.nl.ca). Designated as a National Historic Site of Canada, the heritage value of Government House is based upon a number of character defining elements, including the spacious landscape on which it sits. As a functioning government site, Government House has seen a number of changes over the past 190 years, and as such, the grounds may hold significant historic resource potential.

Background

Since 2007, the PAO has engaged staff at Government House to review and assess development plans, including new stables, the demolition of the "Old Carriage House", a proposed greenhouse, a Newfoundland Pony enclosure, and garden construction. In so doing, the PAO continues to undertake reviews of these developments on a case-by-case basis until a more comprehensive review of the historic resource potential of the grounds is completed. In July 2021, the PAO prepared a Terms of Reference to hire a consultant to undertake a desktop assessment of the property, which includes a walking survey and resource interviews. More specifically, the consultant's report, completed in November, includes a history of Government House and the associated landscape, and the identification, mapping and description of the known and potential archaeological
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resources. This report provides a summary of past and current activities related to various aspects of Government House grounds. It also provides a description of all of the archaeological monitoring and testing conducted by the PAO in 2021 and those conducted by PAO sponsored consultants.

Previous Archaeological Research

On June 3, 2019, the PAO undertook a cursory survey under Permit 19.16 to determine if there were any remaining substantive structural remains subsequent to the demolition of the "Old Carriage House" that was located in the northeast corner of the property. A visual examination of the recently landscaped surface of the site revealed a mix of historic materials, including brick fragments, bottle glass, ceramic shards and some kaolin pipe fragments. Two test pits, excavated by hand on the eastern side of the property where no fill had been added, demonstrated that the area contained no apparent evidence for in-situ archaeological remains related to the occupation of the site. See Provincial Archaeology Office 2019 Archaeology Review pp.23-24.

Summer 2021 Archaeological Investigations

On May 4, 2021, and under Permit # 21.05 at the invitation of David Brown C.D. the former Private Secretary to the Lieutenant Governor, the PAO conducted a brief walking survey of Government House grounds in the vicinity of the current horse paddock and gardens where future developments and grounds improvements are planned. In particular, Mr. Brown noted that there were plans to develop the area of the current horse paddock as a greenhouse. From a preliminary review of archival materials and available mapping, there does not appear to have been any previous substantial use of this area, other than gardens.

On July 2, 2021, the PAO met with Mr. Peter G. Fitzgerald, the new Private Secretary to the Lieutenant Governor, to review and coordinate archaeological investigations, including the proposed greenhouse project. Subsequently, the PAO monitored the installation of postholes for a pony paddock, and tested an area of the grounds planned for the installation of a new monument. This preliminary work also provided the impetus for the desktop assessment that now informs decisions on site planning and development. To this end, the PAO continues to work with Government House officials to ensure that site planning and development takes into consideration known and potential historic resources.

Pony Paddock Post Hole Monitoring

On July 16, 2021, the PAO monitored the installation of wooden poles in the creation of the pony paddock. This work began with a walkover and visual survey of the grounds situated between the existing RNC horse paddock, an existing greenhouse and the tree line along Circular Road. The grounds of the proposed pony paddock are a level but mildly undulating grassy area that had the appearance of a former garden. This observation is consistent with the July 16, 1830 map of Government House grounds which generally shows the areas currently covered by the horse paddock and the greenhouse as the "Governor's Garden" (Figure 4).

Pole installation involved punching three inch diameter holes approximately 12 inches deep using a mini excavator. The holes were examined by hand and checked for cultural materials. The soils were loosely compacted dark brown sandy loam with pebble inclusions. There was no noticeable stratigraphy, as the topsoil appeared to be the full depth of each hole (Figure 5). Other than two holes, Nos. 14 and 18, no cultural materials were recovered (Figure 6).

Owing to the small diameter of the post holes, the likelihood of retrieving cultural material from any single post hole is very low. In all, two of the approximately 60 postholes contained cultural material. A few fragments of window glass were found in post hole #14, and a ceramic (stoneware) fragment was found in post hole #18. Likely dating to the 19thC, these fragments of material are commonplace across the grounds as layers of fill, landscaping and general use attest. In fact, discussions with groundskeepers confirmed that similar materials are routinely found within the topsoil across the property.

Testing Garden Monument Area

Upon completion of the monitoring of the pony paddock post holes, a single test pit was excavated in the vicinity of a proposed garden monument planned for construction later this summer at 22T 0371859 5270234. This test pit was excavated to a depth of 50cm down to sterile soils. Mixed within the top 45cm was a mix of cultural materials, including a stemware fragment, brick, coal, burned and unburned ceramic shards. While there were no reliable datable materials recovered, the materials look to be associat-

21.05 & 21.30 Figure 1: Government House Grounds, Adjacent Properties, Structures and Activity Areas.

21.05 & 21.30 Figure 2: Cursory survey and test pitting to determine if there were any structural remains left after the demolition of the "Old Carriage House".

ed with 19thC activities. The mix of broken and burned objects and lack of any buried soil horizon suggest that this area was disturbed by landscaping / gardening activities over time.

Stratigraphy was relatively simple, with a slightly darker brown topsoil layer underplayed by a lighter brown soil (containing the cultural materials) that overlaid an orange-brown compacted subsoil. From conversation with the grounds people, who routinely undertake excavations on the property, this is the basic stratigraphic profile across much of Government House grounds. Based on these findings, there are no significant historic resources in the area of the planned landscaping and monument.

Archaeological Potential and Potential Future Investigations

The PAO's cursory review of the historic evidence associated with Government House property suggests that the most likely and significant historic resource potential may be that of the Old Garrison Hospital that is currently marked by way of a small plaque located on Government House grounds facing Bannerman Road that reads:

> "Old Garrison Hospital - A single storey wooden building to house one surgeon and 41 patients was erected near this site about 1805 to replace the Garrison Hospital at Fort William, condemned in 1841, it was occupied until 1832 when a new and larger brick building was erected on the site of the General Hospital for the use of the Garrison of Newfoundland".

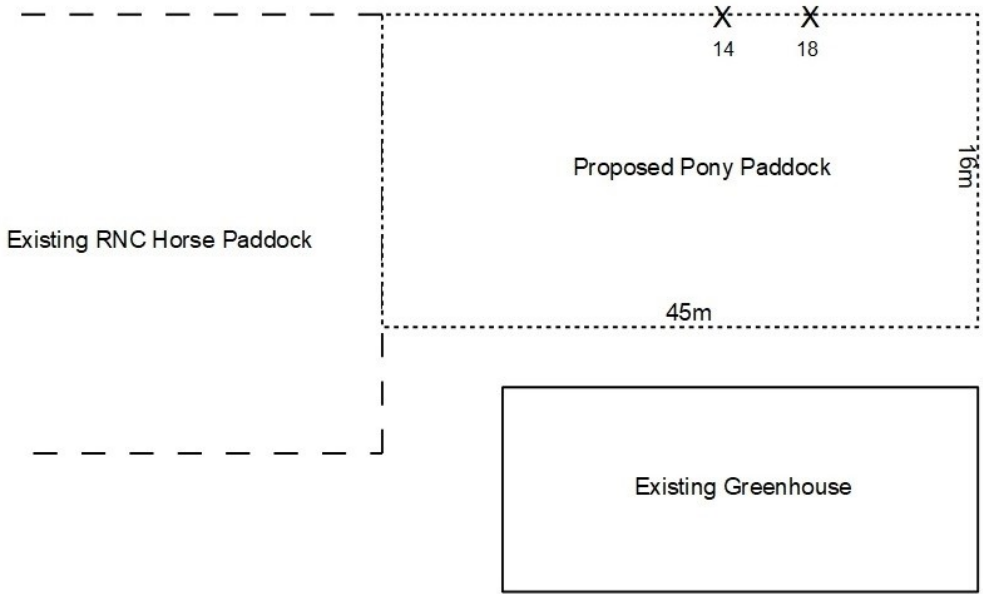
Another description of the Old Garrison Hospital is found on the Heritage Newfoundland Labrador website, https://www.heritage.nf.ca/articles/society/19th-century-health.php which states:

> "In 1805, the army opened a hospital between Government House and Fort William on Military Road. Widely known as the 'Pest House' and later the 'Old Garrison Hospital, the building had a bed capacity of 10 and enough facilities to treat up to 31 patients; it also admitted civilians, but only when space allowed. As the city's population continued to grow, however, it demanded better medical facilities. A large public movement, led by Scottish physician and reformer William Carson, successfully petitioned the government to establish a civilian hospital at St. John's in 1811. Before the year ended, Newfoundland and Labrador Governor John Duckworth appointed a committee, with Carson as its chairman, to design the new building and oversee its construction. The Riverhead Hospital opened to the public on 7 May 1814 in what is today known as Victoria Park in downtown St. John's".

21.05 & 21.30 Figure 3: Location of the new pony paddock.

21.05 & 21.30 Figure 4: July 16, 1830 – Location of Governor's Garden.

21.05 & 21.30 Figure 5: Installation of Poles using a mini excavator.



21.05 & 21.30 Figure 6: Sketch Map of Pony Paddock and Location of Positive Test Pits 14 and 18.

A plan dated July 16, 1830 on display in Government House shows the location of the Garrison Hospital and includes a Surgeon's Garden, stables and two additional structures. An excerpt from this plan (below) illustrates the location and extent of the hospital and associated grounds.

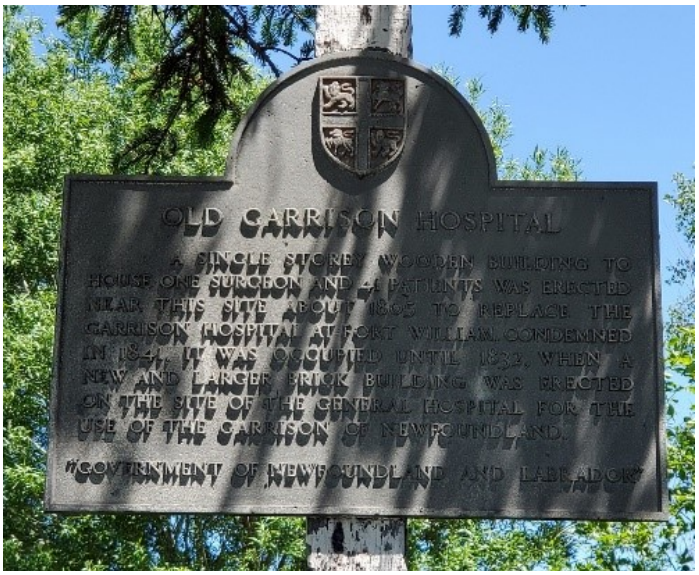
If the 1830 Plan is drawn to scale, the footprint of the Garrison Hospital is about 75% of Government House. Although described as a single story wooden structure, this was a large structure, which may have left significant archaeological traces. In addition, this plan also illustrates the presence of a surgeon's residence, a stable, another unidentified structure and a Surgeon's Garden associated with the hospital. In view of the nature of these uses, there are likely to be remnants of not only the hospital and evidence for its use, but also evidence for the residential and associated uses related to the surgeon's life on the property. As such, the archaeological investigation of the old hospital grounds represents a potentially unique opportunity to provide a glimpse into the history of medical care of St. John's.

Archaeological Testing for a New Horse Paddock

On September 9, 2021, at the request of Government House, the PAO undertook archaeological testing of a former garden area located just south of the current RNC horse paddock. The construction of the new paddock is to include excavation and removal of surface materials to facilitate the application of a drainage layer. Although a previous walkover of this area, as well as historical mapping and records suggested that this area likely contained little in the way of in-situ historic resources, the PAO undertook testing as the nature and extent of the proposed development would likely be detrimental any archaeological remains.

As indicated in the following illustration (Figure 11), 18 shovel test pits were excavated (to sterile) in a grid pattern across the area proposed for the new horse corral. These are identified alphanumerically in three rows A1 to A6, B1 to B6 and C1 to C6 and were excavated by three of the PAO archaeologists. From these, 15 test units contained artifacts and/or evidence of cultural activity. Test pits ranged in depth from 20cm to 45cm and demonstrated a similar stratigraphic profile across the site –

21.05 & 21.30 Figure 7: Test Pit Garden Monument.



21.05 & 21.30 Figure 8: Plaque for the Old Garrison Hospital as seen on Government House grounds.

which reflects this area as being one of long-term disturbance from gardening activities.

With the possible exception of a single test pit, identified as C6, which included unidentified burned conglomerate that could be part of a fire, or dumping episode, there was no evidence of any features or in-situ archaeological materials. This work resulted in the recovery of 78 catalogued specimens that date approximately from the late 18th century to the early-to-mid 20th century (see Table below). The stratigraphy of this area is similar to other areas tested (to date) on Government House grounds – insofar as there was no evidence of an intact cultural layer, nor any features that demonstrated previous use.

The majority of specimens recovered consisted of various types of refined earthenware ceramics, including 19thC refined white earthenware and pearlware, and a couple small fragments of undecorated creamware that dates to the late 18th to early 19th century. Although a couple of smoking pipe bowl fragments were recovered, they were too small to assign a date. While pipe stems are not as accurate a dating tool, the small bore diameters (4 & 5) suggest a relatively late (19thC) date.

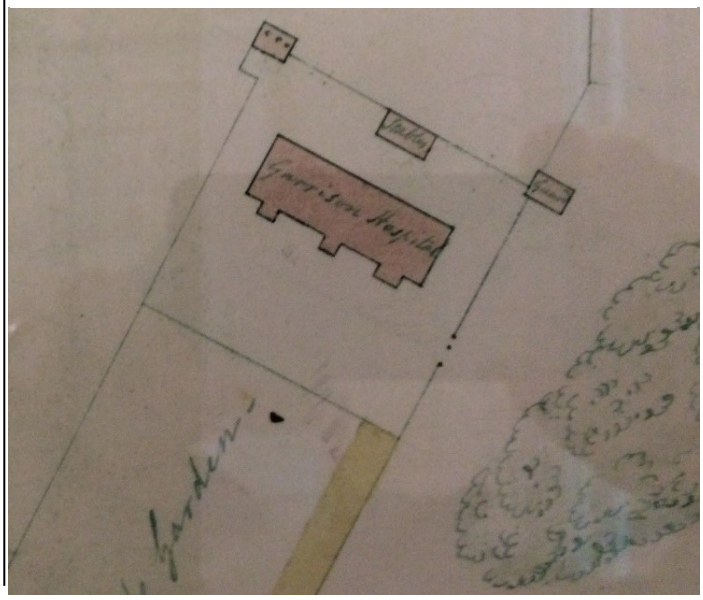
Based on the identification and a preliminary analysis of these objects, it is concluded that the majority of the artifacts relate to the late 19th to the early 20th centuries. The ceramic types, windowpane and tobacco pipes are all relatively common and found in abundance on historic sites of this period. Other more unusual objects, including the stemware and marble are less common. It is also concluded that the lack of any in-situ provenience and the small and fragmentary nature of the specimens is consistent with the use of this area as a garden – which has been subject to excavations for some time. As a property that has been subject to much landscaping and multiple uses over the last two centuries, it is not surprising to find these kinds of objects distributed throughout the grounds.

Following this testing, Government House was notified on September 22, 2021 that we had no concerns with this plan for the new horse paddock, and that we will add the results of this work to our ongoing report for the activities that the PAO has undertaken to date.

Testing of the Old Garrison Hospital

Throughout much of November, 2021 The PAO continued to assist in the assessment of Government House plans to ensure that historic resources associated with the property are preserved and managed in accordance with the *Historic Resources Act* and in a manner that will accommodate current and future plans. This work commenced with a walkover of the proposed trail route by PAO and Government House Staff. The proposed walkway is comprised of a large loop around the perimeter of the western side of Government House grounds, an inner loop and a series of connecting paths. Of particular concern were two areas of high potential areas, namely the Old Garrison Hospital and a WWII gun battery and

21.05 & 21.30 Figure 9: Garrison Hospital and Ancillary Structures from the 1830 Plan.



21.05 & 21.30 Figure 10: Area of Testing (New Horse Paddock).

associated barracks.

Guided by results of Dr. Amanda Crompton's desktop assessment (2021), the PAO advised that test excavations, test pitting and additional investigation employing Ground Penetrating Radar (GPR) would be required prior to trail construction. This work was also guided by the possibility of unexploded ordnance associated with the WWII gun battery.

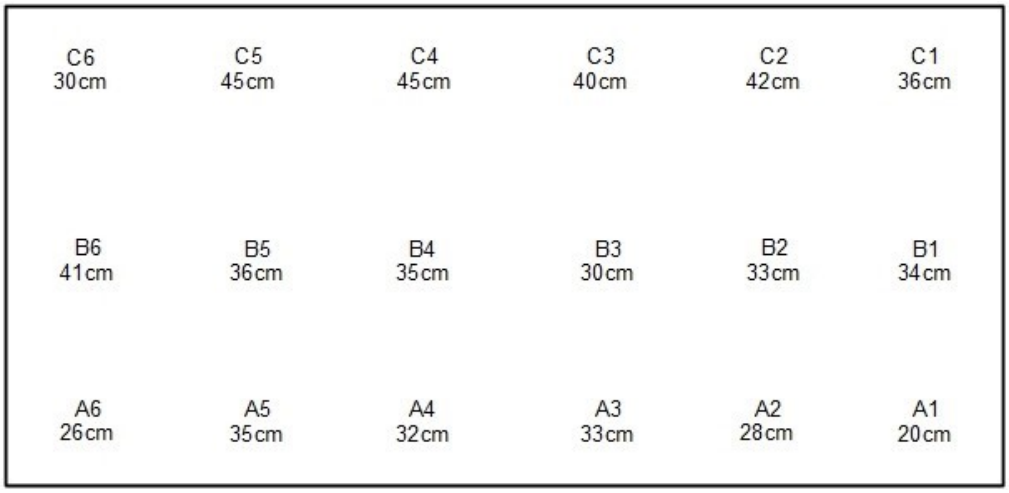
In view of the immediacy of Government House plans to begin construction of the pathway in November 2021, Blair Temple Associates was contracted to conduct ground truth excavations of the Old Garrison Hospital as well as shovel testing at select locations. No archaeological investigation was conducted near the gun battery for safety concerns. Subject to clearance by the relevant authorities, additional investigation of the battery and barracks will be required. From November 15-19, 2021, limited excavations and GPR investigations of the Old Garrison Hospital were conducted. This work resulted in the positive identification of the hospital's stone foundation (see figure 13 below). Additional site monitoring, in concert with the trail construction is planned, and a final report by Blair Temple Associates is forthcoming.

GPR investigations (see figure 13 below) conducted by Maria Lear of Memorial University in concert with Blair Temple Associates excavations also confirmed in-situ remnants of an unexcavated portion of the eastern portion of the hospital foundation, as well as one of the ancillary buildings identified in the 1830 Plan of the hospital grounds. A final report of this investigation is forthcoming.

Conclusions and Recommendations

The PAO's involvement in the monitoring, testing and the sponsor of investigations at Government House in 2021 have demonstrated the potential for archaeological and historic resources, including physical and documentary evidence important to fully understand the changing nature of the cultural landscape as it relates to Government House. Initially beginning as an effort to assist in the management of historic resources relating to discrete projects, such as the pony paddock and monument placement, it became apparent that a more comprehensive approach would be required to manage the preservation of historic resources with the advent of larger projects such as the proposed trail and landscaping plan. As a result, the PAO sponsored Crompton's research, resulting in a desktop assessment that provided insights into the property not previously recognized. The resulting recommendations formed the basis for archaeological testing that resulted in the discovery of intact stone foundations of the Old Garrison Hospital.

21.05 & 21.30 Figure 11: Test Pit Locations (New Horse Paddock).



A - Refined White Earthenware

B - Pearlware

C- Coarse Red Earthenware

D - REW, Porcelain, Creamware

E - Window Glass

F - Bottle Glass

G - Tobacco Pipes

H - Other

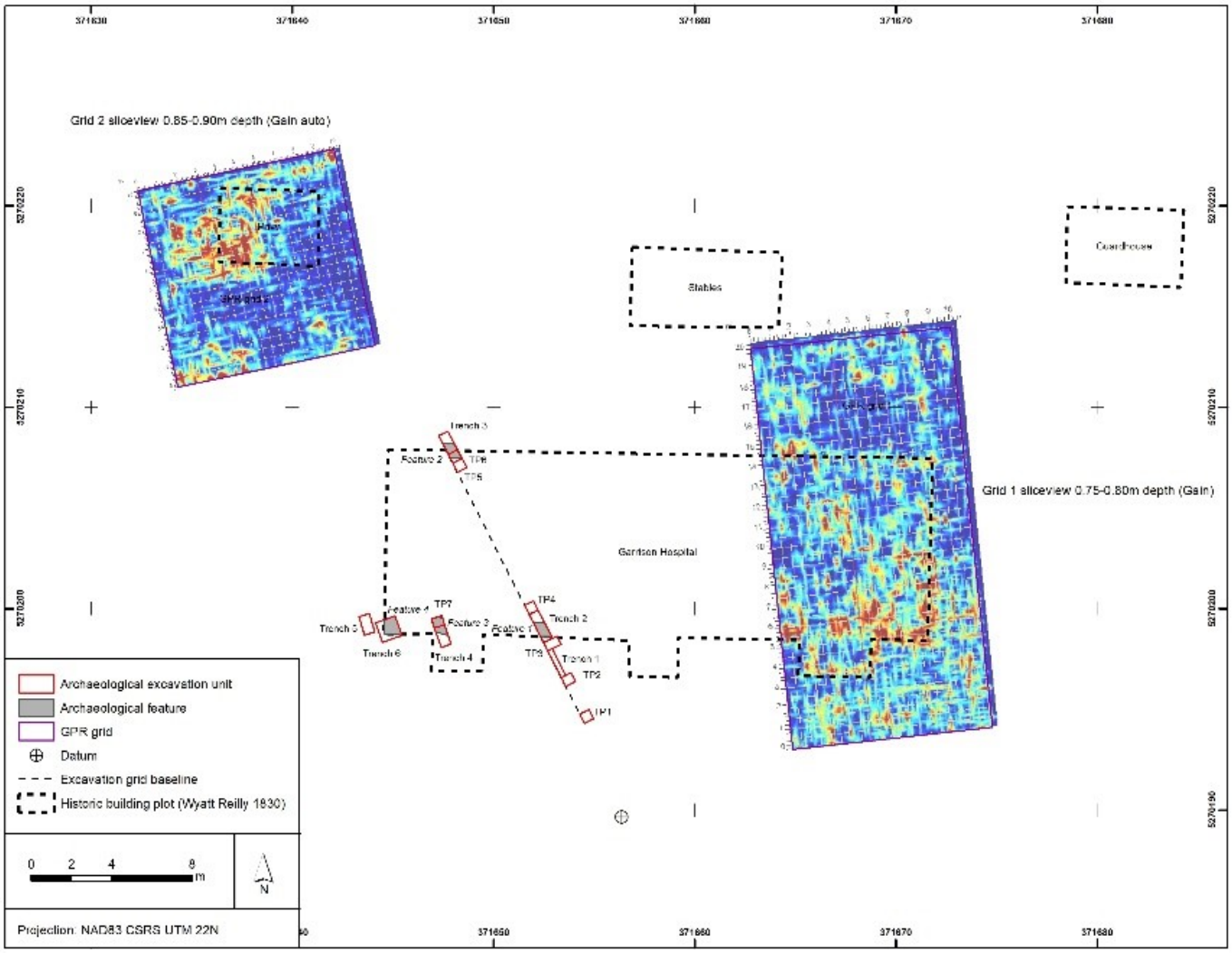
I – Brick and Coal

J - Burned Samples

21.05 & 21.30 Figure 12: Government House (CjAe-190) Ceramics and Glass.

Artifact Summary

Photo Key	Object Type	# of Specimens
A	Refined White Earthenware	20
B	Pearlware	9
C	Coarse Red Earthenware	7
D	Refined Red Earthenware	1
D	Creamware	2
D	Porcelain	1
E	Window Pane	11
F	Bottle Glass	7
G	Tobacco Pipe	4
H	Other	5
I	Coal	4
I	Brick	2
J	Unidentified / Burned Specimens	5
	Total Specimens	78



21.05 & 21.30 Figure 13: Test Excavations and Preliminary GPR Results of the Old Garrison Hospital.

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Permit 21.15 Come by Chance

Heritage NL contacted the PAO regarding an abandoned cemetery, the Old Methodist Graveyard, Come Bay Chance (CkAm-07). The local heritage committed had cut down the trees and opened up the space around the cemetery and were inquiring about further activities such as removing stumps and erecting a fence to mark the perimeter of the cemetery. Because both activities would involve ground disturbance Heritage NL involved the PAO

In order to get a better sense of the size of the cemetery and the potential for unmarked graves, several members of the local heritage committee along with Members from Heritage NL, PAO and MUN traveled to the area in May. The site is located on the north shore of the Come By Chance River, southwest of the community of Come By Chance and about 600m southwest of the site Come By Chance Beach West (CkAm-06). This site was recorded by archaeologist William Gilbert in 1988 and consists of several rectangular and circular depressions. Gilbert felt these were likely the remains of European structures such as houses, root cellars, etc. dating to the 19th- 20th- centuries. It is likely that the people buried at the Old Methodist Graveyard, Come By Chance (CkAm-07) are the same people who inhabited Come By Chance Beach West site (CkAm-06) .

21.15 Figure 1: Large sub-rectangular depression thought to be associated with a church. Note the metre stick on the left.

Shortly after arriving on the beach between

21.15 Figure 2: The broken marble headstone of Stephen Adams who died Dec. 7, 1917.

21.15 Figure 3: The broken marble headstone of Elizabeth Adams who died May 7, 1892.


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21.15 Figure 4: The only visible slate marker on site that is believed to be a headstone.

CkAm-06 & CkAm-07 local heritage committee members pointed out a large rectangular area and nearby depression that is believed to be a former church. We then walked along a trail, just over 100m, through the woods to CkAm-07.

The cemetery is in the southwest corner of a field known locally as Jimmy Gilbert's Garden. The field contains an abandoned building and the remains of former vegetable beds. It contains at least 10 marked graves, nine of which have a marble marker and one with a slate marker. Eight of the graves have legible text, all of which relate to members of the Adams family indicating their deaths to be in the late 19th- or early 20th- centuries; the oldest dates to 1892 and the most recent to 1917. In total, the cemetery measured about 10m by 17m.

After thoroughly searching the area for unmarked graves, we came across wire strung between trees that related to a former fence that surrounded the cemetery. With the knowledge of this fence and having not found further unmarked graves, we advised the committee that they could trim tree stumps as close to the ground as possible but to not dig them out in order to protect the graves. We also suggested that if they were to erect a fence to do so in the same area as the former wire fence.

After recording the cemetery and the text on each of the legible headstones, we left and walked along the beach towards Come By Chance Beach West (CkAm-06). About 600 m northeast of the cemetery, we relocated at least one of the depressions that Gilbert recorded in 1988, which we photographed.

Permit 21.22 New Perlican

Plans to construct a residential dwelling on private property in the Town of New Perlican came to the attention of the PAO in late May 2021 because of its potential to impact a nearby historic cemetery. Local heritage committee members and archaeologists Shannon Lewis-Simpson and Robyn Lacy, who had been conducting work in the area, notified the potential homeowner ,

Having been in the area previously and having seen photos of the cleared lot for the dwelling to be constructed the PAO believed the new construction would not impact the cemetery . Just to be certain we traveled to New Perlican in June and met with local heritage committee members, Lewis-Simpson and Lacy to get a better understanding of the

21.15 Figure 5: Looking northeast across the cemetery, the remains of a rusty wire fence can be seen wrapped around the stump on which the metre stick leans.

21.22 Figure 1: Map sent to the proponent showing where further development could and could not proceed.

construction and its proximity to the cemetery. After investigating the area the PAO had no concerns with the construction of the residential dwelling.

The PAO advised the proponent that he was not to conduct any ground disturbance any further in the direction of the red arrows because of his close proximity to the cemetery (right red arrow). He could however expand in the direction of the green arrows (Figure 1).

Permit 21.35 Blackhead

In 2021, Dr. Catherine Losier (see this volume) of the MUN Archaeology Department ran the MUN Field school at the site of CjAd-02, Blackhead Church. It is believed that Dr. Losier located and test excavated the foundations of the former Star of the Sea, Roman Catholic stone church, built in 1861 and removed in 1910. The Blackhead Museum is built next to the foundation.

During this summer, we learned from the always helpful and cooperative members of the Blackhead Museum that they were planning to have some ground disturbing work done next to the building to allow for water and sewer hookups. With Dr. Losier's confirmation of the foundation located next to the Museum, everyone's collective concern was for the protection of that foundation. The MUN Archaeology Field school had concentrated on the area north of the Museum and we knew very little about what, if anything, was in the ground to the south of the Museum. To rectify that situation Maria Lear of MUN Archaeology conducted a geophysical survey (Ground Penetrating Radar) of the area south and west (front and side) of the Museum. Please see Maria's submission in this volume for details of that survey. (See Lear, this volume)

21.35 Figure 1: MUN Archaeology Department Field school test excavation units looking towards the north wall of the Blackhead Museum.

Permit 21.38

Sunnyside and Central, NL

Over the last two years or so members of the PAO have been re-reading various Beothuk articles and books and discussing this material with other colleagues. We have read some new articles and books, some were good, some not so good. We have also taken a very close look at digital copies of the drawings of Shanawdithit. We are trying to develop new Beothuk

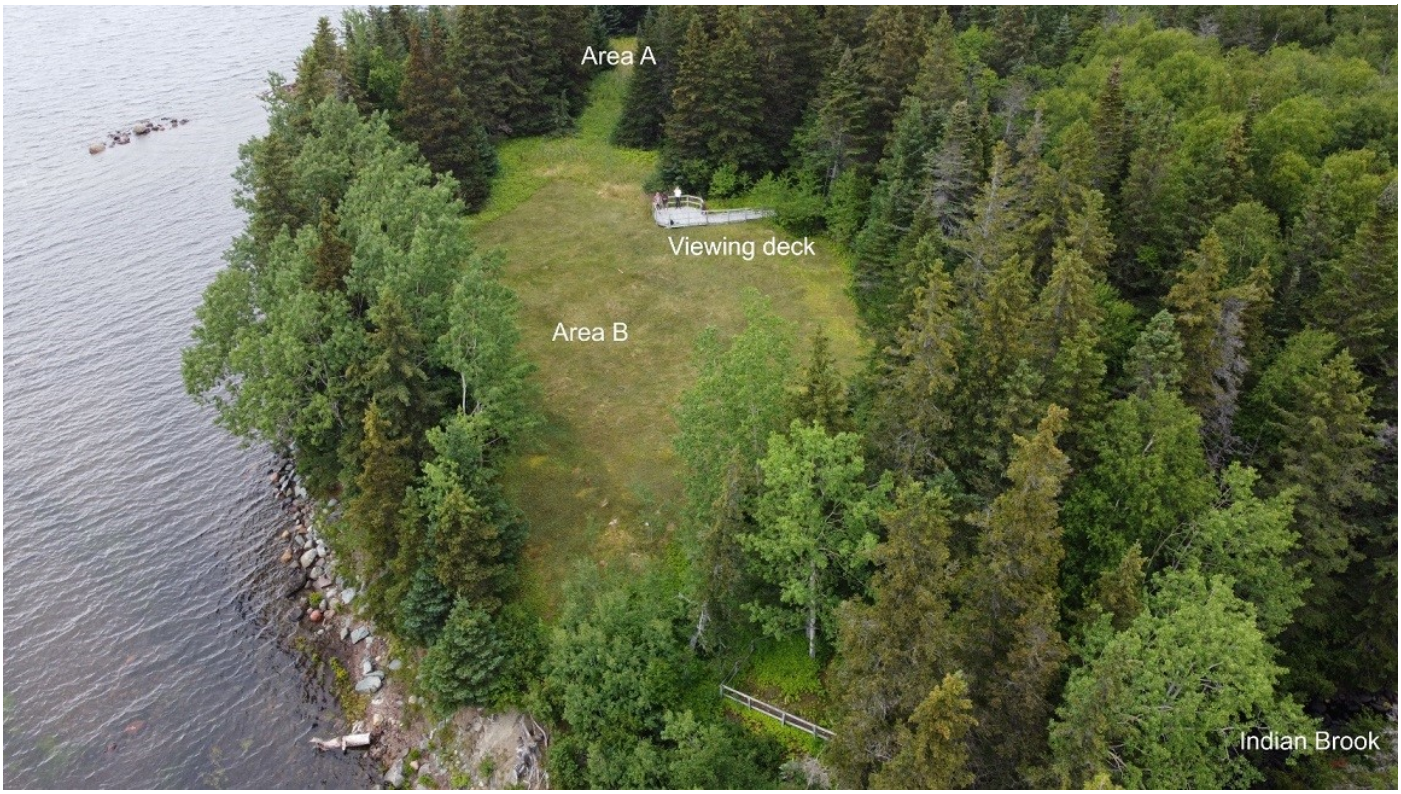
oriented research ideas and this has proven to be a very beneficial exercise in several ways. We have re-read older articles and learned some new things, and reconsidered old ideas from new perspectives. One of the things we noticed on Shanawdithit's maps were areas that have not received much archaeological attention such as South Pond, south of Halls Bay, Crooked Lake, Pauls Lake and Joes Lake near Badger and Harbour Round on Beothuk Lake (Red Indian Lake). In August, two members of the PAO travelled to central Newfoundland with several goals in mind including:

- Briefly visit and assess the historic resources potential of several places noted on Shanawdithit's maps
- Visit and photograph Boyd's Cove using the PAO drone
- Visit Robert's Arm where a member of the public had reported some suspicious features to the PAO
- Planning for several meetings

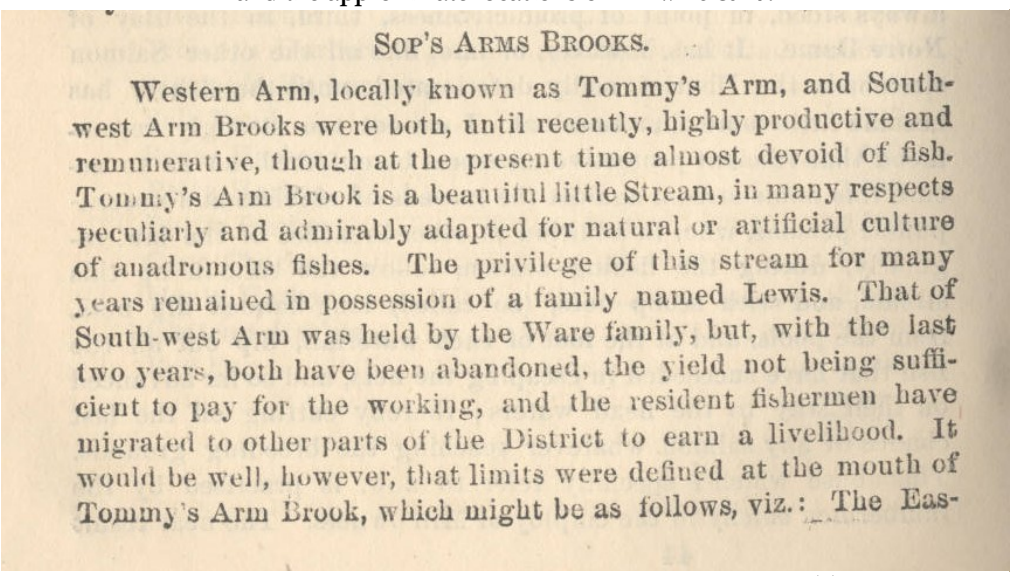
On August 16 PAO staff members met at Boyd's Cove where we took drone shots of the site. Having recently purchased a drone, one of the sites we wanted to get shots of was Boyd's Cove. After meeting with Boyd's Cove Interpretation Centre staff we went to the site to get the shots. Altogether, we took about 30 drone shots, taking in the viewing deck, areas A and B of the site and a view of Indian Brook.

Our task for the next day was to investigate several small earthen mound features that Charles Ryan from Robert's Arm brought to our attention in May. The features (DiAw-16) seem to be aligned with a path that runs parallel to the western shore of the river that empties out of the eastern end of Crescent Lake into Tommy's Arm. The trail is just over 1 km long. Initially, Mr. Ryan suggested the features were Beothuk housepits but the more he told us about them and eventually sharing some photos of them, we all realized they were not. By the end of May, Mr. Ryan had found several more earth mound features along the trail and compiled all the information he knew about them into a document that he shared with us. During his observation of the features, he did find a few iron nails and some 19th- century ceramic fragments under the duff near the features. Based on his preliminary research there seems to have been considerable use of the area in the late 19th - and early 20th- centuries. For example, Francis Warr had a sawmill at Tommy's Arm in the late 19th- century, Richard Lewis netted salmon from the river in the late 19th- century, Peter Parsons and William Faulkner

21.38 Figure 1: Boyd's Cove with Areas A & B highlighted as well as the Viewing deck and Indian Brook.



21.38 Figure 2: Tommy's Arm area showing our track log in pink and the approximate locations of DiAw-16 & 17.



SOP'S ARMS BROOKS.

Western Arm, locally known as Tommy's Arm, and South-west Arm Brooks were both, until recently, highly productive and remunerative, though at the present time almost devoid of fish. Tommy's Arm Brook is a beautiful little Stream, in many respects peculiarly and admirably adapted for natural or artificial culture of anadromous fishes. The privilege of this stream for many years remained in possession of a family named Lewis. That of South-west Arm was held by the Ware family, but, with the last two years, both have been abandoned, the yield not being sufficient to pay for the working, and the resident fishermen have migrated to other parts of the District to earn a livelihood. It would be well, however, that limits were defined at the mouth of Tommy's Arm Brook, which might be as follows, viz.: The Eas-

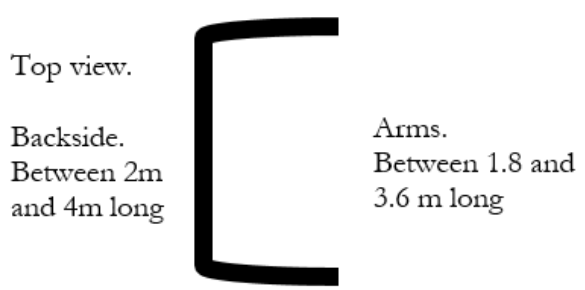
21.38 Figure 3: Reference to the Lewis family fishing salmon from the Tommy's Arm River. (Journal of the Legislative Council of the Island of Newfoundland 1886, https://collections.mun.ca/digital/collection/h_assembly/id/121307/rec/1

shipped pitprop out of Tommy's Arm in the early 20th- century and Bowaters started operating in Tommy's Arm in the early 20th- century. Any of those activities could account for the features.

In total, we investigated four earthen mound features along the trail and we noted the presence of several more. Three of the four were shaped like a capital U or a three-sided rectangle missing one side (see sketch below). The longer back side of the three features were between 2m and just over 4m long, the two smaller arms extending from the ends of the back side were between 1.8m and 3.6 m long. The walls ranged from just under 1 m to nearly 1.5m high and the walls were usually around 1 m wide. All of these measurements are from the outside edge of the walls and are approximate because with the tree/brush growth and vast amount of overburden it was difficult to see where the walls started. For those same reasons, it was difficult to get a decent photo of any of the features. Test pits in each of the features revealed no cultural material.

Unlike the first three features, the fourth feature was a rounded earth mound that was ~3.8m across. It was also different in that there was a trench dug around the outside; we assume the excavated soil was piled on top of the mound to make it higher than the surrounding soil. It was just under 1 m high from the base of the surrounding trench.

After looking at all the earth mound features we walked to the end of the trail to briefly look out over Tommy's Arm. On our way back, Mr. Ryan took us on a short detour of about 150m west to show us another area along the Tommy's Arm shoreline. At the base of a hill and surrounded by small hills on



21.38 Figure 4: The metre stick is in the centre of one of the earth mound features.

21.38 Figure 5: Looking across the rounded earth feature.

all sides is a small flat clearing of about 15-20m wide and long (DiAw-17). In one area, we could just make out the faint lines of garden drills. In the back of the clearing (northwest corner) was a small pit or depression that was about 50-75cm deep and about the same across the top; it narrowed toward the bottom. A test pit in the depression did not reveal cultural material.

The next day, August 18 we visited the Indian Point site to check on how the Sabbath Point housepit fared through the winter. The known features at Indian Point that were not destroyed in the early 1980s seem to still be in good condition with just a small amount of shrub and brush growing on them. The Sabbath Point housepit also seems to have survived the winter; previously noted erosion seems to be ongoing but it has not yet reached the housepit. Satisfied with our brief visit to Indian Point and Sabbath Point we continued on to the south side of Beothuk Lake to Harbour Round.

21.38 Figure 6: Looking northwest across the clearing, the small pit/depression is behind the large tree in the upper right of the photo.

Very briefly, in the winter of 1811, Lieutenant David Buchan with a party of

21.38 Figure 7: Ongoing bank erosion in front of the Sabbath Point housepit.

Marines and local men walked up the Exploits River looking for the Beothuk in an attempt to make contact. They arrived on Beothuk Lake early in the morning and took several of their houses by surprise. According to Buchan's journal, they spent several hours trying to communicate with the Beothuk and explain their intentions for peaceful contact (Buchan's 1811 Journal). In an effort to show their good intentions Buchan got several Beothuk to agree to walk with him back to his supplies where he had gifts for them. Two of his Marines remained behind to fix their snowshoes. Eventually, by the time Buchan reached his supplies back on the Exploits River several of the Beothuk who had gone with him had run off. The next day they returned to the lake with the gifts and found the houses empty. They left the gifts for the Beothuk and eventually set off to find where they had gone. While crossing the lake the last Beothuk man ran off from the party, it was then that they found the headless bodies of the two Marines out on the lake. According to Shanawdithit's map (Drawing 1, see Howley 1915 or Marshall 1996) all the Beothuk gathered together on the south shore of the lake to spend the rest of the winter together. In reviewing Shanawdithit's drawing 1, we realized that no one had ever looked for this winter camp which we thought was likely located in the Harbour Round area.

In preparation for the trip, we looked at air photos of the area and noticed that the south side of Harbour Round had several cabins on it meaning if there was anything cultural in that area, it was likely disturbed. We were undeterred because Shanawdithit seemed to indicate the houses the Beothuk stayed in we were on the north side of the cove so were hopeful some evidence of them remained.

In looking at the air photos, we thought there were former woods roads that we could use to get close to Harbour Round. When we arrived in the area we quickly realized these were abandoned roads that were heavily overgrown with alders. We thought about walking the road but that would have meant a 6 or 7 km walk before even starting the survey. We decided to drive the rest of the way to Harbour Round and try to walk around the beach from the south side to the north side. That still meant a walk before the survey but it was around half the distance of walking through the alder choked road. In the end, this benefited us because we were able to get a better look at Harbour Round, its north shore and the level of disturbance the area has suffered over the years.

We parked our vehicle on the east side of Harbour Round on the logging road and walked

21.38 Figure 8: One of several in situ large tree stumps we saw on the badly eroded shore of Harbour Round.

through a small area of brush before coming out on the shores of Beothuk Lake. Our initial impression was that it was similar to areas to the north that we were more familiar with, a large open beach that clearly has suffered a great deal of erosion based on the width of the beach, eroding banks and the number of *in situ* large tree stumps.

As we walked along the beach towards the north shore, we saw numerous metal artifacts including nails, horseshoes, a leg trap, several lengths of chain and steel cable. We walked around 3.5 km to the northern tip of Harbour Round, examining the beach as much as possible and every so often going inland a small distance looking for any evidence of cultural activity. When we got to the end of the north side we took a lunch break and formulated a plan for our return to the vehicle which amounted to trying to stay in the interior as much as possible on our walk back. That way we felt we had searched the shoreline and a small portion of the interior. Along the way, we stopped to investigate many tree throws and dug several test pits. While we did find several flat and dry areas that have some potential for cultural resources we felt that our odds of finding anything, indeed if anything still existed, were like looking for a needle in a haystack. We decided that if we returned to the area for a more thorough search in the future we would bring a metal detector and a larger team of people.

Upon our return to St. John's we searched for

21.38 Figure 9: Showing the large open beach and eroding banks at Harbour Round. The bank on the right is nearly 10 feet high.

a history of Harbour Round and realized that it was used as a supply depot for the logging operation in Millertown in the early 20th-century. According to the Anglo Newfoundland Development Company blog:

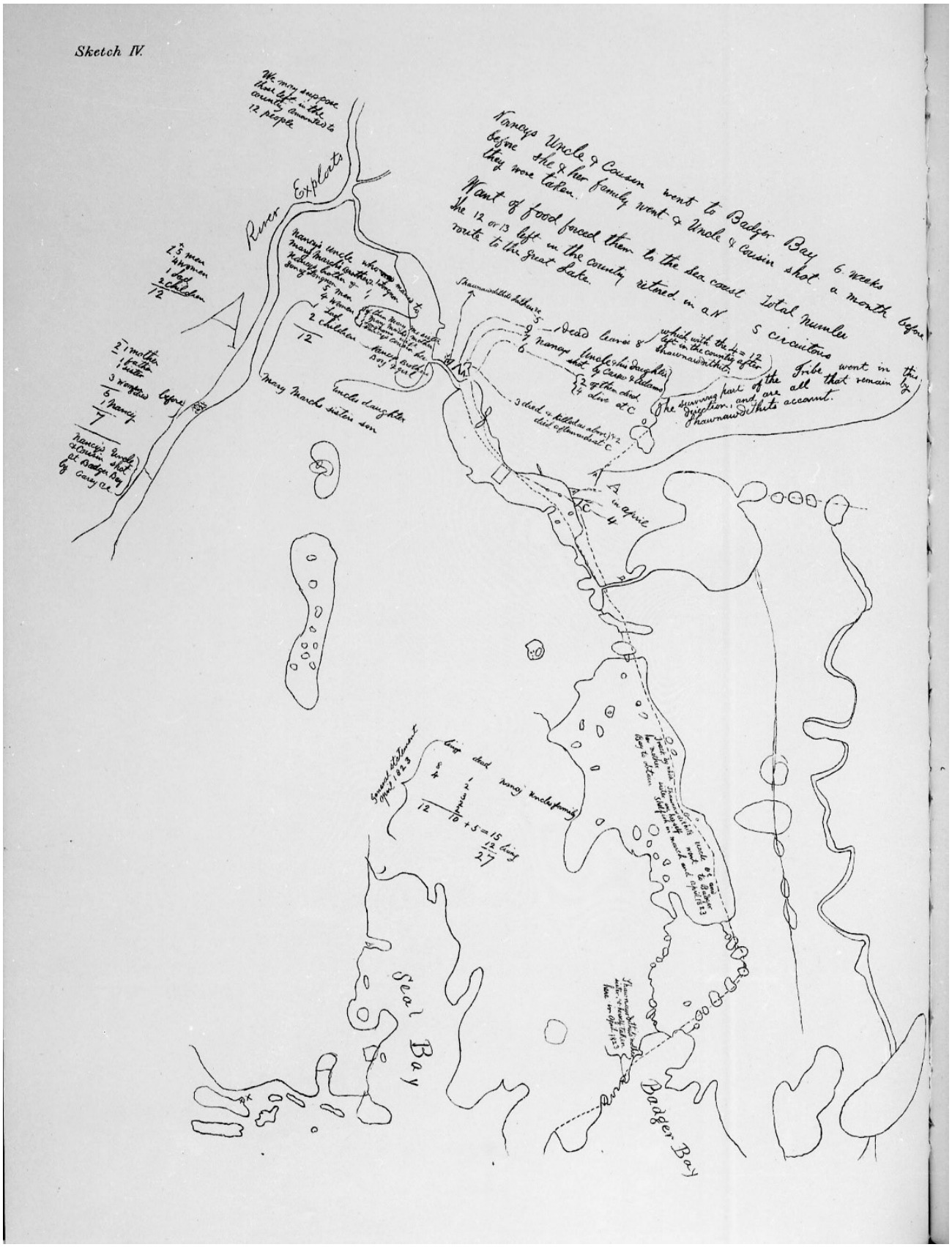
> *In 1908 the pulpwood operations of the Anglo-Newfoundland Development Company started out with one logging division, Millertown, Between 1910 and 1925 three other divisions would be added; Badger, Bishop's Falls, and Terra Nova. Each division had a headquarters, located in or near a satellite community. In the days of horse, and later tractor, transport, the distance which supplies could be transported in a day was limited; horses, even when being distributed to camps could still only travel so far in a day. Therefore the distances between the headquarters' and the camps necessitated the establishment of supply depots, for the warehousing of food and other camps supplies, accommodating loggers in transit, and the stabling of horses.*

Between 1908 and the 1920's, Harbour Round was used as a dock for steamers with an elaborate wharf; it also had a forge, warehouse and supply store. The area was actually enumerated in the 1921 census, according to the Anglo Newfoundland Development Company blog. This level of development would explain a lot of the destruction we saw including the artifacts such as the horseshoe, nails, chain and steel cable.

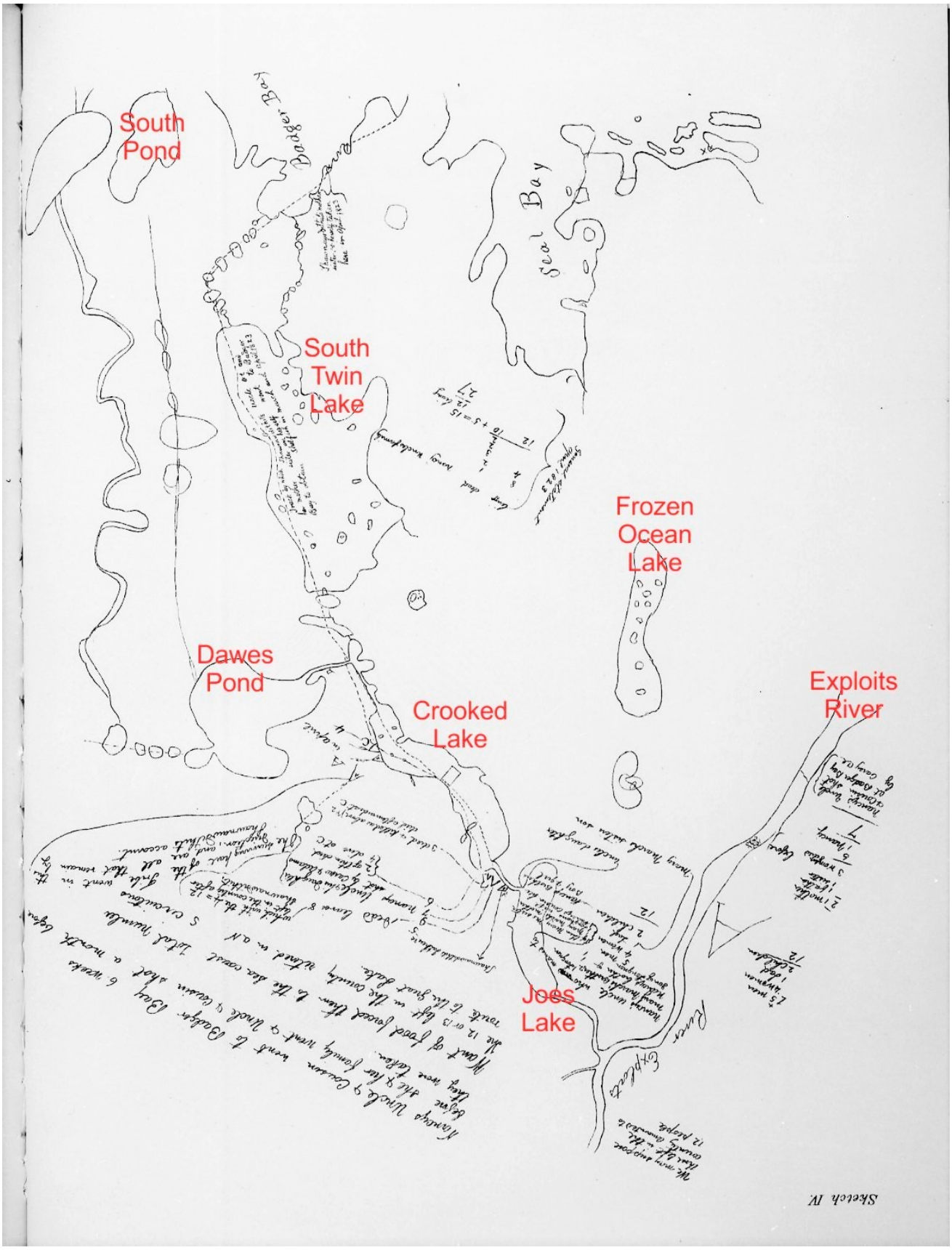
During our last day of fieldwork activity in central, we focused on South Pond, south of Halls Bay and did a mostly driving tour of Crooked Lake, Pauls and Joes Lakes with brief walking tours of several areas. Our interest in all these areas again derived from an examination of Shanawdithit's maps. This time we were interested in the events as recorded on drawing four as seen in Howley 1915 and Marshall 1996. According to that map and the interpretation in Marshall 1996 by April 1823, according to notes on the drawing, there were 19 Beothuk left in the Badger Bay Waters area (the chain of lakes between the Exploits River and Badger Bay, including Crooked Lake, Pauls and Joes Lakes among others). Shanawdithit accounted for each person to Cormack, according to the note on the map they included: Shanawdithit's uncle, his daughter, Shanawdithit's brother and his two children (a girl and a boy), Demasduit's mother and sister, Demasduit's sister's son, two of her brothers, one of whom was called Longnon, and Longnon's wife and son. In addition there was one mother, one father, one sister, three women [whose relationship to the group is not revealed], and Shanawdithit. By the time Shanawdithit was captured in April the group had dwindled to 12 or 13 people; there is a discrepancy between what Shanawdithit told Cormack and numbers noted on the map. Regardless of the numbers, she did tell Cormack that the remainder of the tribe set off on a circuitous route for Red Indian Lake. It was this last line that brought us to South Pond.

In 21.38 Figure 11 you can see the original version of drawing four. With this orientation, it is much easier to read the handwriting on the top of the page that details who was in each Beothuk house, but geographic north is at the bottom of the image. For

21.38 Figure 10: Leg hold trap and horseshoe seen on the north shore of Harbour Round.



21.38 Figure 11: Original version of Shanawdithit's drawing four.



21.38 Figure 12: Modified version of Shanawdithit's drawing four rotated 180^0 and showing what we think are the names of various bodies of water.

21.38 Figure 13: White refined earthenware fragments found at South Pond.

our purposes the drawing makes more sense to be rotated 180^0. In 21.38 Figure 12 I have rotated the image and added, what we think are the current names to various bodies of water she drew. Of note, in reference to the comment Shanawdithit made about the last of the tribe heading off to Red Indian Lake in a circuitous route we noticed what appears to be a pencil line drawn between Dawes Pond and South Pond. We wondered if this was the circuitous route, to the Lake, if it was perhaps there was some trace of the last of the Beothuk on the south end of South Pond.

The morning of August 19, we drove to South Pond and parked the vehicle on a cabin access road. From the road, we walked to the south end of the pond and immediately noted the environmental resemblance to Indian Point on Beothuk Lake, which raised our hopes somewhat. Like we did at Harbour Round, we walked along the shore and went inland when conditions looked favourable for habitation. Again, we searched through numerous tree throws and dug test pits but found no Indigenous cultural material. However, we did find artifacts that came from a recent 20th-century site perhaps related to logging, trapping or it may have just been a small cabin. The material was found on the eastern shore of South Brook that flows in to South Pond and consisted of scattered artifacts including white refined earthenware, metal eating utensils, a rectangular oil can and part of what appears to be a bed frame (DiBa-14).

Our plan initially was to wade across the brook wearing hip waders. Unfortunately, we quickly realized that this was not an option as it was too deep. Despite not finding any Indigenous material, we were encouraged by the potential of the area and we hope to return in the summer of 2022 with a boat in order to cross the brook. With this work completed for this year, we headed back towards Crooked Lake, Pauls Lake and Joes Lake near Badger.

Shanawdithit's maps again sparked our interest in those areas, as these lakes are the last place we know the last of the Beothuk were. Unfortunately, it did not take long for us to realize this area has been

21.38 Figure 13: View of the sandy beaches on the shore of South Pond that are reminiscent of the beaches near Indian Point on Beothuk Lake.

21.38 Figure 14: Cleared lots, cabins, sheds and manicured lawns as seen on Crooked Lake.

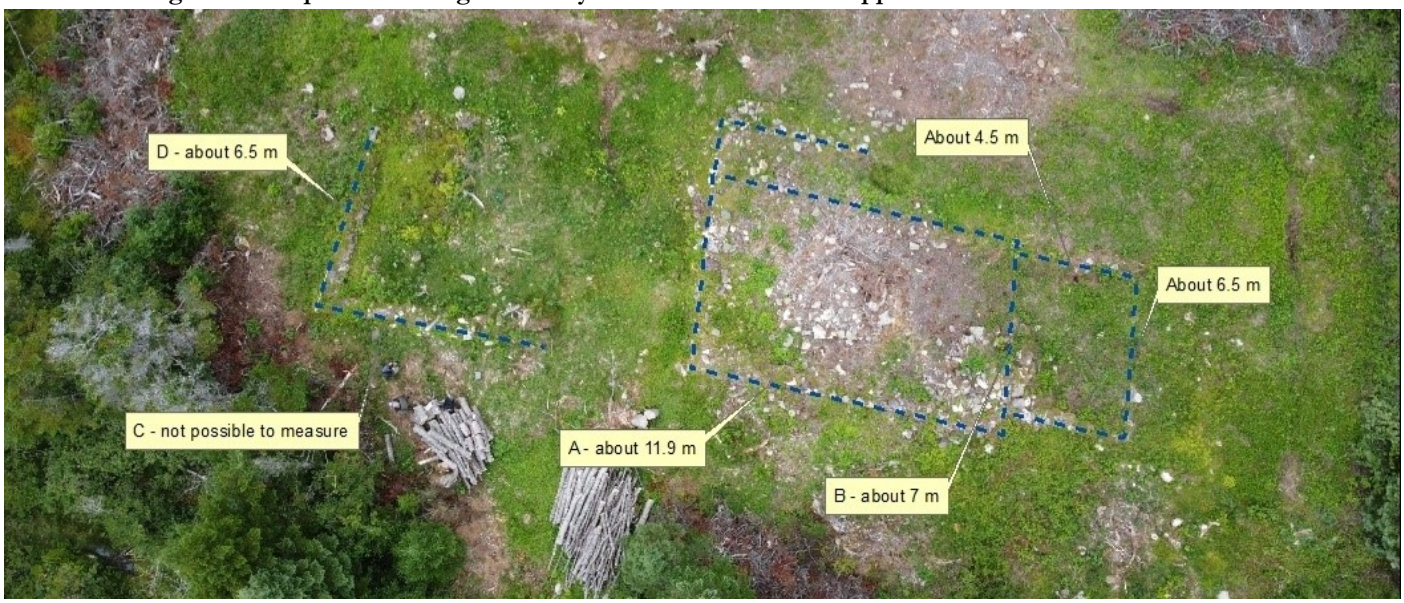
heavily impacted by logging, cabins and various other forms of development. There are so many cabins in the area it may be more apt to refer to these areas as towns. While the lakes cannot be said to have no historic resources potential, certainly many of the higher potential areas have been negatively impacted.

The next day we returned to St. John's and stopped in to Sunnyside and the Bay Bulls Arm Telegraph Station site ClAl-04 to take some measurements and get some drone imagery.

Mr. John Curran, an architect turned author, who has developed a keen interest in the fascinating history of first transatlantic cable, contacted the PAO about the Sunnyside Cable Station (see Brake et al. 2021). Mr. Curran was interested in acquiring measurements from the archaeological remains of structures at the site. While those measurements had not been taken during previous site visits, there was now an opportunity to get them on the way back from the trip to Red Indian Lake, Green Bay and South Pond described above. Mr. Curran was looking for specific measurements to compare to a survey of the site that was done by de Sauty in 1858.

During our 2021 trip to the Sunnyside Cable Station we noticed that a number of additional trees had been removed from the site. This activity had been coordinated by the local heritage committee and did not disturb any of the archaeological features. Their work made it much easier to see the features, and we were able to take good drone photos of the site, as well as most of the requested measurements. Soil accumulation and vegetation made it impossible

21.38 Figure 15: Air photo showing the Sunnyside Cable Station and approximate measurements taken in 2021.



to accurately measure all of the walls in question and excavation would be required to do this properly (Figure 15). Nevertheless, we were able to collect information that was useful to Mr. Curran and that could be added to the PAO archaeological sites database.

Permit 21.44 Spread Eagle, Trinity Bay

In early September, the PAO received a Land Use Referral for a property on the western tip of Burnt Point, on the eastern shore of Spread Eagle Bay. In 1612 John Guy spent a few days exploring the lower end of Trinity Bay. He found several Beothuk sites, and actually shared a peaceful meal with a small group of Beothuk, one of very few such encounters of which we are aware. The next year, Henry Crout visited a Beothuk camp on Dildo Island. Trinity Bay also has evidence for other Indigenous occupations and evidence for early European use as well. We also consulted with Bill Gilbert who has a long history of archaeological research in this area. Bill advised us about John Guy and Henry Crout, but also made us aware that local folks have found Indigenous lithic material at several places in Spread Eagle and Little Ridge in Chapel Arm, west of Spread Eagle Bay. With all this in mind and knowing there has been a lack of survey work in the area, two members of the PAO spent the day investigating a couple of small places in the area.

After departing St. John's we arrived in the Burnt Point area around mid-morning, we drove around for a little less than an hour looking for the best place to access the Land Use Referral area on the eastern side of Spread Eagle Bay. We walked to the tip of the point and just beyond to get a better sense of the land. We found a small low fieldstone wall just north of the referral property. Finally, we accessed the area and found the approximate corners of the property and searched numerous tree throws for evidence of cultural material with no luck. On the western side of the property, we located a suspicious looking cleared flat area that appeared as though it had a rectangular outline. We dug two test pits in this clearing and found nothing cultural so we think this is just a natural flat clearing. Much of the eastern half of the property was wet and unfit for habitation. About 20m southwest of the suspicious cleared flat area we did locate a large root cellar (~7m x ~7m across measured from the outside base of the wall to the opposite outside base of the wall). There appears to be an entrance facing Spread Eagle Bay. It is more than 70 cm deep with visible layers of stone cobbles on the outside. A test pit inside revealed no cultural material (CjAj-13).

After finishing at Burnt Point we drove to the end of the road on the western side of Spread Eagle Bay. We planned to walk to Little Ridge on the eastern shore of Chapel Arm. However, we did not realize the trail we needed to follow went around the point resulting in a walk that was just over 3km long, one way, not particularly long but unexpected.

Arriving at Little Ridge (CjAj-14), we immediately noticed a very large depression on our left that was obviously dug into the beach. We do not believe it was a root cellar because it was too big and deep and such structures are rarely found in active beaches. However, we are certain is cultural. The depression is in the foreground of Figure 7.

After examining the depression, explored the far end of the beach and the grassy terraces seen in Figures 6 & 7. The grassy terraces contained several depressions that are likely former root cellars and building foundations (Figure 5). We noted in particular at least one large flat rectangular area with a very low mound outline and evidence of a low stone wall on the west side. The terraces were likely once the location of several buildings and likely a house or two. We saw nothing to suggest this occupation was particularly old, most likely it was dated to the early 20th century or maybe as early as the late 19th century. Unfortunately, we also encountered metal detectorists

21.44 Figure 1: Dorset Pre-Inuit tip-fluted chert endblade surface collected by a local person at Little Ridge in Chapel Arm (Gilbert).

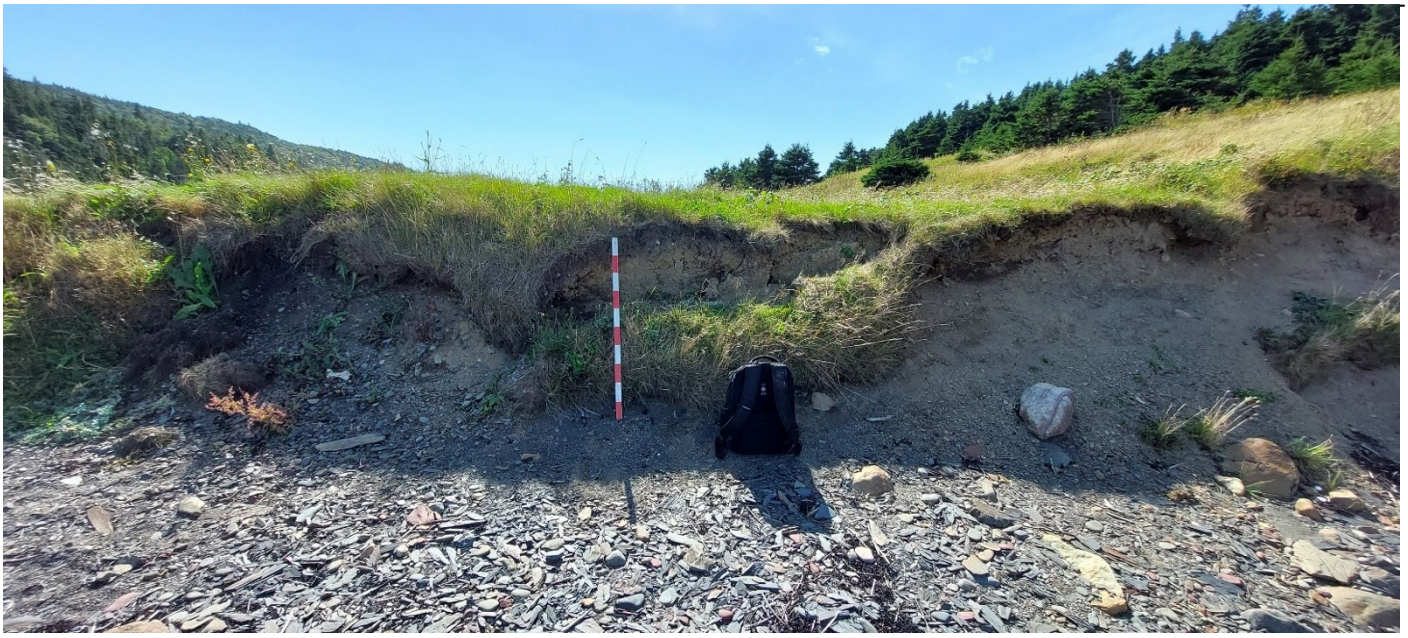
21.44 Figure 2: The outside of the root cellar, cobbles are visible near the base of the cellar on the right.

holes; next to one, we found a discarded iron stove leg.

The north end of the grassy terrace area is actively eroding as is evidenced by a nearly vertical bank that is in excess of a metre high and with large chunks of sod and grass hanging over the edge (Figures 4 & 7). We found several very small chert finishing flakes in this area (not collected). Based on what Bill Gilbert told us the Dorset endblade came from this area. Judging by what we saw there is little if any of the site remaining *in situ*.

After thoroughly examining the bank and nearby beach looking for lithic material we left the area and drove back to St. John's.

21.44 Figure 3: Red line is our track log, three of the green dots mark the approximate corners of the property. The green dot at the top of the photo marks the location of the stone wall and is just outside the property. The yellow star is the location of the cellar.



21.44 Figure 4: Eroding bank at the north end of Little Ridge.

21.44 Figure 5: One of several depressions seen in the grassy terrace area of Little Ridge.

21.44 Figure 6: Red line is our track log; green dots mark the location of some of the historic structures. The yellow star marks where we found very small finishing flakes. It also marks the approximate area of the endblade find.

21.44 Figure 7: Looking west, the first large depression we saw is in the foreground of the photo. The green field contains the historic structures and former gardens. The very small finishing flakes and endblade were found on the lowest end of the eroding bank on the right of the photo.

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Government House and Grounds Overview Assessment

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Consulting Archaeologist

In the summer of 2021, I completed an Overview Assessment of Government House grounds and adjacent properties in St. John's, for the Provincial Archaeology Office [PAO] under the Directed Research Program. Numbering among the oldest historic properties in St. John's, and as the official residence of the Governors (and later Lieutenant Governors) of Newfoundland, this building and its surrounding property are important historic resources, locally, provincially, and nationally. As a National Historic Site of Canada, Government House has been commemorated for its historical associations, its architectural design, and for its landscaped 22-acre grounds.

In response to proposed landscaping work on Government House grounds, an Overview Assessment and walking survey of the grounds (Permit 21.53) were completed to identify and evaluate the potential for archaeological and historical resources on Government House grounds and for adjacent properties located outside its formal boundaries (Crompton 2021).

Background History

Historically, the lands occupied by Government House had been known as the Barrens, and which had been reserved for Ordnance use since the eighteenth century. Most of these lands had been used for farming and gardening, with the exception of a Garrison Hospital, which had been constructed in 1805 and occupied the southwestern portion of what, is now Government House grounds. The Garrison Hospital was a 3-bayed structure of 80 feet long by 30 feet wide (Wyatt and Reilly 1830, July 16). A Surgeon's garden lay to the south of the hospital grounds, and to the north of the hospital itself lay three small buildings- one unlabelled (possibly a privy), stables, and a guardhouse. The Garrison Hospital likely remained the only building in the area until Government House construction crews arrived in 1827 (See PAO & B. Temple, this volume for more).

Plans for the construction of a New Government House were started in earnest in 1825 with the arrival of Governor Sir Thomas Cochrane. This was a watershed moment in Newfoundland's colonial history. For the first time, Newfoundland was to be a formal colony with a civilian Governor. This event ended the long rule of Naval Admirals, and ushered in legal reforms and eventually electoral representation (Bannister 2017). Little wonder that a new approach to governing Newfoundland gave way to new means of representing governmental authority, in the form of a New Government House. Additionally, Old Government House at Fort Townshend was described by both Cochrane and local Ordnance officers alike as in a perilous and uninhabitable state, meaning that building a New Government House became a priority.

Construction began in 1827, after two years of negotiating plans and costing estimates. Costs quickly spiralled upwards, because of errors in compiling estimates, rising labour and materials costs, and as Cochrane continued to alter the plans of the house and grounds while construction was ongoing. By the time Government House was completed in June of 1831, the original estimate of £8,778 had ballooned to a final cost of some £38,000—an extraordinary cost overrun. While the house was built of solid stone materials, and had very good interior accommodations particularly for its public functions, it had been built at enormous expense. It was said to be too large and expensive for the comfort of subsequent Governors, its site too unsheltered and exposed, and "not possessed of any exterior architectural beauties, does not much ornament the capital" (Bonnycastle 1842). Nevertheless, it was finished, and has been continually occupied by Governors (and later Lieutenant Governors) ever since.

Overview Assessment Results

After a thorough search of archival documents, maps, and secondary literature, it is clear that Government House and the layout of its grounds are a remarkable historical survival. The house itself remains as an excellent example of Palladian-style construction, built with a combination of local and imported stone;

Figure 1: Government House to southeast, as seen from the treed landscape of the north lawn. Photo by author.

many of its interior furnishings also remain intact (Figure 1). Broadly speaking, and with a few notable exceptions, the general layout of the grounds has also remained the same since the 19th century. The lands to the south of the house is a formal garden today, and have remained so since construction of the house was completed, with tree plantings started fairly early on and serpentine pathways in place since the 1850s. The Glass Conservatory beside Government House was built sometime before 1872, and still stands in the same location today.

The area immediately to the north of the house has likewise been used for decorative tree plantings since its earliest years, with wandering pathways variously laid through the plantings. Further to the north, fields and kitchen gardens much in the same location as the current fields and garden area is today occupied the lands. The Royal Newfoundland Constabulary's horse stables are in the same location as stables constructed by the early 1840s. The West Lodge and East Lodge gatehouses first appear on maps of the property drawn up in 1830, though the present buildings have been much altered and renovated in the ensuing years. The Gardeners House, first appearing on a map of 1879, shows a building much in the same shape and location as the current building today, standing alongside Bannerman Road. Though borders have been altered, and property lines (particularly on the King's Bridge Road side) have shifted, the overall functional layout of Government House and its grounds are much the same today as they were in the nineteenth century.

However, some changes to the grounds were uncovered in archival sources. For example, the Old Garrison Hospital remained in use until the 1850s, and was finally sold and demolished sometime between 1852 and 1857. The Garrison Hospital site appears to have been used only as a field in subsequent years (Crompton 2021).

Some new constructions also changed the Government House landscape. For example, by 1915 a tennis court had been constructed to the north of the house (Figure 2). Then-Governor Davidson's personal diaries contain several references to his daughters Diana and Daphne learning to skate on the tennis court when the lawn flooded and froze in the winter (Davidson 1915, January 27-28).

In 1881, a four-sided stone, resembling a survey benchmark was installed near the corner of Bannerman and Circular Roads. Though references to the installation of survey monuments were not uncovered in the archival sources consulted, it does seem most likely that the stone was one of a series used to mark the boundaries of Government House by the Newfoundland Government. It may well have been part of a move to understand and codify existing boundaries in the local landscape, particularly in a time when the immediate landscape was changing. The British

Imperial garrisons were withdrawn from Newfoundland in 1870, and as a result, existing Ordnance properties such as Commissariat House and the Commanding Engineer's Residence (#21 King's Bridge Road) were adapted to other uses. Additionally, work was underway to open Bannerman Park (which had been Government House land, and was later provided for the park). Perhaps the need to mark the boundaries of Government House grounds with boundary stones was a result of changes in land tenure occurring around its boundaries.

Pathways through the grounds were sometimes altered. For example, Governor Davidson wrote that his best achievement in Government House grounds was the installation of a broad straight walkway topped with comminuted seashells, which he obtained from the ballast of fishing schooners that arrived from Labrador. Prisoners from the Penitentiary completed the pathway work; he records that the prisoners worked enthusiastically when he told them he would name the pathway "Pennsylvania Avenue" in honor of their hard work (Davidson 1917, April 30). Other constructions or alterations to the grounds included the construction of wells, water pipes, drains, the installation of electrical lines, and the erection of a summerhouse, the locations of which are not well documented in contemporary maps or documents.

Plantings of gardens and trees varied by Governors through the years. Generally, each Governor sought to make alterations to the grounds in terms of plantings and garden arrangements, though some were more enthusiastic gardeners than others. During the First World War period, the landscape designer Rudolf H.K. Cochius (one of the designers of Bowring Park) visited the grounds and made suggestions for redesigned plantings, for example. Later, Governor Harris wrote that he had gone to a great deal of trouble and expense in replanting parts of the grounds, improving garden layouts and arrangements so that they would be a permanent credit to the colony. "A good deal of money had apparently been thrown away upon ill-judged planting (and in this climate the planting of trees requires very great judgment) and recently goats and other animals had been allowed to run about the grounds and destroy the attempts which had been previously made" (Harris 1921, February 10, 1921, February 18). From this point onwards, a Public Works department Inspector for Government House remained responsible for overseeing work on the grounds, to ensure continuity of care for the grounds and to prevent future neglect.

Other changes to the landscape include the construction of a World War II anti-aircraft gun battery, bearing a Bofors gun and a nearby structure installed by the Canadian Army. The gun emplacement had been removed by 1946. A Government House

Figure 2: The flat area at the centre of this photo is the early twentieth century tennis court. Photo by author.

Figure 3: The uneven ground at the centre of this photo likely represents the location of the Old Garrison Hospital. Photo to southwest, taken by author.

caretaker had used the structure in the post-war period for a few years after, though beyond this its use remains unclear.

Recommendations

Despite some changes in land-use, Government House and its grounds remain a remarkably intact survival of nineteenth century formal architecture and garden/landscape planning. In most cases, the existing footprint of historic structures on the grounds remains in situ, and monitoring of any work around these buildings should be undertaken as a matter of course, as each structure may have unrecorded outbuildings and/or garden structures nearby. Most of the remaining landscapes of Government House are agricultural or botanical in nature. As active landscapes, which are integral to the commemorative integrity of this National Historic site, these landscapes should be developed sensitively, in keeping with their historic character. Given the association of these grounds with historic garden parties, receptions, and outdoors pursuits (such as the tennis grounds), careful development of these areas, in keeping with their historic character, might be factored into future plans.

Two areas of Government House grounds were designated as areas with high potential to produce subsurface historic resources: the Old Garrison Hospital grounds and the World War II Battery. At the time of writing the Overview Assessment, the precise location of the hospital building and its associated outbuildings were currently unknown, within the general area to the west of Government House. Undulations on the ground surface noted during the walking survey suggested a potential location (Figure 3). Furthermore, only a limited number of historical sources documenting daily life at the hospital were uncovered in the course of Overview Assessment research, meaning that archaeological remains will tell the majority of the story at this site. Additionally, though no evidence of a hospital graveyard was uncovered, the risk of uncovering stray human remains at this site is a possibility, as the work of surgeons in the hospital would almost certainly have produced body parts in need of disposal (Crompton 2021). For all of these reasons, a cautious approach to any future development in the area is recommended, as well as the use of non-invasive subsurface imaging and excavation to locate extant historical resources.

The second area of very high potential for subsurface remains is the 1945 Bofors Gun emplacement and associated dwelling (Figure 4). These structures are no longer visible on the surface and so this area should be monitored closely during any development of the area. The gun itself was removed following the war— and so, too, one hopes, was any unused ordnance. For the time being, subsurface disturbance is not recommended, as the site is listed with the De-

Figure 4: The area (facing west) at the corner of Bannerman and Circular Roads is the location of the World War II Bofors Gun site.

partment of National Defence as an unassessed site that might bear Unexploded Ordnance (UXO). The status of the Department of National Defence assessment should be investigated prior to any subsurface disturbance or development in this area.

Government House is an important example of 19th century formal architectural design. Though the residence remains the most visually impressive part of the site, Government House is recognized for more than just the construction of the building itself—the grounds are every bit as important as the structure. To this end, considerable effort was undertaken to evaluate the history and potential historical resources for each part of the Government House grounds area. Government House and its grounds are, and continue to be, a significant historical site in St. John's, representing a key node in the history of the city, both civically, provincially, and nationally.

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Analysis of the Peat Garden and Peat Garden North Faunal Assemblages

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In early 2021, the Provincial Archaeology Office of Newfoundland and Labrador contracted me to carry out the detailed analysis of faunal remains recovered from the 1997-2000 excavations at the Peat Garden (EgBf-06) and Peat Garden North (EgBf-18) sites. Portions of these collections had been previously identified and used over the years in teaching zooarchaeology courses, including the Winter 2020 Zooarchaeology (ARCH 4152) course at Memorial University of Newfoundland and Labrador (MUN). However, no systematic analysis had been undertaken on the collections, and all previously available reports were preliminary in nature (Murray 1998, 2000). Both collections were identified by the PAO as important for further study, due to the generally good preservation of the faunal material, and the relatively unique nature of the deposits; Peat Garden (as initially interpreted by Hartery and Rast 2001) is a multicomponent site with both Cow Head complex and Groswater components, while Peat Garden North represents a rare warm season Dorset habitation site (Hartery 2010; Hartery and Rast 2003). Very few faunal assemblages from these site types in the province exist, and even fewer have been analysed to date. In addition to substantially augmenting the body of data pertaining to Dorset and Groswater and/or Cow Head complex subsistence economies, both assemblages presented some interesting taphonomic signatures – these are discussed below. The full reports on the analyses of the faunal remains from these sites are on file with the PAO.

Peat Garden (EgBf-06)

The Peat Garden site is located near the town of Bird Cove on Newfoundland's west coast, and was excavated in 1997, 1999, and 2000 as part of the Bird Cove Archaeology Project. Although it reportedly contains stratigraphically separated Cow Head and Groswater components (Groswater overlain by Cow Head), existing catalogues and information written on faunal sample bags were insufficient to permit separate analyses of each component's faunal collection. However, as it was reported that very little faunal material was recovered from the Cow Head component, it is assumed that the existing collection is affiliated largely with the Groswater component (with perhaps some exceptions, as noted below).

The faunal assemblage totaled 3942 specimens, however due to a high degree of fragmentation and burning within much of the assemblage, the majority (58%) of specimens were unidentifiable below the level of class, and an additional 32% of specimens were unidentifiable to class (these are mostly identified as bird/mammal). The majority of specimens identified to class were identified as mammal (32%), followed by bird (24%), fish (8%), and mollusc (4%, gastropod and bivalve). Identified mammal remains (totaling 336 specimens) are dominated by seal (88%, including ringed, harbour, harp, and bearded seal), as well as smaller quantities of beaver (4%), and small quantities of caribou, lynx, and bear, as well as one small rodent (likely an intrusive vole or lemming). Identified bird remains (totaling 56 specimens) are more varied, with a little over half identified as cormorant, about 30% goose or large duck, and the remainder evenly split between different species of sea birds, including great auk. Finally, fish remains formed a not-insignificant portion of the assemblage, and are comprised of very large Atlantic cod (or cod relatives, 41 specimens) and sculpin (7 specimens).

The presence of seabirds suggests a general warm season of capture, while the juvenile cormorants and other birds indicate a mid-late summer capture, after birds had hatched but before or only shortly after they had fledged. The absence of breeding/laying birds (indicated by medullary bone within the long bones of breeding/laying female birds) might indicate that the site was not occupied during the breeding season (spring-early summer), or else breeding birds were simply not targeted. While most of the mammal species in the assemblage are active, year-round, bearded seals and harp seals would mainly have been available with the sea ice during the winter and early spring before they migrate northward, while harbour seals are more easily taken from the ice edge

Figure 1: Calcined beaver ulna (left) alongside a modern reference specimen (right).

or in the warmer months when they haul out on shore. The assemblage on the whole may therefore represent multiple re-occupations of the same site at different times of year, coinciding with the availability of different resources.

Element representation patterns suggest that most animals arrived at the site whole or that all parts were transported to the site, as all taxa that are represented sufficiently frequently (seals, birds, and cod) are represented by all body parts. Most of the assemblage is quite well preserved relative to most precontact assemblages from Newfoundland, and this has allowed for the identification of cut marks, insect damage, and gnaw marks in most cases. Rodent gnawing was observed on four specimens - a piece of worked ivory, a fish bone, a bird leg bone, and a mammal patella. A vole or lemming was also identified among the faunal remains (likely intrusive) and is a potential culprit. Rodent gnawing is commonly found at a low level such as this in most archaeological assemblages as rodents, as well as rabbits/hares and caribou, are known to consume bone as a source of minerals.

Incidence of burning in the Peat Garden assemblage is relatively high at 27% of all specimens, and nearly all of these were calcined, which is indicative of direct exposure to very high heat over several hours. This may indicate occasional disposal (accidental or deliberate) of food remains in a fire, and possibly the construction of hearths directly overtop of earlier midden deposits, as Hartery (2007) states in a description of the site stratigraphy. Calcined bones are more difficult to identify confidently not only because their brittleness causes them to fragment into much smaller pieces, but also because the process of being burned causes bones to deform in unpredictable ways. Figure 1 displays one such instance, of a calcined beaver ulna alongside a modern reference specimen. Both fragments of the calcined ulna have undergone considerable shrinkage due to the loss of moisture and organic matter during burning, but would otherwise refit except that one fragment has shrunk considerably more than the other.

The most noteworthy and destructive weathering process observed in this assemblage was extensive and intensive boring by bone-eating bugs. These appear as meandering channels across the cortical surface of bones, sometimes with deeper pits penetrating into the medullary cavity or underlying spongy bone (Figure 2). Insect osteophagy would likely have occurred near or above the ground surface, on bone that was clean (had little or no flesh on it) but still somewhat fresh (still contained organic matter – fat and protein in the bone matrix). Insect osteophagy in

Figure 2: Insect-gnawed seal vertebra (EgBf-06:1686-4, FID 109).

Figure 3: Cut bone with grooves from the uneven edge of a chipped stone tool.

archaeological contexts is poorly documented, and the literature largely relates to case studies of termite-damaged human burials in hot, arid environments. This case of insect osteophagy in an arctic/subarctic environment might be of taphonomic interest for understanding insect-mediated destruction of archaeological assemblages, as well as of entomological interest for understanding feeding ecology of insects in archaeological and/or nutrient limited environments.

Cut marks were identified relatively frequently within the Peat Garden assemblage, and though insufficient to completely reconstruct butchery practices, some interesting patterns can be observed. Mammal ribs were typically cut into sections about 5cm long. Vertebrae of seals were frequently cut through the laminae on either side of the centrum, and even unidentifiable fragments of vertebrae followed this pattern. This is a curious pattern of butchery, as this would not aid in disarticulation of the carcass, but may have been employed to access the long ligaments that run the length of the spinal column, perhaps for use in place of caribou sinew as thread. Disarticulation cut marks (small, shallow notches near the points of connection of one bone to another) are rare, but present, as are some cut marks indicative of filleting and skinning, indicating some carcasses were butchered while fresh. Other cut marks are better characterised as chop marks through the shafts of long bones (especially in seal bones, which do not possess a true marrow cavity – see Figure 3), which are commonly found when carcasses are butchered while frozen (Binford 1978:62). This supports an occupation at least partially during the cold season when carcasses would have frozen or when sufficient snow or ice was present for freeze-preserving food when it was abundant. Cut marks are present on fish and bird remains as well, and represent de-heading and de-gilling of the large cod, and both jointing and chopping of bird carcasses.

Although some intriguing patterns can already be discerned, a larger assemblage of identifiable remains would permit a more complete reconstruction of butchery practices and a clearer interpretation of Groswater and Cow Head (if these assemblages can be separated) economies.

Peat Garden North (EgBf-18)

The Peat Garden North site is a warm season Dorset habitation site located about 100m north of Peat Garden, and was excavated as part of the Bird Cove Archaeology Project in 1997 and 2000 (faunal remains recovered from later excavations in 2001 are reported on in Hartery 2010). The assemblage analysed here consisted of 6801 specimens, the majority of which (61%) were identified as mammal, followed by bird remains (27%), fish (1%), and mollusc (0.1%), of which one specimen was a large scallop shell (it should be noted that large quantities of shell were reported from later excavations at the site). The remaining 11% of the remains were fragmentary remains identified only as bird/mammal. Identified mammal remains (868 specimens) consisted of seal remains (85%), as well as a significant quantity of caribou (9%), followed by small quantities of walrus, polar bear, worked whale bone, wolf/dog (most likely wolf), fox, otter, hare, beaver, and a (likely intrusive) vole. Identified bird remains (221 specimens) are less varied, and consist mainly of geese with small quantities of ground birds and sea birds. Finally, identified fish remains are few (16 specimens), and include flatfish (halibut, and possibly others), sculpin, and one very large tuna vertebra, 57mm in diameter. It is not clear if the tuna had been caught and eaten, or was present as a fascinating beach find, though additional

Figure 4: Insect-gnawed seal phalanx (EgBf-18 FID 1288, left) and modern reference specimen.

tuna elements were recovered in the 2001 excavations (Hartery 2010).

Most animals seem to have arrived at the site whole, or all parts were transported to the site, as all species that are represented sufficiently frequently (seals, birds, and sculpins) are represented by all body parts. Caribou were represented by all elements except the humerus and tibia. However, many specimens that were not otherwise identifiable were identified as fragments of long bones of large terrestrial mammals, and many of the identified caribou long bone specimens had been cut to expose the marrow cavity. This processing of caribou bones for marrow is likely the cause of the underrepresentation of identified humeri and tibiae. Nearly all of the antler identified within the assemblage was tentatively identified, as it was present without the outer layer of compact bone, which appeared to have been removed by planing or gouging the cancellous bone away from the dense outer layer.

Cut marks were identified relatively frequently within the Peat Garden North assemblage, with patterns similar to those observed at Peat Garden. Mammal ribs were again typically cut into sections about 5cm long, and vertebrae of seals and caribou were often cut through the laminae on either side of the centrum, though not as frequently as at Peat Garden. Disarticulation cut marks are rare, but present, but most other cut marks are better characterised as chop marks through the shafts of long bones. As at Peat Garden, insect boring was the most destructive weathering process observed in this assemblage (Figure 4). Incidence of burning at Peat Garden North is very low, with less than 1% of specimens exhibiting evidence of having been burned. About half of these are better characterised as heat altered (by indirect exposure to intense heat), while the remainder were calcined. This may indicate that a fire occurred or was constructed overtop a deposit of faunal remains, with or without the occasional disposal (accidental or deliberate) of food remains in a fire.

At least 12 seals are present in the assemblage overall, of which at least five are harp seals, one is a harbour seal, and three are bearded seals – of these, at least two are adult male large seals (possibly bearded seals), as indicated by two bacula. A small number of seal remains were identified as fetal or neonate remains (less than about 2 months old). The single walrus was represented both by fragments of worked ivory and by elements of the post-cranial skeleton, indicating that it was likely hunted nearby and consumed on site. This is an important distinction for an animal that has often been considered as crucial to Dorset economies, but is rarely identified except as ivory in Dorset assemblages in Newfoundland (e.g., Hartery 2010; Murray 1992, 1998; Wells 2012).

Many of the bird remains from Peat Garden North (at least nine individuals, likely all geese) contained medullary bone – a type of spongy bone that forms within the cavities of the bones of female birds during the breeding season, just prior to and during egg laying, as a reserve of minerals for the creation of eggshells. This, combined with the seasonally available bearded and harp seals and neonatal seals in the assemblage, indicates an occupation from the early spring through summer, in accordance with the architectural remains and the faunal remains analysed by Hartery (2010). There are subtle signs within the assemblage that have in other contexts been interpreted as signs of economic stress: increased diversity in diet breadth associated with novel animal harvest strate-

gies and species of lower economic utility (such as terrestrial carnivores and out-of-season caribou) (Colson 1979; Hawkins et al. 2018), and intensified extraction of nutrients and other resources from familiar species (such as the careful butchery of seal spines for sinew). It is difficult at this point to say whether these patterns *are* indicative of economic stress, or if they are instead characteristic of Dorset economies in the region, as the relevant literature is dominated by analyses from a single exceptional complex of sites – Phillip's Garden, a winter habitation site near Port au Choix, where seals dominated the assemblage. Faunal assemblages with high taxonomic richness (many species present) have been observed in warm season Dorset assemblages elsewhere in the arctic (e.g. Darwent and Foin 2010; Howse et al. 2021), but more research will be required to determine what a "typical" Dorset spring/summer subsistence economy looks like in western Newfoundland.

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Archaeological Monitoring of the Geology Research Camp at Kamestastin, Fall 2021 Permit #21.42

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Figure 1: Looking south-southwest from the top of Kamestastin-utshu, where the Western University geology team began their investigation of the cliff face.

In September 2021, the Innu Nation requested that archaeological monitoring be conducted of a geological research project at Kamestastin (also referred to as Mistastin Lake, or Kameshtashtan). The Western University 2021 Mistastin Expedition was the latest in a series of investigations by planetary geologists looking at remnants of a ~36-million-year-old impact crater in northern Labrador. The archaeological monitoring related to their research activity including the operation of a temporary base camp. This was conducted in proximity to cultural resources relating to both contemporary Innu and past Indigenous cultures. This report provides a brief overview of the context and results of the monitoring conducted under Permit #21.42.

This report follows the recent examples of Arbour, Jenkinson, and Loring who refer to the lake as Kamestastin. Previous site forms have used the variant spelling of Kamistastin, and in standard Innu-aimun orthography, this would be rendered as Kameshtashtan. All of them have the same meaning, roughly "the place where the wind blows everything off the ground." The toponym officially recognized by the provincial and federal geographic name boards is Mistastin Lake. Some issues of toponymy will be discussed later in this report.

Background

Kamestastin is located in northern Labrador at approximately 55.8833° N, -63.3333° W, about 125 km west of Natuashish. It is a culturally significant area to the Innu living north-central Labrador, and in partic-

ular the Mushuau-innut families from Natuashish. The lake is in the Taiga Shield ecoregion and characterized as high subarctic tundra with variable precipitation, short cool summers, and long cold winters. The local vegetation consists of lichen and grass tundra with willow thickets and spruce stands in sheltered areas. The lake is fed by a series of brooks, the largest entering the lake at its western end, and drained by the Kamestastin (Mistastin) River which exits at its northeast. The latter eventually drains into the Kogaluk River and thence to the Atlantic, about 30 km northwest of Natuashish. The narrows on the eastern river is a significant spot for caribou hunting, and the lake boasts a population of landlocked Arctic char. The Kamestastin area has been the focus of long-term seasonal occupations from the Archaic to the present day. Innu cabins are located at the east end of the lake and on the western shore south of a large river delta. The cabins are occupied at peak periods during spring, fall with access through a combination of charter aircraft flights, and snowmobile. While this fieldwork was underway, Mushuau-innut families were beginning to arrive for a fall gathering and ceremony.

Archaeological research at Kamestastin has been ongoing since the late 1990s with contributions by Tony Jenkinson, Stephen Loring, Chelsee Arbour, and others (Arbour & Jenkinson, 2013; Arbour et al., 2012; Arbour, Ashini et al., 2019; Jenkinson, 2010, 2015, 2016, 2017, 2018, 2019; Jenkinson & Ashini, 2014; Loring, 2001, 2004, 2005, 2007, 2008; Loring & Jenkinson, 2008, 2011; Loring et al., 2009). Through their work, the area has been the focus of an ongoing research programme largely organized through the Tshikapisk Foundation in partnership with the Smithsonian Institution.

Kamestastin is also of interest to planetary geologists as it is the remnants of a meteorite impact crater dating to approximately 36 million years ago. The lake has a circular aspect ringed with hills that are parts of the eroded crater rim, and Mistaministuk (Horseshoe Island) is the crater's central uplift. Portions of the parent bedrock are present, as is shocked rock resulting from the impact and even exposed sections of the impact floor. The lakebed was once lined with impact melt, which was present in a number of solid, vesicular, and glassy forms. Over time, much of this melt rock has been eroded or removed by glacial action and in some areas thick layers of glacial till have been deposited over underlying material. The lake is visually impressive, due to both its enclosure within a hedge of low hills (the eroded crater rim) and the presence of Kamestastin-utshu (also called Discovery Hill) at its west end. The crater is significant to geologists as its anorthosite-dominated geology makes it a terrestrial analogue site for lunar exploration (Anonenko et al., 2013; Mader et al., 2013; Mader, 2015). It is the subject of a multiyear field project that first visited the area in 2009 (Mader et al., 2013), based on mapping and research conducted starting in the 1970s (e.g., Currie, 1971; Grieve, 1975; Marion, 2009). The geological research team included team members from Western University (formerly the University of Western Ontario) plus participants from Canadian and American space agencies. The two astronauts participating in this year's fieldwork were engaged in training to observe impact structures in a more down-to-earth setting.

Following one previous field season when the base camp was situated on the north side of the lake, concerns were raised over alteration of archaeological features during the establishment of the field camp (Jenkinson, personal communication). The camp was relocated in subsequent field seasons to the area of the airstrip on the west side of the lake, (the 2021 camp was adjacent to an existing airstrip about 1.5 km north of Kamestastin-utshu). I was asked to accompany the Western University team by Jodie Ashini, the Culture/Heritage Guardian for the Innu Nation. My priorities for the trip were as follows:

1. Assess the base camp location, ensuring minimal impact on cultural resources (archaeological and ethnographic);
2. Minimize crew impact on cultural resources while engaged in geological survey and sampling;
3. Visit sites documented previously in the survey area;
4. Engage in reconnaissance for new archaeological sites as time permitted; and
5. Act as an informal liaison to Innu Nation prior to the arrival of Innu guardians.

September 2021 Fieldwork

The archaeological activity involved monitoring the establishment, operation, and takedown of the geological research base camp. The base camp established by the Western University team had no perma-

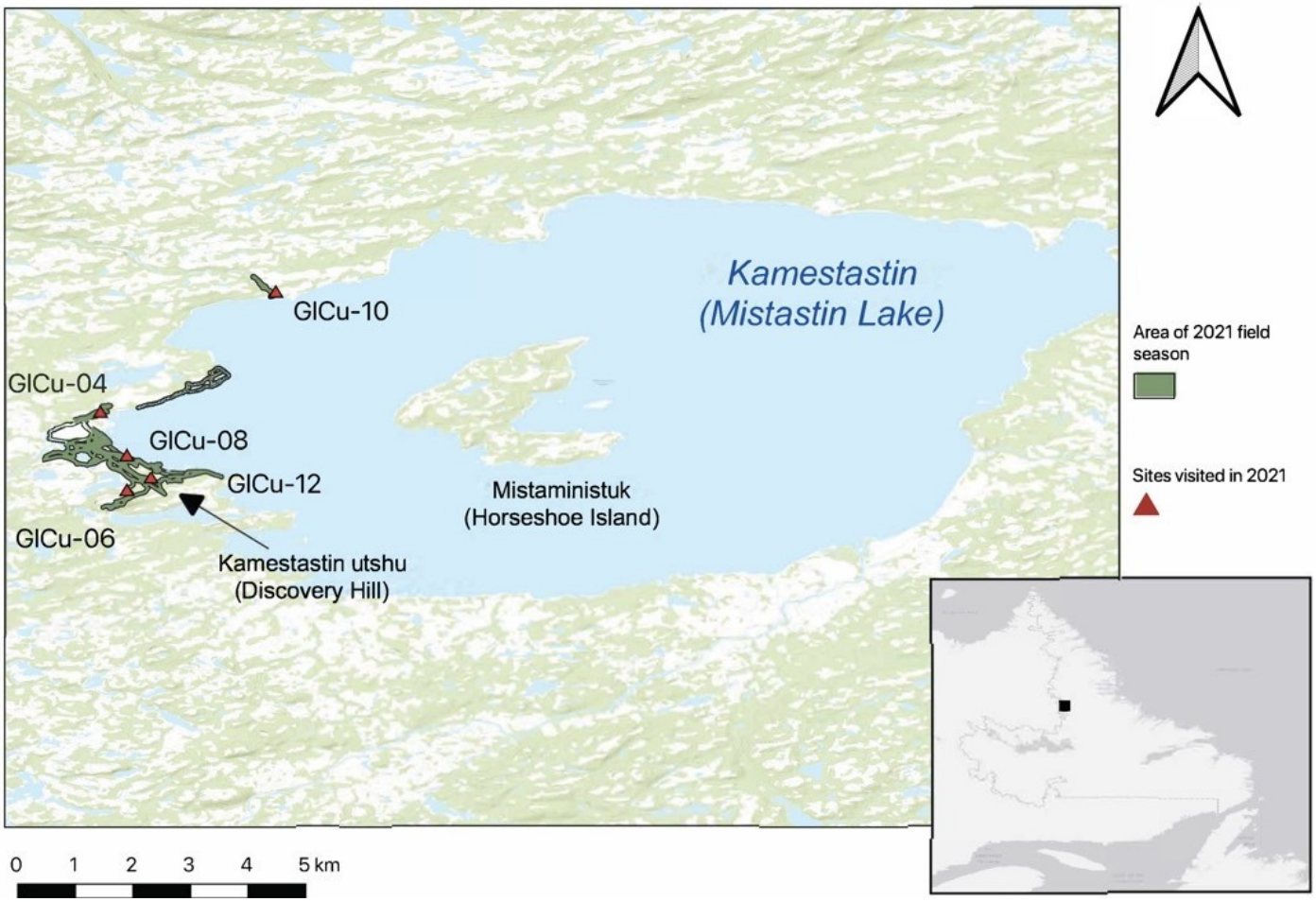

Figure 2: Areas investigated in 2021 under Permit #21.42.
QGIS 3.4.12 (30 October 2021). Overview Map – Kamestastin Lake. 20U, 471234.96 mE, 6199453.03 m N. ESRI Top. (Accessed 30 November 2021)

nent structures. It was centred upon two large dome tents (~5 m diameter), one used as a kitchen tent and another as a research space and gathering area. The crew's tents extended ~30 m south from the main base camp structures and consisted of nine personal dome tents. Amenities included a gas generator, solar paneling, and camp kitchen, gravity filters for water, a Zodiac, and multiple drones. Modifications made to the immediate landscape included the digging of three latrines, a small sump, and a firepit. The author, who observed no cultural objects or soil modifications, inspected the soil and pit wall profiles of these three features.

In addition, I re-visited archaeological sites near to the camp that had been identified during previous field projects. The geology team principally focused on locations on the lake's west side but also investigated bedrock exposures on the lake's south shore. Had the weather (and boat motor) permitted, they planned to return to the north-central shore and to visit Mistaministuk. I accompanied their crew on initial site visits whenever possible and inspected the routes for cultural materials.

Methods

The monitoring component of this work consisted of a visual evaluation of field camp footprint and travel routes; assessment of geological sampling against perceived archaeological potential; and examination of geological samples for archaeological origin. Near-camp reconnaissance also allowed re-visits to known archaeological sites in the area and the recording of new sites in the local area if such were encountered. Site investigation involved judgmental pedestrian survey (by foot and Zodiac) and surface collection. Shovel testing was proposed in the event of discovery of new sites, but none were dug as no new sites were noted (though pits dug for camp use were inspected being *de facto* test pits). Visible heritage features were

documented through field notes, digital photography, and GPS coordinates and tracks.

Timeline

On September 3, 2021, I flew from Happy Valley-Goose Bay to Kamestastin, arriving with the project's principal investigator (Dr. Gordon Osinski) and three graduate students from Western University. We touched down at the western airstrip behind the Mushuau-innut camp, approximately 500 metres west of the lakeshore. After we unloaded the aircraft, I assessed the proposed camp location and photographed the area. It was decided to shift the camp slightly south of its proposed location, away from small stands of spruce near the airstrip with caribou antlers suspended in their branches. Hanging caribou antlers in trees is an Innu practice intended to show respect for the animals and Kanipanakasikueu, the god or master spirit of the caribou who is an intermediary between Innu and the caribou (Armitage, 1992; Castro, 2015). At the request of Jodie Ashini (the Innu Nation's Culture/Heritage Guardian), I briefed the crew on Innu protocols for respecting the land as best I understood them. This conversation wasrepeated in the following days upon the arrival of the Innu guardians, Hank Rich and Sebastian Piwas.

The area where the camp was placed is a transportation corridor between the airstrip and the Innu cabins. The cabins extend along the beach from the western delta to a small point about 1.5 km south of it, and the area is criss-crossed by ATV and snowmobile tracks. After the base camp was established, we made our first trip to Kamestastin Hill. Along the way I made the first re-visits to sites GlCu-06, GlCu-08, and GlCu-12. Having determined that GlCu-08 was on the route between our base camp and the lake, I used flagging tape to indicate a 10-metre buffer for the crew to avoid the site. I made a similar diversion for GlCu-12, which was situated in a sandy blow out directly in the path of foot and ATV traffic. These sites will be discussed in more detail in later sections of this report.

The remainder of the crew plus the two Innu guardians arrived on September 6, 2021. While they settled in, I made my first trip to the Ataka Village Site (GlCu-04). I located six of the eight structures identified in previous field seasons and recovered a single flake. I returned to the site on later days and attempted to push along the north bank of the river towards the Ray (GlCu-15) and Benuen (GlCu-01) sites. I was unable to get to those locations due to the density of alder brush; upon finding a better crossing to their west, I was thwarted again the following week as rainfall had increased the river's flow.

Between September 7 and September 14, I accompanied the geology crew on their rounds and reconnoitered the western shore. This included making a visual survey of the footprint of the soon-to-be expanded camp footprint. During this period, the team successfully flew drone surveys and sampled locations at Kamestastin Hill, near creek mouths on the northwest and south shores of the lake, and outcrops west of the camp. Persistent trouble with the boat motor prevented me from accompanying the crew to the south shore but I was able to assess most other locations or routes independently.

The area around the lake has intermittent outcrops of shocked mangerite and anorthosite as well as occasionally extensive patches of melt rock. Much of the latter is coarse and vesicular but textures vary widely. The suitability of melt rock for tool making is low, though it could serve for abrading tools or tie-downs. A large expanse of vesicular melt can be found on the beach of the large point west of GlCu-03. Melt of a more vitreous nature, such as the obsidian-like melt glass described previously by Loring (2010), may have been better suited to flintknapping. However, no artifacts in the material have ever been found (Arbour, personal communication; Jenkinson, personal communication). During this trip, samples of black melt glass were collected while hiking on the shore at the easternmost slope of Kamestastin Hill, and in the future may be assessed for their flaking characteristics.

As the camp was being taken down on September 15, I observed some lithic flakes near one of the communal tents (see figure 3). These were quickly determined to be the result of the processing of geological samples brought back to the camp on the basis of their location near the sample storage and their being struck from melt rock rather than a tool stone. The waste flakes were collected but this has some implications for cultural resource management in the area. Modern flakes may be confused with archaeological ones. In this case, these flakes were produced at the base camp but it is clear that geological sam-

Figure 3: Melt rock flake and shatter recovered from base camp.

pling with rock hammers could produce similar flakes in more remote locations.

Sites Visited: GlCu-03

Also called Kamestastin-5, this site is located at the mouth of a brook that enters the north-central shore of Kamestastin from the northwest. This stream is referred to as "Coté Creek" in geology publications, including those by the Western University geology team. The sites at this location were previously recorded by Stephen Loring in 1998 and 2001 (Loring, 2001) and the area has since been regularly revisited by Tony Jenkinson. Sites at this location occur on both sides of the stream mouth: most of the occupations lie on riverbank terraces running east from the river (Areas I-V), and there were flake scatters of Ramah chert on east-west terraces running from the brooks west bank (Area VI). This terrace is directly south of a distinctive steep cutbank on the brook's north side, exposing a cliff of grey-white anorthosite. Previous finds from the area included quartz and Ramah chert debitage; a dark brown chert projectile point in Area V assigned to the Intermediate period; an eroding hearth of fire-cracked rock in association with quartz and Ramah chert flakes close to the cusp of the bank which backs the riverside beach; and a Maritime Archaic bilobate tent ring in Area III near which were noted an endscraper, a large multibladed tool of Ramah chert, and two pestles. All occupations at these sites are thought to be Precontact in origin. Close by but further to the east, members of an archaeological Innu survey party reported a boulder mound in an otherwise sandy area. The description given raises the possibility that this was a burial but no GPS coordinates were obtained and the find was never subsequently relocated (Jenkinson, personal communication).

On September 7, I accompanied the crew on a Zodiac trip to a creek mouth on the lake's north shore. This creek was identified by the geology team as Coté Creek, but this is not a local toponym. This stream mouth is close to three known sites (GlCu-03, GlCu-10, and GlCu-14) but our landing only allowed time to access one of them – GlCu-03. The site visit focused on Area VI as it was adjacent to the boat landing site and was the gateway to geological sam-

Figure 4: The crew arrives at GlCu-03 and has its first spot of motor trouble. Looking south from shore.

Figure 5: Quartz flake recovered from the surface of GlCu-03, Area VI (east at top).

Figure 6: Past disturbance of rocks at GlCu-03, Area VI (south at top).

pling on the river's east side. The area was walked in north-south and east-west transects at approximately 2-metre spacing, covering a total area of about 200 m². Surface collection recovered a single artifact: a quartz flake in a deflated area surrounded by gravel and patchy lichen. The find is not a surprise considering that quartz flakes were found in this area in past years.

Sometime prior to 2015, Area VI was partly disturbed by a previous party of geologists who established a camp at the site and moved boulders to be used as tent hold-downs. The 2021 re-visit noted no new disturbance, though recent hearths were present on the beach south of the area. After having walked the site and nearby deflated areas, the geology team proposed that their crew bypass the site by taking an old caribou track to its east, up onto the higher terrace above the site and along the east bank of the brook. This is in the area of the bilobate tent ring but the route did not appear to intersect it. This route was followed in subsequent days. An alternate path may be required in future that avoids these features entirely.

GlCu-04

The Ataka Village site (also called Kamestastin-9) is a significant site at Kamestastin. It is a large Innu village site, likely dating to the mid- to late 19th century. As such, the site is important for demonstrating the extent of Innu land tenure during that period. The site is situated at the west end of the lake, on a low bedrock knoll on the north shore of the delta directly across from the Mushuau-innut camp. The knoll has two peaks, the higher elevation being to the north, and a sandy "saddle" between them. Prior investigation recorded at least six oval and rectangular tent-rings with raised earth walls, as well as stone box cache pits and rock alignments, situated east and above he saddle on the southern flank of the knoll (PAO, 2014). Two other structures with stone hearths were previously recorded at a slightly lower elevation south of the main site. Artifacts found in previous seasons were consistent with the 19th century period including tobacco tags and trade beads.

During the 2021 re-visit, at least five of the tent rings were relocated, including one structure that had been partially excavated in past field seasons (see Figures 7 and 8). A single artifact was recovered, a spot find of an irregular flake of Ramah chert (see Figure 9). It was not in association with the tent rings, but rather some 700 metres away on the southernmost slope of the hill close to the shoreline. Another spot find was made in 1998 at the site's west end, a

Figure 7: One of the house structures at the Ataka Village Site, GlCu-04 (looking west).

Figure 8: A chaining pin was found from the prior excavation at GlCu-04 (south at top).

Figure 9: Ramah chert flake found at GlCu-04.

Ramah chert biface, also at some distance from the tent rings in the core area of the site. The Ataka site is extensive and should be re-visited in the future. The area east and southeast of Ataka should also be looked at more closely, particularly areas now obscured by alders (Jenkinson, personal communication).

Some snowmobile tracks were seen crossing the site from north to south, across the sandy middle area. This was likely from a transit in spring when snow levels were reduced. While no features were disturbed, the site should continue to be monitored.

GlCu-06

The site is located on the upper mid-slope of Kamestastin Hill, about 200 metres east of its western lip, in a rocky lichen barren. Surface collection in past field seasons included occasional scattered flakes (Loring, 2011). In 2021, a single artifact was recovered from the site: a modified piece of quartz, possibly a pièce esquillée or core remnant (see Figure 9). Upslope from the site is a more level surface on the hill where a cloth offering had been recently affixed to a small tree, but otherwise nothing else of human manufacture was observed in the immediate area.

The geology team initially marshalled in a flat area about 200 metres south of the site, at which point the hill's southern cliff face could be accessed for rappelling. They also investigated all other faces of the hill. In subsequent days, the Mushuau-innut conducted ceremonies on the hill and the area is clearly a focus of recent cultural activity. After my initial surface collection, I flagged the area of GlCu-06 and recommended that the crew avoid travelling directly through it.

GlCu-08

This site, also referred to as Kamestastin-19, is situated at the western shore of the lake about 750 metres south of the western delta and 1 km south of the Ataka village site (GlCu-04). The site previously yielded a single black lithic flake possibly dating to the Intermediate period, which was found in proximity to a pair of recent Innu tent sites (Loring, 1998).

Wave action on the shoreline has created sand ridges parallel to the beach. An extensive network of ATV trails mostly follows these ridges. A cabin in current use is located 130 m north-northwest of the site. The Western University geology team initially planned to travel through this area when getting water for camp. On my initial visit on September 9, I flagged the site and directed them to avoid a 5 m radius around its coordinates. Daily monitoring of the beach ridge yielded no new finds nor any signs of the former winter camps. The degree of disturbance and limited yield lead me to recommend that the site not be considered a priority in future field seasons.

Figure 10: Quartz artifact found at GlCu-03 (north at top).

Figure 11: Quartz artifact found at GlCu-03.

GlCu-12

Tony Jenkinson and Richard Nuna first recorded the Kam Hill North Deflated Hearth site in 2001. As its name suggests, it consisted of the remains of a hearth in the middle of a sandy blow-out on the north flank of the ramp leading up to Kamestastin Hill. No artifacts were recovered at the time, but some feature rock remained including a fragment of columnar melt rock. In the site form for GlCu-12, Jenkinson noted that tabular or columnar melt rock had been observed in association with several archaeological and ethnographic sites in the Kamestastin area (PAO, 2015).

Upon Jenkinson's suggestion, I re-visited the site during the 2021 field season. Given the deflation and the error inherent to GPS coordinates, it was difficult to immediately identify the site. It was finally located through comparison with photos that he took in 2014-2015 (Jenkinson, personal communication). The site was observed to consist of one piece of ap-

Figure 12: Looking west from GlCu-08, towards the base camp.

Figure 13: Kam Hill Deflated Hearth site, GlCu-12 (looking southwest). Note ATV tracks in area.

Figure 14: The disturbed remnant of the deflated hearth at GlCu-12 (east at top).

parently fire cracked rock in a sandy blow out, in close association with a single columnar piece of meteorite impact melt rock. Both rocks were under 30 cm in length. No other cultural material was visible on the loose sandy surface. The rocks are not in the same positions as they were in Jenkinson's 2015 photograph. ATV tracks cut through the blowout in which the hearth is centrally located, though a recent bone fragment was observed 10 m NW of the site.

The site was directly in the path of the Western University geology crew as they made their way daily to Kamestastin Hill. The area was flagged, and the crew directed to bypass the site by walking several metres away on the edge of the blowout. Despite the attempt at avoidance, the site has been significantly disturbed and ATV traffic in the area will continue to degrade its already limited integrity. It is recommended that the site not be considered a priority in future field seasons.

What's in a Name?

As I noted at the beginning of this article, individual sites and features in the Kamestastin area may have multiple names. Most of these are variations on a theme: different ways of phonetically rendering Innu-aimun into English. Topographic maps anglicize Kamestastin as "Mistastin Lake," a name that is perpetuated in non-Innu literature. Others are outside names superimposed on Innu toponymy (see Figure 15).

Several features have no recorded Innu names at all and are probably referred to informally or descriptively (Jenkinson, personal communication). For example, Kamestastin Hill is the focus of geological interest and a prominent feature important to Innu culture. During our visit we were frequently cautioned by people not to point at the hill as doing so could cause the weather to change for the worse. This headland could be referred to locally as Kamestastin-utshu or Kameshtashtan-utshu but has become entrenched in the geological literature as Discovery Hill (Grieve, 1975). William Cabot (1912) recorded it as Walcott Dyke.

A similar palimpsest of naming conventions exists with watercourses in the area. For example, the stream flowing out of Kamestastin Lake to the northeast (Mistastin River in English) could be called Kameshtashtan-shipu. However, the major stream flowing into the lake from its western end, nearest the base camp and the Mushuau-innut cabins, appears to have no current formal name. The stream on the north shore that geologists refer to as Coté Creek is

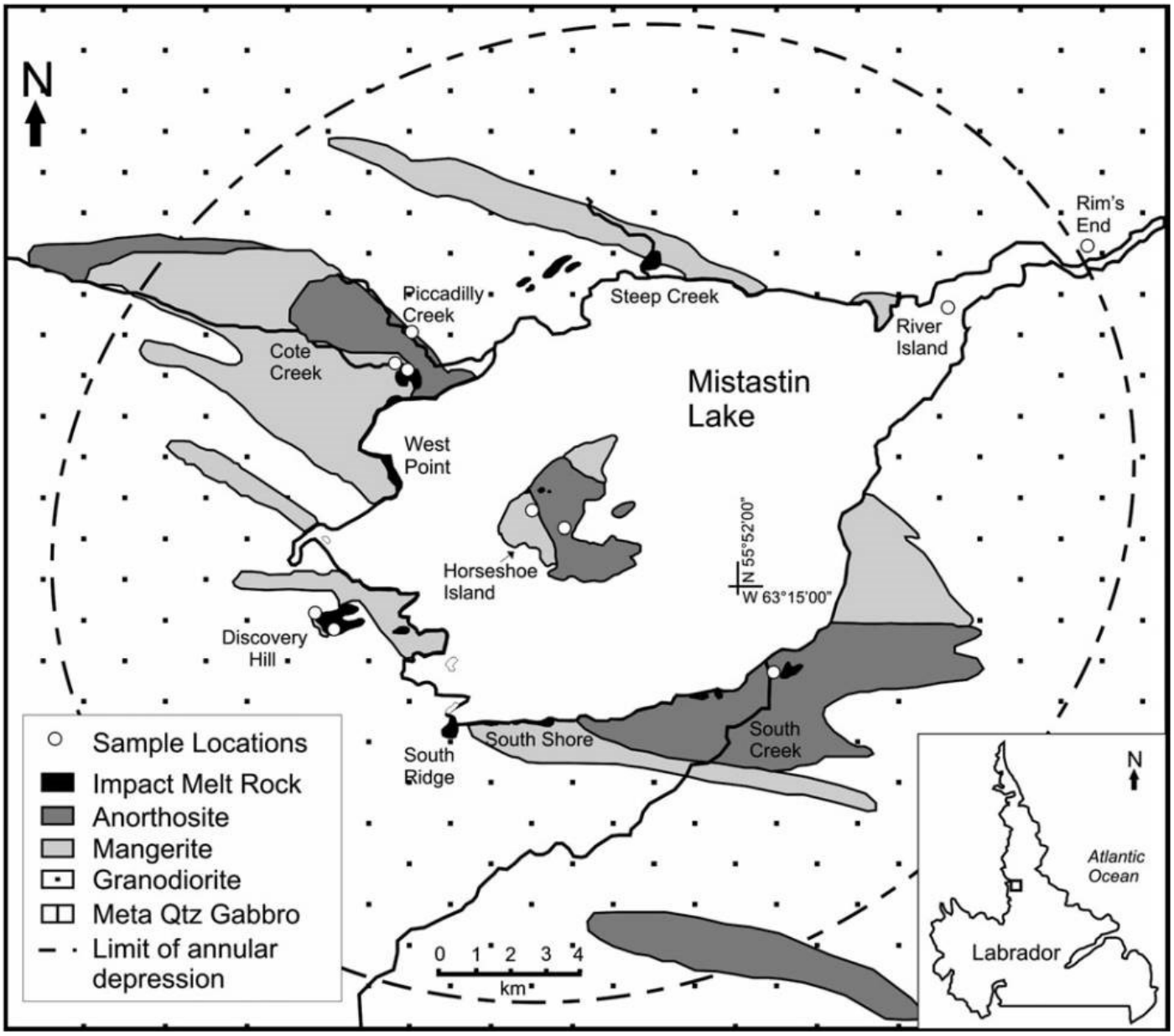

Figure 15: A simplified geological map of the Mistastin Lake impact structure, with informal toponyms used by geologists and avocational crater explorers. The dotted line indicates the approximate extent of the crater rim, after Grieve (1975). Note the adoption of English place names (e.g., Discovery Hill, Piccadilly Creek, South Creek, etc.). Reproduced from O'Dale (2018), modified from Marion (2009, Figure 2.1).

known locally as Mistanipi-shipis because it flows from the direction of Mistinipi Lake. A brook on the south shore (Shinapeu-shipu or Shinapeu-shipis) is an exception to the rule as it is named for a person who died nearby. This stream is referred to as South Creek by the geology team. Other toponyms have been applied by researchers in the geological literature including Piccadilly Creek, Steep Creek, and South Ridge (Marion, 2009; O'Dale, 2018) (see Figure 15). The use of outside toponyms risks overwriting Innu place names. Since the arrival of Europeans in Labrador, as with elsewhere in North America, Indigenous lands have been re-mapped and re-named according to outside perspectives, often arbitrarily. Renaming has been criticized as a tool of settler colonialism that subordinates Indigenous culture and land tenure (Berg, 2011; Gray & Rück, 2019; Parsons, 2011). Recognition of Indigenous toponyms is being addressed through federal legislation such as the recent *Indigenous Languages Act* (2019), and the increased flexibility shown by the Geographic Names Board of Canada towards alternate naming. Nonetheless, the

best way to preserve local toponyms is to promote their use, and by doing so decolonize cartography. It is recommended that Innu place names become established in scientific publications, ideally through consultation with the Innu people and their organizations.

Likewise, archaeologists apply their own toponyms to the cultural landscape. Conventions such as site names to Borden numbers – elements of the site record form itself – do not necessarily reflect customary naming systems and may be hard to change. Rather than characterizing this as a problem, I see it as an opportunity for experts in different knowledges (Innu, archaeological, geological) to become better aware of what the others mean.

Observations and Recommendations

Being able to see Kamestastin first-hand made me appreciate the area's cultural resources much more acutely. The opportunity to see current and ancestral Innu sites was a fantastic learning experience, as was my brief exposure to planetary geology. During my survey and monitoring, I made several observations upon which I have based recommendations for future work (see below).

- The area around the camp's location may not have attracted past occupations given its distance from water. It is currently used as a travel corridor with a dense network of ATV trails. The camp itself does not appear to have had a significant impact on cultural resources. How-ever, future camps should be monitored to ensure that disturbance is minimal.
- Re-use of the base camp area for future field seasons could minimize impact to cultural resources and keep visitors away from Innu cabins and cultural sites. In this case, a monitoring archaeologist should examine camp-related soil disturbances (such as sumps, latrines, and firepits) for evidence of prior occupation.
- Research teams should continue to be directed away from known archaeological and ethnographic sites. In the absence of an archaeological monitor or an Innu guardian, consider sharing information such as sites or areas to avoid or acquainting visitors on the range of artifacts that may be found in the area. Researchers from other disciplines travel through the landscape in ways different from archaeologists, so taking advantage of new eyes could help further our own archaeological understandings.
- Geological sampling should be conducted with an eye to minimizing debitage that could be confused with objects of archaeological origin. Collecting debris in the field may be difficult, but efforts should be made to limit debitage production (particularly of the obsidian-like material). Sampling locations could be shared with the Innu Nation so that potential sources of confusion were known. Debitage from geological samples that are reduced in camp can more easily be collected and disposed of.
- It is possible that the Ataka site (GlCu-04) could be more extensive than thought and should be revisited in the future. As only one structures was fully excavated in past field seasons, the site also presents an opportunity for excavation and interpretation with Innu partners. Revisits of nearby encampments such as the Ray and Benuen sites (which could not be visited in 2021) would make for excellent comparison.
- Additional samples of the Kamestastin melt glass could be obtained and tested for their suitability as a lithic tool stone. If the material is not well suited to tool manufacture, then its presence at archaeological sites may have other explanations. Based on the statements of residents, the material may be collected and curated for cultural reasons or out of curiosity.
- To avoid future problems, place naming in the archaeological and geological literature should reflect Innu practice. Provincial and federal cartography already have mechanisms for recognizing Indigenous place names but academic practice may not be up to date. The Innu Nation and the Tshikapisk Foundation maintain lists of site names in Innu-aimun that could be suitable guides for future publication. Researchers can conduct a preliminary search via an online guide at www.innuplaces.ca (Innu Nation and Sheshatshiu Innu First Nation, 2008).

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Figure 16: Dawn at Kamestastin, looking east towards Mistaministuk, September 15, 2021.

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A Note on Shell Island-1 (GcBi-11) and Some Thoughts on the Labrador Ramah Chert Trade

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In July 2018, while conducting surveys in Hamilton Inlet in collaboration with the Nunatsiavut Archaeology Office, we revisited a site tested briefly in 1969 on Shell Island, one of the westerly islands in the Smokey archipelago in northeastern Groswater Bay (Brake and Fitzhugh 2019). Shell Island is the largest of a low string of skerries east of Rattler's Bight and Winter Cove and lies at the intersection of Pottles Bay and Alliuk Bight. The latter is a narrow, north-south passage between Holton Island and the mainland. The bight is blocked from the open sea at its north end by a low bar a few hundred meters wide. A thousand years ago, this isthmus would have been submerged, creating a water passage bypassing the shoals and surf east of Holton Island. Shell Island lies at the south end of Alliuk and offered a quiet camp shelter with fresh water, ducks, and seals. Travelers heading south from Shell Island passed East Pompey Island and entered open sea conditions for 17 km until reaching George Island, and from there it is 10 km farther to harbors at the southeastern entrance of Groswater Bay.

Groswater Bay is the largest open body of water travelers had to cross on the entire Labrador coast without access to shelter on one side or the other. Small open boats could make this crossing only with ideal weather and sea conditions, especially if carrying a heavy cargo of Ramah chert. Sometimes, even in summer, one must wait several days for safe conditions. George Island, being high and large, is not a traveler's haven. Except for a surf-plagued cove on its eastern side, the rest of the island has no protected landing sites. When we passed George Island in calm weather in 2018, we landed and made a brief survey of the eastern cove, finding a few boulder caches and scattered bones of recently killed caribou, but no tent-rings or other archaeological evidence. During the winter months, Groswater Bay can be crossed on foot or by sledge if the bay ice is solid, but storms frequently break the seaward ice edge, requir-

Figure 1: Shell Island (GcBi-11) and surroundings.

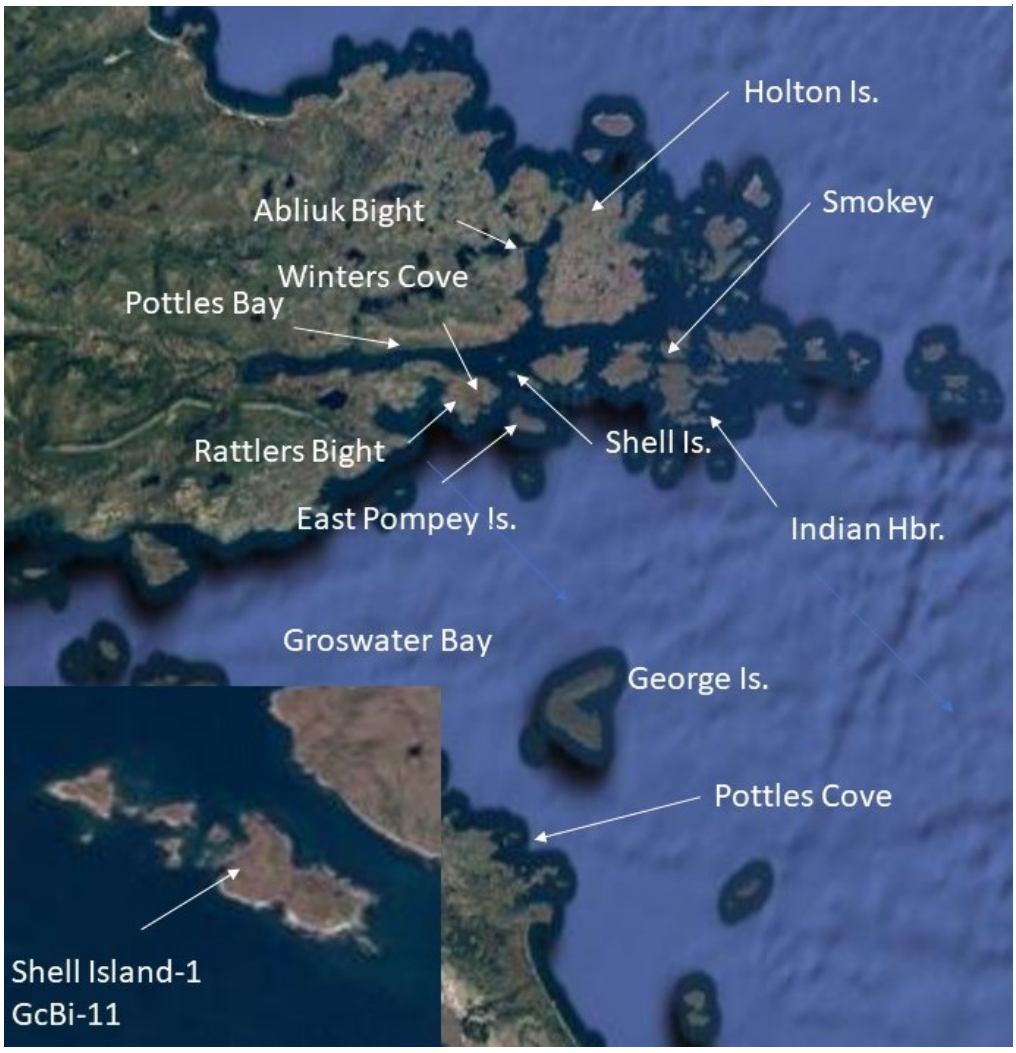


Figure 2: Shell Island site, view north in 2018.

ing a detour on more stable inner bay ice to the west. In spite of its prominence in the late-19th and early 20th century Newfoundland cod fishery (Browne 1909) and its seasonal abundance of marine resources (including capelin, cod and curlews), the Smokey/ Indian Harbor region has never received even a preliminary archaeological investigation.

Shell Island-1 (GcBi-11) is in a small north-facing cove on the largest of the Shell Islands. The beaches and soil on this and the other islands consist mostly of deposits of blue mussel (*Mytilus edulis),* soft clam *(Mya arenaria),* and other species, covered by 10-50 cm of peat, topped by tundra vegetation of low grass, dwarf birch, lichens, and ground berries. GcBi-11 is at the lower (northern) end of a broad raised beach between low rock ridges to the east and west. We found the site when we noticed Ramah chert flakes in blowouts in the southern, upper part of the beach slope.

The 1969 excavation was a single 2x2 meter test-pit where a tent ring poked through the vegetation 4m above sea level in the northern part of the raised beach, a few meters north of a large round boulder. The turf and upper peat contained a few fragments of 19-20th century creamware and square nails. Below 40-50 cm of sterile peat, resting on a pavement of beach cobbles in a sand-shell matrix, our field notes record "a prodigious amount of chipped and frost-fractured [Ramah chert] flaking debris" (Fitzhugh 1972:102), a few biface tips and midsections, a ground slate fragment, and a few flakes of brown chert. The latter suggested the presence of a Groswater component, while the low site elevation and absence of stem fragments suggested Ancestral Innu (Daniel Rattle complex and Point Revenge complex, 400-2000 BP) rather than Maritime Archaic. The absence of finished tools and the massive amounts of thinning flakes—almost 5 kgs—packed solid in a 15-20 cm level, indicated intense production of biface blanks. We concluded that the site should be assigned to the Ancestral Innu on the basis of its 4m a.s.l. elevation (Fitzhugh 1972:102).

When we returned to Shell Island in mid-July 2018, we opened a small area along the edge of the 1969 excavation (Locus 1), hoping to find diagnostic artifacts but recovered only a ground slate celt fragment and a large Ramah chert flake scraper. Locus 2, six meters east of L1 produced a fragment of tan chert resembling European ballast flint and European ceramics in the turf and upper peat. Residual winter frost kept us from reaching the deeper Ramah chert debitage level.

Figure 3: Worked slate and a Ramah chert flake from the 2018 dig.

Time and tide prevented us from extending our stay at Shell Island or expanding our knowledge of this intriguing site much beyond our initial interpretation. Since 1969, a considerable amount of research has expanded our knowledge and appreciation of the proto- and pre-historic Innu groups, the direct ancestors of the Innu whose land-use and tenure along the central Labrador coast and adjacent interior stretches back uninterrupted from the present day several thousand years (Fitzhugh 1978, Loring 1985, 1988, 1989, 1992; Stopp 2017). A prominent reoccurring observation throughout this literature is recognition of the pronounced preference for Ramah chert as the nearly exclusive lithic raw material used for making chipped stone tools. Even acknowledging the inherent biases of archaeologists for centering the role of lithics in their interpretations of past social and economic systems, there can be little doubt about the profound spiritual connections between Ancestral Innu groups and the translucent chert from Ramah Bay (Jenkinson 2019; Loring 1992:333, 2002:184, 2017; Stopp 2017)

Ramah Chert Studies

Although antiquarians and early archaeologists working in the Northeast had long suspected Labrador as the source for the unusual lithic raw material now known as Ramah chert (Loring 2002:167-169) in 1969 the exact location of the Ramah chert quarries in northern Labrador had not been determined. Although Elmer Harp (1964:255-256), based on information from British-Newfoundland Exploration Company surveys, identified Ramah Bay as the likely source. Smithsonian surveys at other suspected quarry locations where William Duncan Strong had found 'translucent quartzite' at Northwest Corners and in Jack Lane Bay between Hopedale and Davis Inlet (Strong 1930), showed that these locations referred to quartz outcrops rather than Ramah (Fitzhugh 1974). Investigations at Ramah Bay in 1976 by Michael Gramly and Anne Abraham for the Smithsonian located the principal quarries on the north side of Ramah Bay and produced the first detailed information (Gramly 1978). Gramly's work was followed by more detailed description and analysis by Colleen Lazenby during the Smithsonian-Bryn Mawr Torngat Project of 1977-78 (Lazenby 1980, 1984), which also identified the west side of Little Ramah Bay as another major quarry source, and subsequently by de Boutray (1981) and Burke and Gauthier (2017). Since then, Stephen Loring has written extensively on Ramah chert, it's cultural and spiritual role in Labrador culture history, and its far-flung distribution in Eastern Canada and the U.S. Northeast and Mid-Atlantic coast region (Loring 2002, 2017). A growing appreciation of the unique role Ramah chert has played in Northeastern North American culture his-

Figure 4: A tabular block of Ramah chert, almost certainly from a Tshiash Innut (Archaic Period) component at the caribou crossing place adjacent the outlet of Kamestastin near the height-of-land between the George River drainage and the Labrador Coast. Recovered approximately 400-500 kms (depending on the route) from the Ramah chert quarries, representing a considerable expenditure of time and energy.

tory has led to a flurry of recent investigations (much of which is summarized in Curtis and Desrosiers 2017) and prompted the Canadian government to designate "Kitjigattalik—the Ramah Chert Quarries" as a National Historic Site in 2014.

In Labrador, Ramah chert is the dominant lithic material for chipped stone inventories in Late Maritime Archaic (4000-3600 BP), Middle Dorset Pre-Inuit (1800-1300 BP), and Ancestral Innu (400-2000 BP) sites, and its peak distribution in southern sites beyond the Quebec-Labrador Peninsula coincides with these periods. In most instances, specifically at sites in Maine associated with the Moorehead Burial tradition (ca. 3700-4500 B.P.), and at Early Woodland ceremonial sites throughout the Northeast (ca. 2000-3000 BP), Ramah chert appears as finished bifaces apparently manufactured in the north and brought south as finished products, clearly objects of deep spiritual significance. It is only after about 1500 years ago that Ramah chert, as a raw material, makes its way to New England (Cox 2021) and the Chesapeake (Lowrey 2017), and doubtless in-between, where it is worked and shaped into local forms. During this late prehistoric period, and prior to the disruptions brought about by expanding Inuit populations and eventually European economic interests, the Algonkian peoples of the Far Northeast were clearly linked by webs of social, spiritual and linguistic ties. Those ties most manifest appearance–at least from an archaeological perspective—in the acquisition, distribution and use of exotic lithic raw materials. In central and southern Labrador (Loring 1992, Stopp 2008) and the Northern Peninsula of Newfoundland (Hull 2002) significant amounts of Ramah chert were moving south in a tangible expression of social engagement.

In addition to individual implements, caches of extraordinary large Ramah chert finished bifaces have been found at Port au Choix in western Newfoundland, at the Spingle site in L'Anse au Clair, near Port Hope Simpson at Alexis Bay in southern Labrador, and at the Stubbert site in Kegashka on the Quebec Lower North Shore (Loring 2017:203-4).

While Ancestral Innu sites all show a conspicuous fidelity to Ramah chert, so far, Shell Island-1 is the only site on the Labrador coast that can be construed as a specialized lithic workshop. Some Daniel Rattle components (like Kamarsuk [HbCj-1] and Daniel Rattle Area IV [GlCg-1]) were literally "paved" with Ramah chert debitage, but never so much as to form a distinct stratigraphic layer as at Shell Island-1. Although limited to a single two-meter square excavation unit, we know of no other sites in Labrador south of Ramah Bay that evidence such a dense deposit of flaking debris accompanied by a relative absence of finished, use-broken, or worn-out bifaces, scrapers, and utilized flakes. Excavations conducted at nearby ancestral Innu sites like Aly's Head (GcBk-11), Big Island-1 (GbBm-1) and Winter Cove-4 (GcBi-4) all evidence the domestic use of Ramah chert with a range of artifacts all of which are apparently missing at Shell Island-1.

The site at Shell Island bares striking similarities to the North Cove site –EgBf-08—on Newfoundland's Northern Peninsula (Hull 2002) where a similar Ramah chert workshop was uncovered. At North Cove Area A over 2kg of Ramah chert debitage (over 10,000 flakes, including a significant quantity of flakes with bifacial striking platforms) formed a pavement several cms thick over an area of several square meters.

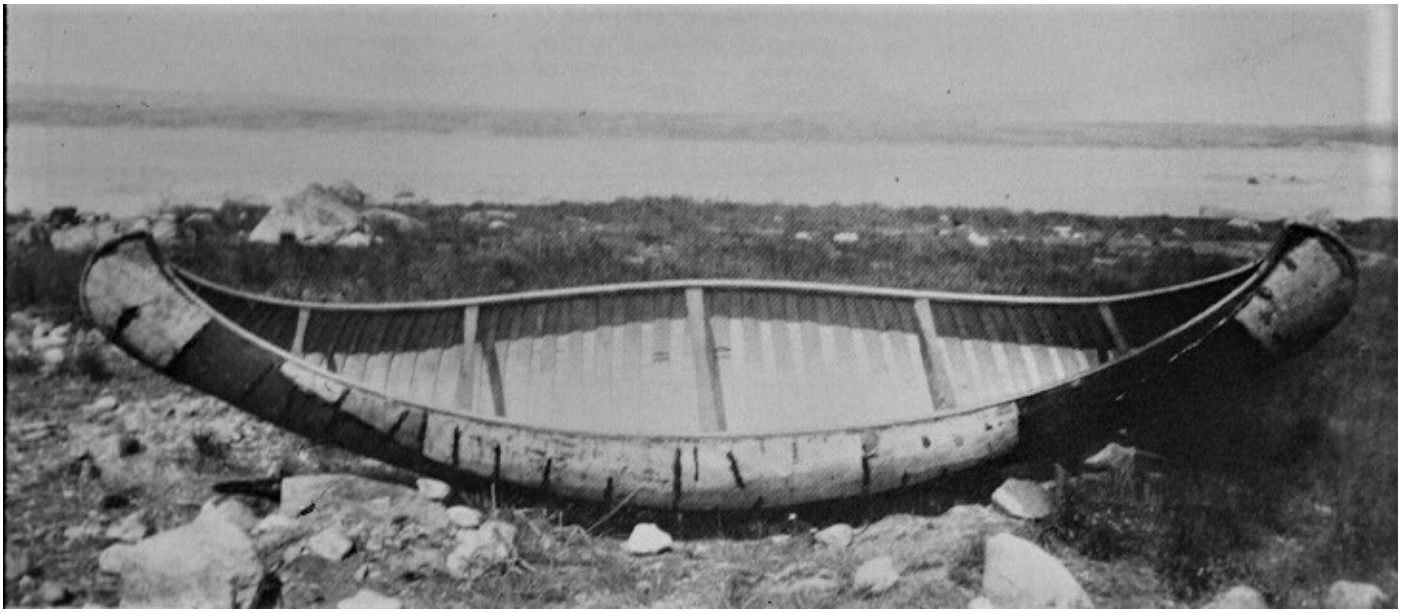
Sites like Shell Island and North Cove invite speculation about the nature of resource procurement

strategies and perhaps even the emergence of socially distinct specialists in the form of "boat captains"/ navigators. Those individuals with the chutzpah, charisma, and social allegiances (Bogojavlensky 1969) to attempt such daring travel as well as craft specialists, skilled crafts-persons capable of producing the large extravagant Ramah chert bifaces (Cross 1990).

Sites like Shell Island also offer intriguing insight to the scheduling practices and resource procurement strategies of maritime hunting peoples where it has been proposed that social relations predicated –in part—on the long-distance acquisition and exchange of exotic lithic raw materials create a cohesive web of social entanglements that could mitigate local subsistence exigencies. It remains for future researchers to elaborate on these themes and to determine the dynamics of acquisition both from a sociocultural perspective as Algonkian-language speakers encountered Dorset (diagnostic Point Revenge projectile points have been recovered from a Late Dorset winter-house at Saglek (Loring 1992:399-401, Thomson 1981) as well as from a logistical one addressing the season and technologies involved. With the lengthening of days, early spring acquisition of Ramah and transportation over the still frozen shorefast ice might have been a preferable strategy to the risks of open water travel. That said the Innu who frequented the east coast of Hudson's Bay and Ungava had perfected an extraordinarily wide-beamed, high-sided "crooked" canoe that was capable of carrying huge loads and weathering rough water. One has to wonder why, having transported the Ramah chert raw material across Saglek Fiord, down along the mountainous coastline adjacent the Kaumajet Mountains, around the Kiglapaits and across Voisey Bay, that it isn't until Shell Island (and North Cove) that significant biface production ---with its concomitant discard of the precious raw material, takes place.

The conspicuous consumption of Ramah chert at early Ancestral Innu sites like Daniel Rattle 1 (GlCg-1) where almost 8kgs of Ramah chert debitage was recovered, and Kamarsuk (HbCj-1) with over 3 kgs, and presumably Shell Island-1, offer a striking contrast to later proto-historic Innu sites like Aly's Head (GcBk-11), Big Island-1 (GbBm-1). Large pieces of debitage are nearly entirely absent from these sites, giving the impression that Ramah chert had become more expensive and more difficult to access, perhaps reflecting the dissolution of previous social arrangements and extractive practices with the arrival of the Inuit in northern Labrador.

Figure 5: The Innu of Ungava had perfected a unique ocean-going birch-bark canoe that would have been capable of transporting unusually heavy loads. Photographed by Lucien Turner at Fort Chimo, Ungava Bay in 1883. (Smithsonian Institution Archives, Record Unit 7192)



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Archaeology at Ferryland 2021

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Memorial University

Figure 1: 2021 excavations in Area D along the eastern side of the 6.4m by 6.4m building (ca. 1620s).

After a one season hiatus from fieldwork in 2020 (due to Covid-19 restrictions), the archaeology at Ferryland began anew in 2021. Although fieldwork in 2020 was not possible, research, conservation and collection's management continued apace; therefore, 2021 represents Memorial University's 30th consecutive year of archaeological research at Ferryland. This year also marks the 400th anniversary of the founding of the 1621 English colony of Avalon established at Ferryland by Sir George Calvert, the first Lord Baltimore.

Our archaeological investigations in 2021 focused on two areas of the site: the first is the easternmost extent of the 17th-century settlement where, in previous years, staff has been uncovering the remains of a stone structure dating to the 1620s (Area D); the second area is a small parcel of land directly adjacent to the old Colony Café where we have been sifting soils and piling back dirt from previous excavations (Area G). The following report represents the efforts of a small field and lab crew of eight from Memorial University and the Colony of Avalon Foundation. Much of our continued success is due to the dedication and professionalism of our staff, in particular Neil Jordan, Mercedes Johnson, Debbie Barnable and Donna Teasdale.

Recent archaeology at Ferryland has demonstrated that at least one special-purpose structure was built outside Calvert's fortified 4-acre settlement in the 1620s. The exact purpose(s) of this structure has yet to be determined; however, archaeology has shown it to be a clay-bonded masonry building measuring 6.4m (21ft) on a side with three interior features along its western wall including a central fireplace, an oval furnace and an alcove (Gaulton and Bethune 2020). The location of this structure 30 metres east of

the ditch and rampart fortification that enclosed the settlement and protected inhabitants also suggests that it was not a domestic dwelling. Preliminary interpretations point to one or more activities such as alchemy, assaying, attempted glass production or other related tasks that required constant high heat, the use of refractory ceramics and specialized glass containers. Suggestions by colleagues that this sequestered structure could have served as a hospital have not been discounted, but runs contrary to George Calvert's 1629 statement that "my house hath been an hospital all this winter" (Calvert 1629).

With these considerations in mind, the goal of the 2021 fieldwork was to fully expose and map the eastern wall of the 6.4m by 6.4m structure (Figure 1), continue excavation of the associated midden deposit to the northeast and further test portions of a builder's trench, previously identified by Alexa Spiwak, outside the south wall of the building (Spiwak 2019). The task of mapping the remaining structural elements of the building was quite uneventful, yet excavation of the adjacent midden deposit continued to inform our understanding of the activities once conducted within as well as the duration of occupation. As in previous seasons (2018-2019), we continued to find many pieces of melted, glassy residue or by-product created from the prolonged exposure of clay, sand or other geologic material to high heat. Additional pieces of stoneware crucible were likewise among the finds in 2021; however, the fragments (Figure 2) were from much larger containers compared to what had previously been found at Ferryland. The discovery of both small and large refractory stoneware vessels from this building lends further support to theories associated with industrial activities. The clay tobacco pipe bowls and makers' marks found in 2021 continue to demonstrate that this structure was built in the early 1620s but fell into disuse in the 1630s. As such, the pipes represent a tightly datable assemblage produced in London and Barnstable and will be of interest to archaeologists in both North America and Northwest Europe.

Figure 2: Fragment of a large stoneware crucible from the 1620s-1630s midden deposit.

Targeted excavation of the ca. 1620s builder's trench consisted of a 1x4 metre unit alongside the southeastern exterior of the structure. This operation produced, as expected, a plethora of discarded roof slate fragments along with other masonry debris associated with the activities of the slators and masons who erected the structure during the formative years of the Ferryland colony. As a discrete and closely dated deposit associated with a small, and poorly understood, segment of the 1620s population, the goal was to retrieve more information on the daily lives of Ferryland's former craftsmen. The fragments of earthenware cups, pans and storage vessels, along with some preserved faunal material and scattered clay tobacco pipes found in the builder's trench, represent the remains of the meals and leisure time taken by these individuals during the course of their duties. It is anticipated that this small but important collection will be the focus of a future BA Honours research project.

What we didn't expect to find during our excavation outside the southeast end of the building

Figure 3: Late 17th-century destruction deposit southeast of the 1620s building.

was a more recent, late 17th-century destruction deposit associated with the French attack on Ferryland in 1696 (Figure 3). Well above the level of the builder's trench was a thin lens of charcoal containing late 17th-century objects that had been subjected to an intense fire. Among the finds were burnt earthenware and several partially melted/deformed glass wine bottles (Figure 4, top), one of which had the initials of its former owner (II or likely JJ) scratched onto its surface. The most interesting and fragile of the artifacts was the carbonized remains of a reed/rush basket or mat. Although only a small portion of this object was preserved due to depositional and post-depositional processes, the weave of the basket/mat is clearly visible as are small segments of rope (Figure 4, bottom). The excavation, block lift, cleaning and conservation of this rare organic find was, and still is, challenging. It's therefore important to recognize the exceptional work of the excavator (Julieanne George) and our archaeological conservator (Donna Teasdale) who spent many hours carefully exposing, removing and now conserving this 17th-century object.

Exploratory excavations on the parcel of land immediately east of the former Colony Café were prompted by the 2019 fieldwork some 10 metres away. In 2019, we excavated additional sections of the 17th-century cobblestone street as part of Leena Bethune's MA research. As seen in Figure 5, the southern edge of the cobblestone street is approximately 1.21m (4 feet) below the current surface of the Pool road and directly above the cobblestones is an artifact-rich domestic midden dating to the second half of the 17th century. Jordan Hollahan, one of the 2019 field crew, inquired about the area across the Pool road where we sifted our soils and whether we had conducted previous excavations there. Since we hadn't explored this area archaeologically, and since Jordan was returning as part of the field crew in 2021, this was a good opportunity to test that area of the site. Excavation began with a 1x2m trench but soon expanded into a 2x2m unit as the crew proceeded downward through mixed deposits of compacted beach sand containing everything from modern plastic to German stoneware to Chinese export porcelain,

Figure 4: (top) In-situ melted wine bottle fragments; (bottom) carbonized reed basket/mat following excavation in lab.

Figure 5: Southern edge of 1620s cobblestone street and overlying midden excavated in 2019 (foreground); unexcavated land across the Pool road adjacent to Colony Café (background).

Figure 6: (left) Selection of decorative ceramics and clay tobacco pipes from mid-to-late 17th-century midden in Area G; (right) faceted glass jewel from same deposit.

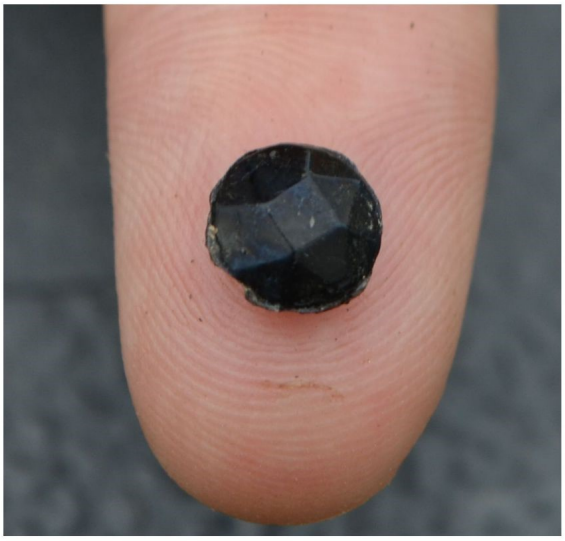

Figure 7: 17th -century cobblestone pavement continuing to the north, east and west of excavation unit.

interspersed with masses of cod bone and wood from former stages that dotted Ferryland's inner harbor for centuries. The uppermost of these deposits represent the dredging of material along the edges of Ferryland's inner harbor (or Pool) back in the 1970s and its re-deposition across lands immediately south.

At 1m below surface, we encountered a domestic midden dating to the second half of the 17th century, very similar in elevation and types/variety of artifacts to that found on the opposite side of the Pool road in 2019. In the midden were North Italian sgraffito and marbled slipwares, decorated tin-glazed earthenware, clay pipe stems stamped with fleur-de-lys decorations and a tiny faceted glass jewel possibly from a button or earring (Figure 6). Directly under the midden, at exactly 1.21m below surface was the south edge of a 17th-century cobblestone pavement continuing to the north, east and west of our excavation unit (Figure 7). Unfortunately, given the fact that the 2x2m test excavation was close to the Pool road and the Colony Café building, we had no choice but to backfill the unit after recording was completed. As is often the case in archaeology, this pavement and domestic midden brings more questions than answers. What is the extent and purpose of the 17th-century pavement? Is it associated with other structural features? What is the relationship between the pavement and the overlying midden? The answers to these questions must await further investigation.

Acknowledgments

I would like to thank the 2021 field and lab crews including Neil Jordan, Mercedes Johnson, Debbie Barnable, Donna Teasdale, Julieanne George, Jordan Hollahan and Jared Hogan. The Colony of Avalon Foundation's gardener Roddy Hynes and his assistant Seamus Walsh likewise deserve thanks for maintaining the grounds in and around the archaeological site. Finally, the Provincial Archaeology Office, Department of Tourism, Culture, Arts and Recreation has always been a strong supporter of the Ferryland archaeology project and their continued assistance is greatly appreciated.

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Halfway Rock, Southwest Arm, Trinity Bay

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Figure 1: Halfway Rock (DaAj-08) looking east.

First recorded by Steve Hull in 2016, the site of Halfway Rock (DaAj-08) is located on an historic cart path/road connecting the communities of Little Heart's Ease, Batt's Cove and Claypitts with Butter Cove, Gooseberry Cove, Fox Harbour (Southport) and Heart's Ease (Hull 2016). Little Heart's Ease resident Lester Green previously informed Hull and other staff at the Provincial Archaeology Office of this outcrop of rock containing a series of inscribed names, initials, dates, and glyphs, some of which originate from the 19th century. Five years after the initial recording, members of the Newfoundland Historic Petroglyphs Project along with Lester Green revisited the site to conduct photogrammetry and Highlight-Reflectance Transformation Imaging (H-RTI) on the inscriptions to further contextualize this landmark once associated with the comings and goings of past residents of Southwest Arm, Trinity Bay.

Upon arrival at the site in June 2021, we conducted a careful visual inspection/assessment of the outcrop, took measurements of the current exposed surface area, recorded its location via handheld GPS, completed a photographic record, collected fallen

Figure 2: Cleaning the rock surface in preparation for further recording using photogrammetry and H-RTI.

rock samples for geological identification and brushed debris from the inscribed surface in preparation for photogrammetry and H-RTI (Figures 1 and 2). As previously noted by Hull (2016:4), the exposed surface area upon which the inscriptions were carved measures a little longer than it is wide (1.2m by 1m). This measurement varied somewhat compared to that recorded in 2021 (1.8 by 1.4m) and may suggest recent removal of moss and peat along the exposed borders of the outcrop, either intentionally or accidentally, or perhaps natural weathering events. In fact, the geology of the site, natural weathering processes, environmental change, vegetation growth, and human intervention all contribute to the deterioration process at Halfway Rock.

The purplish rock upon which these inscriptions were carved has been macroscopically identified as mudstone or fine sandstone (personal communication Susan Strowbridge, Department of Geology, MUN 2021). There were many areas that showed evidence of cracking and spalling where the delaminated rock surface lay at the base or loosely hanging onto the face of the outcrop; this was most likely due to freeze-thaw action. Other environmental changes such as an increase in acid rain and pollutants will cause further deterioration over time. Rainwater carries with it pollutants that can chemically and mechanically erode the stone surface, cause joint expansion, and create permanent weakness to the rock surface (Busher O'Sullivan 2019:19).

Alongside these environmental factors, vegetation and microflora can inhibit the documentation process but also pose a serious threat to the stability of the outcrop. The entire periphery of Halfway Rock is covered in moss, peat and tree roots, potentially obscuring additional inscriptions. This is both a blessing and a curse. The moss and peat could protect underlying inscriptions from the elements in the short term but it can also lead to significant degradation of the rock over time as increased moisture levels and root growth can cause cracks and fissures (Dandridge 2006:19). There are also patches of lichen visible over the entire rock face, appearing as circular grey-blue patches. Lichen is of particular concern as it can

break down rock both chemically and physically. Lichen produces acids and other by-products that can have an altering effect on the surface and throughout the rock matrix (Dandridge 2006:19; Busher O'Sullivan 2019:19).

Computational photographic survey of the rock outcrop involved capturing 101 overlapping photographs, in numerous passes, to produce scaleable photogrammetric 3D models of the rock surface from which quantitative measurements of the individual inscriptions could be derived. Models were processed using the software Agisoft Metashape (Agisoft 2021). Qualitative information about the texture of the rock surface was captured by undertaking several H-RTI passes across the outcrop to produce polynomial texture maps which improve the visibility and legibility of the detail of individual inscriptions using highlights and shadows (Earl et al. 2010). RTI Builder and RTI Viewer (culturalheritageimaging.org) softwares were used to process and visualize the H-RTI models. Together, these complementary techniques (see Porter et al. 2016 and Solem et al. 2020) produced digital models and images that were imported into a Geographic Information System (GIS) to produce interpretive line drawings of the visible carvings (Figures 3 and 4).

Construction of the original cart path/road connecting the communities of Fox Harbour, Heart's Ease, and Clay Pitts of the Southwest Arm area dates to the mid-1840s. The communities of Fox Harbour and Heart's Ease received grant money based on a petition presented by Reverend H. Lind to the House of Assembly for funds in 1846 for road construction (Journals of the Legislative Council of the Island of Newfoundland 1848). The cart path/road between Fox Harbour and Clay Pitts began shortly after settlement of the latter community by two families from Gates Coves, the Vardy's and Benson's, in the mid-1850s. In 1860, the Statutes of Newfoundland records funds of £4 allocated for roadwork between Gooseberry Cove and Clay Pitts. Records from the Yearbook and Almanac of Newfoundland between the 1870s and 1920s records the road committee members responsible for the construction and maintenances of the same cart path/road (Yearbook and Almanac of Newfoundland 1872-1926).

The route served as a means of communication and interaction between several hundred residents, be it for familial, social, economic, educational, or religious purposes. It is notable, however, that the five inscriptions which reference months of the year suggest greater traffic during the summer and fall, between June and November (see Figures 5f and h, and 6e). Reduced traffic during the winter months is also suggested by the quote below, demonstrating that many residents in Southwest Arm lived in the wooded and sheltered interiors from late fall to early spring (see Smith 1987a-b for seasonal transhumant practices).

In the mid-1850s, George Vardy, one of the most educated and influential men in Random Sound, lobbied government officials for the construction of a schoolhouse at Heart's Ease. The Journal of the House of Assembly of Newfoundland 1860-61 announced:

"This year I have to report a new station being occupied at Heart's Ease, where a school-house has been built, and a master engaged. In the General Table will be found a return of this school. The settlement being small and the people in the habit of going into the woods in the winter season, the school can only be a humble one, but I presume, the master is engaged partly for the purpose of leading religious services on Sunday in a locality that can seldom have the visits of a clergyman."

This schoolhouse (and chapel) served the entire region from 1860-1880s with an average of about 30 students per year. George Vardy, the school master, walked daily between Clay Pitts and Heart's Ease until the mid-1870s (Journals of the House of Assembly of Newfoundland 1865-1874). It's also worth noting that work on the first Anglican church began in 1880 at the Crossroads in Gooseberry Cove to replace the 'chapel' at Heart's Ease (personal communication Les Dean, 2022). The addition of the Heart's Ease schoolhouse and later the Anglican church at Gooseberry Cove would have increased pedestrian and wheeled traffic along the road. Educational and religious services may have incentivized some residents to live in their communities year-round.

In the mid-1950s, a modern road (Route 204) was built to connect the communities of Southwest Arm, including the most easterly towns of Butter Cove, Gooseberry Cove and Southport. Once completed, the original cart path/road became obsolete but continued to see recreational and seasonal use. In

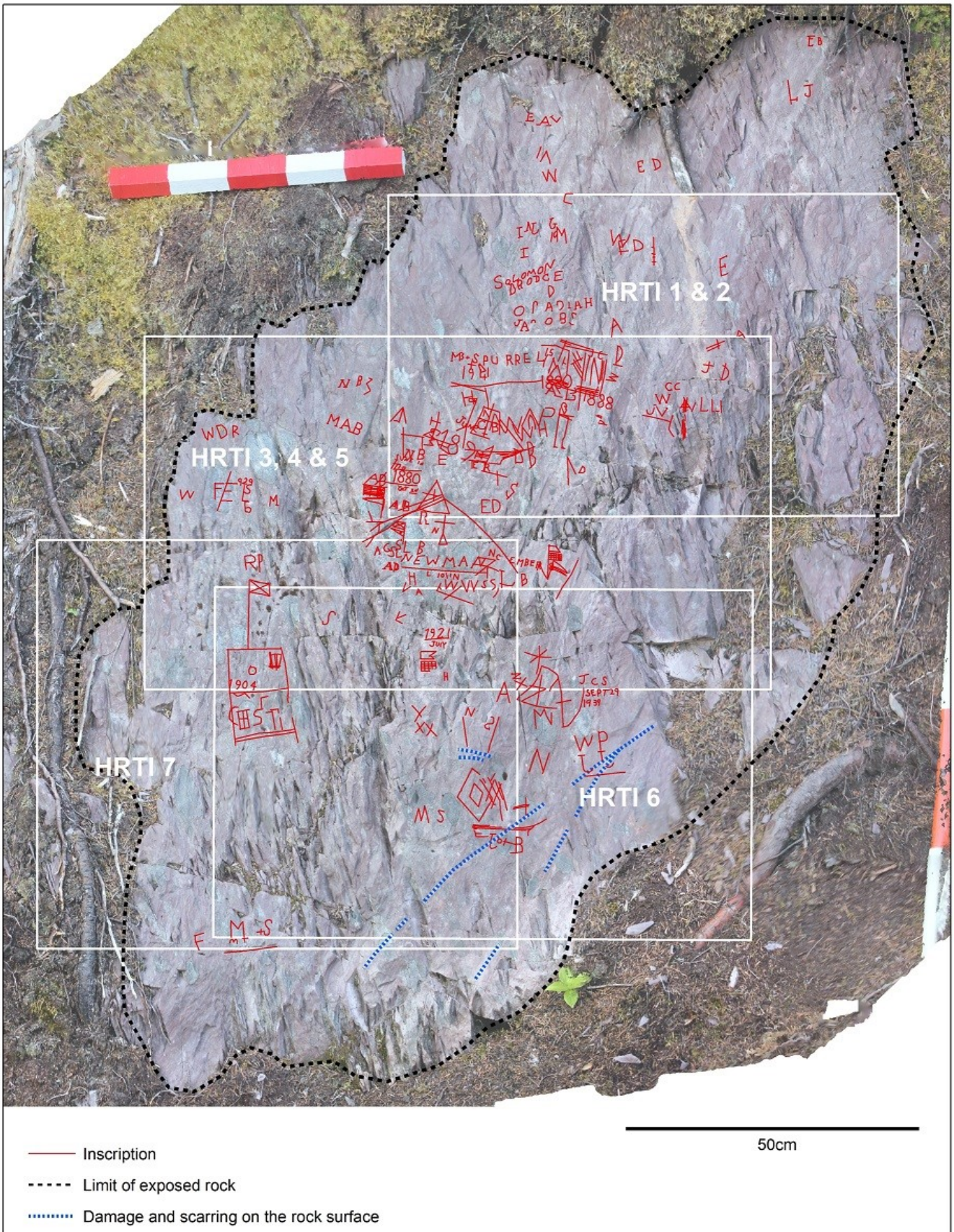

Figure 3: Photogrammetric model of the Halfway Rock outcrop showing areas over which H-RTI was undertaken, and with the inscriptions transcribed.

fact, Halfway Rock bears witness to recent winter activities as demonstrated by a series of deep scars likely caused by snowmobiles traversing across its surface (see Figures 3 and 4). This unintentional damage to the site is of immediate concern and can perhaps be mitigated by the placement of posts along the perimeter of the outcrop to redirect users of motorized vehicles away from the inscriptions.

The etchings on Halfway Rock record the names, initials, and dates of many individuals that travelled between these communities from the 1840s to 1950s (Figure 5). Individuals such as Obadiah Jacobs (1887-1942), and Solomon Drodge (1838-1924) of Little Heart's Ease are permanently etched into the rock face (see Fig. 5a and b). Newman may refer to Newman Avery or it could be Newman Benson; the latter may be referenced in two sets of initials, 'NB' and 'NB 1880', located in the central part of the outcrop (Fig. 5d and h). The name M Spurrel (Fig. 5c) is likely one of three generations of Moses Spurrel residing in Butter Cove (personal communication Les Dean, 2022) while initials like AB (Fig. 5e and h) could indicate Adam Benson (1851-1928) of Clay Pitts or it may refer to one of the oldest surnames Baker of Heart's Ease. The initials JV (Fig. 5g) may be that of John/James Vardy, son of George Vardy of Clay Pitts (personal communication Les Dean, 2022). A rather crudely incised anthropomorphic figure (8.1cm high x 2.6cm wide), comprising a head shown in profile (facing right), with two arms and two legs with feet, all pointing to the right, is the only glyph that depicts the human characters who carved a record of their passage (Fig. 6c). Many more sets of initials are found on Halfway Rock but are not discussed in this report.

A large, deeply incised triangular shape (measuring 26.8cm wide x 12.8cm high), somewhat like the pitched roof of a building, contains a Latin cross and may be closely associated with the name 'Newman' which appears to run along the bottom edge and within the area enclosed (Fig. 5d). The Latin cross, possible roof and two carved dates of 1880 on Halfway Rock may pertain to the laying of the foundation stones for the first Anglican church at Gooseberry Cove (personal communication Les Dean, 2022).

Several glyphs relate to maritime activities (Figure 6). Two sailing vessels are faintly incised and both are overlain by heavier, more recent, carvings. The upper motif of a square-rigged two-masted vessel (16.4cm wide x 11.8cm high), possibly representing a schooner or brigantine, is cut by a heavily carved date '1891' (Fig. 6a). The hull (with a clipper bow), bowsprit, counter stern (?), fore topgallant sail and fore topsail are discernible, while an ensign flag (British?) surmounts the main mast. The lower motif also depicts a two-masted sailing vessel (11.7cm wide x 9.8cm high) but only the clipper bow, bowsprit, and transom stern are clearly discernible. Additionally, there are six glyphs that depict various types and combinations of maritime flags and pennants commonly used for signaling; four of which are shown flying from flagpoles (or conceivably, abstracted/disarticulated, masts). One glyph (3.6cm wide x 5.6cm high) shows two flags on a flagpole; the upper flag is rectangular with a series of horizontal lines and a British Union Jack canton, while the lower flag is a pennant (Fig. 6d). The rectangular flag appears similar in design to that used by the British East India Company, which operated until the 1870s, and also resembles the Grand Union Flag which was the first flag of the United States (albeit with a square rather than rectangular canton). This flag may have been carved by a member of the Loyal Orange Lodge at Little Heart's Ease, a group with strong ties to the British Empire and with members from the nearby communities of Southport, Butter Cove and Little Heart's Ease (personal communication Les Dean, 2022).

A single rectangular saltire flag surmounts a flagpole extending from the top of a square building (a small house?) with a window, doorway and possible chimney depicted, and which is associated with the incised date '1904'; the whole arrangement measures 28.4cm high x 10.5cm wide (Fig. 6b). It has been suggested that both building and date may be associated with Newfoundland's Come Home Year in 1904; another tangible representation of this significant event was found at nearby Gooseberry Cove in the form of a Come Home Year lapel pin marked "Good Luck 1904" (personal communication Les Dean, 2022). The building and 1904 date could also conceivably be related to the cessation of French rights to the Newfoundland fishery as part of the Anglo-French Convention (1904), widely celebrated on the island (personal communication Les Dean, 2022).

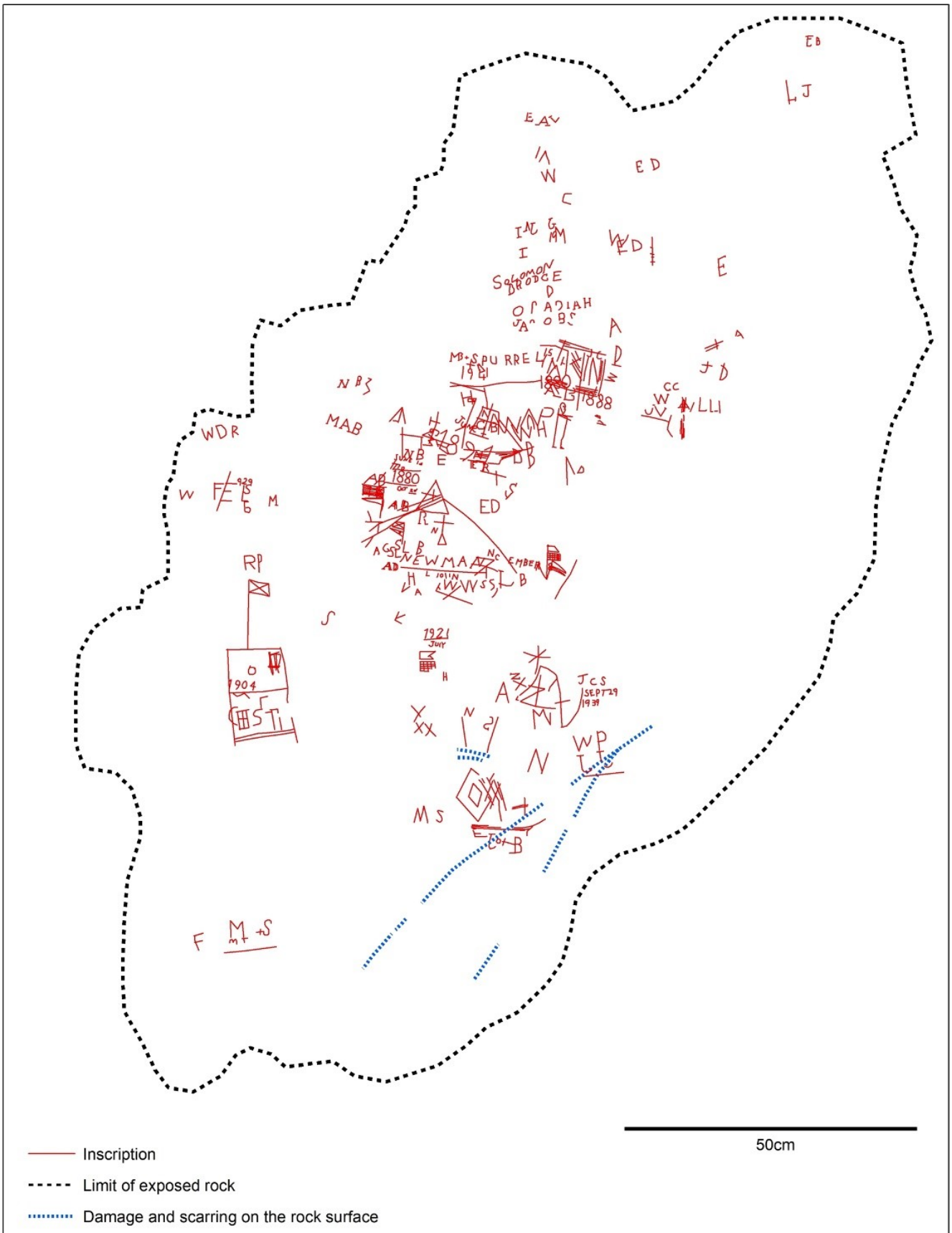

Figure 4: Interpretive line drawing of the inscriptions identified on Halfway Rock.

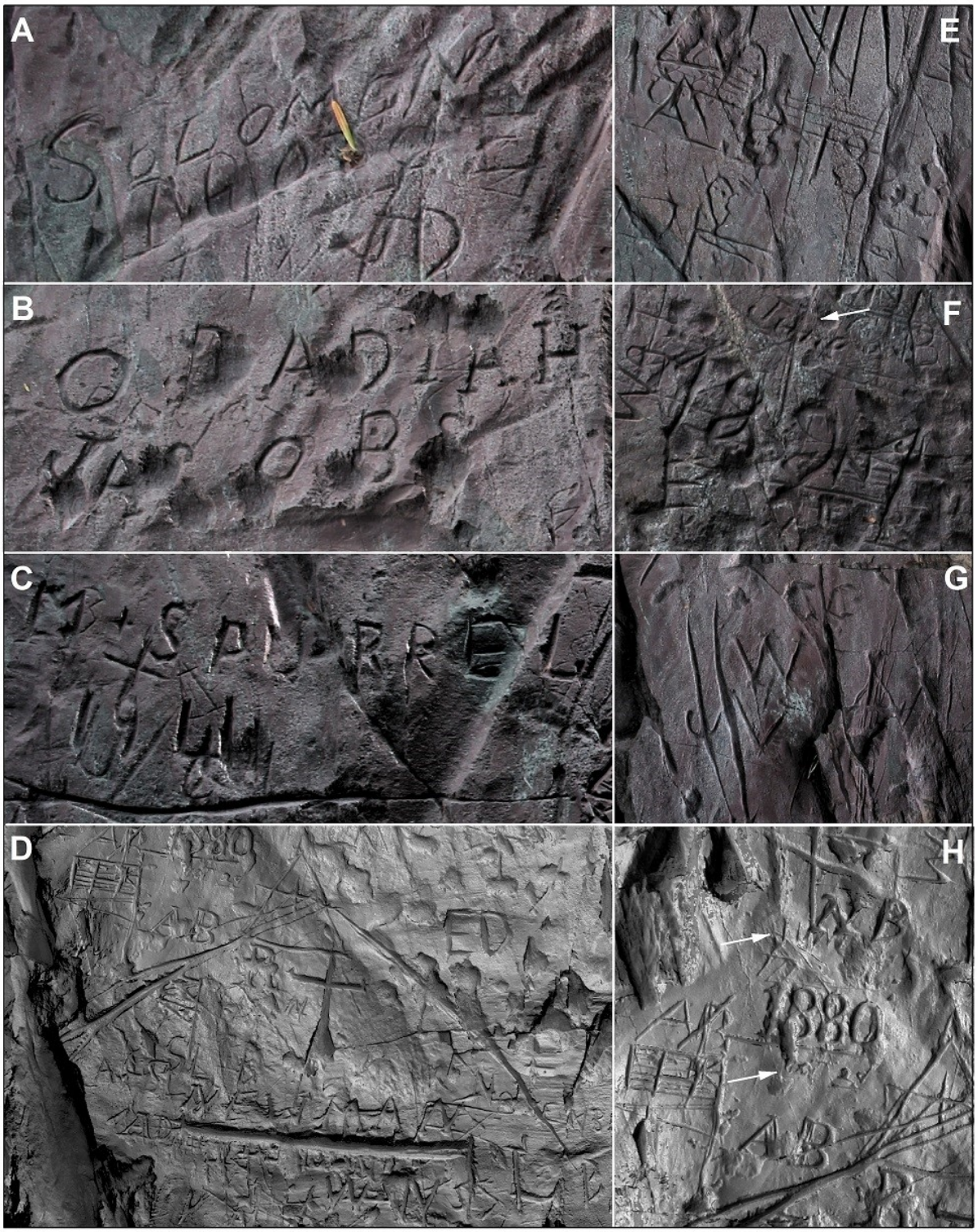

Figure 5: Examples of personal names and initials identified on Halfway Rock. (A) Personal name 'Solomon Drodge', RTI Viewer diffuse gain mode. (B) Personal name 'Obadiah Jacobs', diffuse gain mode. (C) Personal name and date 'M Spurrel 1941', diffuse gain mode. (D) Personal name 'Newman' aligned within a triangular form and associated Latin cross. Three instances of the initials 'ED' occur across the panel. Specular enhancement mode. (E) 'AB 1888', diffuse gain mode. (F) Inscriptions of the name of the month of 'June' (indicated by the white arrow), and of the year '1891' (G) Several sets of initials include the possible set 'JV', partially obscured by later cuts. Diffuse gain mode. (H) The initials 'NB' and 'AB' occur several times across the panel. Note the fainter adjacent inscriptions of the months of 'June' and 'Oct 2d' below the 'NB' initials and '1880' date respectively (indicated by the white arrows). Specular enhancement mode.

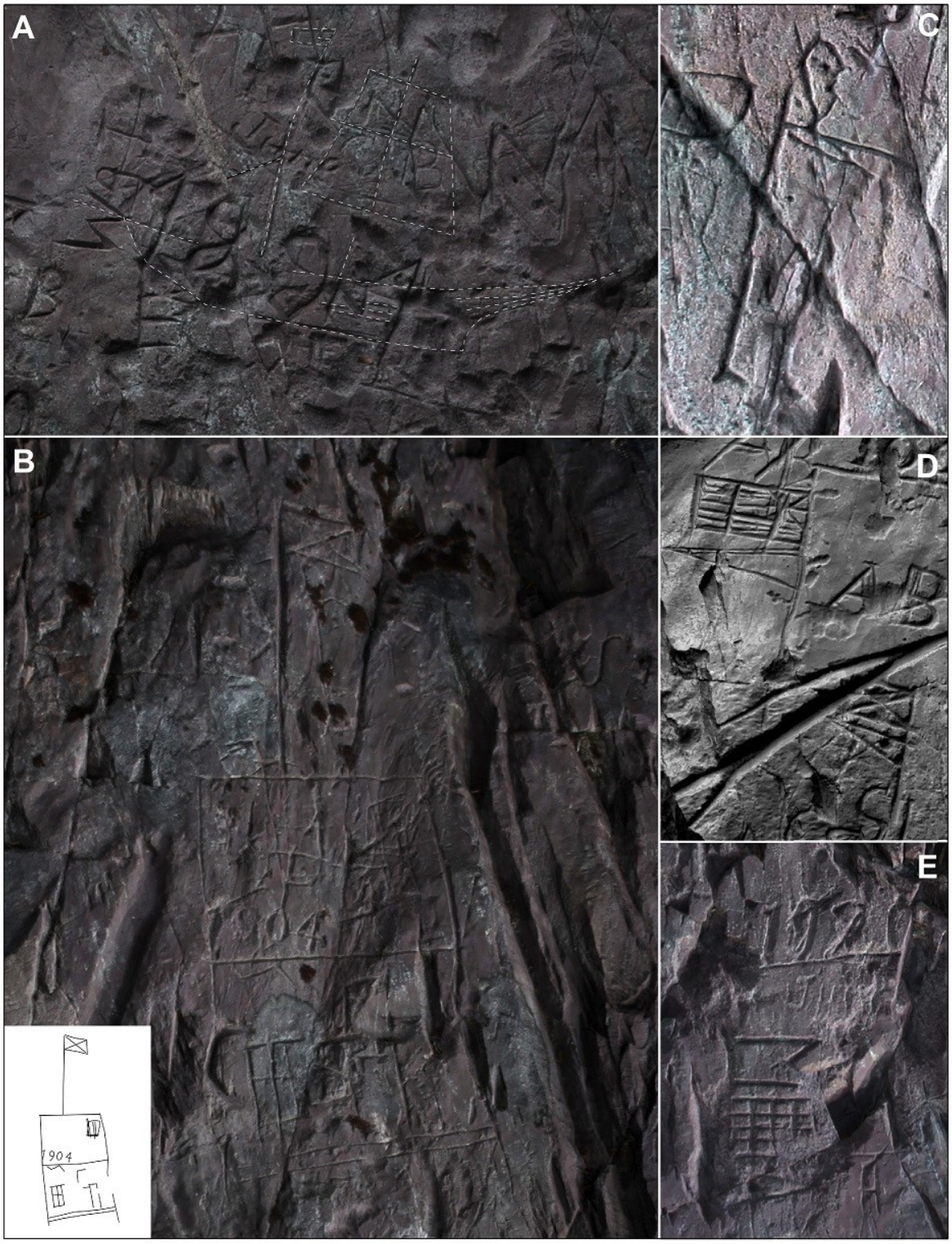

Figure 6: Examples of maritime and other glyphs identified on Halfway Rock. (A) An etching of a two-masted sailing vessel is faintly visible beneath a number of later initials, dates and other inscriptions. Visualized using RTI Viewer diffuse gain mode and white dashed lines have been used to define some elements of the ship. (B) A structure, building or small house, with a flagpole flying a saltire and associated with the date '1904'. Specular enhancement mode. (C) Human figure facing to the right. Diffuse gain mode. (D) Two sets of flags and pennants. The upper-left set comprises a British ensign-type flag with a pennant below. The lower-right set comprise a saltire above a pennant with a circle motif. Specular enhancement mode. (E) A swallow-tailed flag is set above a rectangular checkered flag. Nearby, inscriptions of the date '1921' and month 'July' are closely associated.

Another glyph (4cm high x 2.4cm wide) depicts a flagpole with a rectangular saltire above a pennant with a circle (Fig. 6d). Elsewhere, two flags on a flagpole comprise a slanted pennant-like design above a rectangular checkered design. These designs are closely associated with another set of two pennants; together they fall within an area 6.1cm high x 3.7cm wide. The final glyph (3.6cm high x 2.7cm wide), comprises a swallow-tailed flag which is closely associated with a rectangular checkered flag – both of which are found close to the inscriptions '1921' and 'July' although it is uncertain if they are all directly related (Fig. 6e).

Overall, the palimpsest nature of the inscriptions at Halfway Rock, and the diversity of initials, names, dates, and glyphs, demonstrate the local importance placed upon this landmark — an importance which saw the rockface serving as a medium for the recording of passersby, for recognizing cultural events (i.e. building of nearby church; Come Home Year; membership in Loyal Orange Lodge) or for portraying aspects of maritime activity deemed notable to the carver(s). Local tradition says that Halfway Rock was a convenient stopping point between communities, where residents could take a short rest along their journey. Based on historical and archaeological evidence, these journeys spanned over a century, leaving behind a visual record of past residents and their collective memories. Through the dissemination of this short report, the authors hope to highlight the cultural value of historic inscriptions, not just as a past record of people, their movements, and their local histories, but as sites worthy of further research and protection.

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We wish to thank the Provincial Archaeology Office for their continued support of the Newfoundland Historic Petroglyphs Project. We also wish to acknowledge the assistance of Southwest Arm resident Les Dean for his extensive knowledge of local history, which was heavily relied upon for the interpretation of the historic inscriptions. Finally, identification of the geologic composition of Halfway Rock was provided by Susan Strowbridge, Department of Earth Sciences, MUN.

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Excavations at the Cupids Cove Plantation Provincial Historic Site (CjAh-13), 2021

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Baccalieu Trail Heritage Corporation

Excavations 2019 and 2020

During 2019 and 2020, excavations at the Cupids Cove Plantation Provincial Historic Site focused on the northeast corner of the 1610 enclosure in an attempt to determine the location of the sections of the north and east enclosure walls and flanker erected in that area by John Guy's men (Gilbert 2020, 2021). Previous excavations in the northwest corner of the enclosure had revealed four postholes running from west to east at 12 ft. intervals that clearly had been dug to support posts for the north wall. Since the westernmost of these postholes obviously held the northwest corner post and John Guy stated in his letter of 16 May 1611 that the enclosure was 120 ft. long, it seemed logical to assume there would be another posthole 120 ft. to the east (Quinn 1979: 148). Therefore, in 2019, we ran a tape east from the centre of the westernmost post and along the line of the other three for 120 ft. and began excavating around that point. Over the next two seasons, a total of eight units (Operations 136, 137, 138, 139, 141, 142, 143 & 144), encompassing 34 square metres, were established and excavated in this area (Figure 1).

We initially opened a 2m x 2m unit (Operation 136) around the point where our measurements suggested the northeast corner post should have stood, followed by a second 2m x 2m unit (Operation 137) immediately north of and adjoining it. Excavations in Operation 136 revealed a 1 ft. (30cm) wide trench extending down into the sterile subsoil 118 ft. east of the northwest corner post. The north end of this trench was located just south of the line of the north wall and it extended south from that point for 1.4 m to the southern boundary of the operation. Although it seemed odd that there was no posthole at the north end of this trench, it still seemed possible it may have been dug to accommodate the palings for the east wall of the enclosure and that Guy's measurement was off by a couple of feet. Since Guy stated that the enclosure was 90 ft. wide, if this was the trench for the east wall, it seemed reasonable to assume it might extend south for that distance (Quinn 1979: 148). It did not. When we opened another 2m x 2m unit (Operation 138) immediately south of Operation 136, we found that the trench extended south for another 20cm, then turned southwest and continued in that direction for 1.3m. Clearly, this was not the trench for the east wall. However, as we extended our excavations to the west and south of our first three units, an obvious pattern did begin to reveal itself.

Acting on our initial assumption that the posts for the north wall all had been placed at 12 ft. intervals, we again measured east from the northwest corner post and across the other three, this time for 96 ft., and established another 2m x 2m unit (Operation 139) around that point. As we expected, this revealed another posthole, 45cm below the surface, located along the line of the wall at the 96 ft. mark. It also revealed a narrow ditch, dug into the sterile subsoil and extending east from that posthole to near the eastern edge of the unit. The footprint of what appeared to be some sort of wooden feature also was visible extending into the subsoil in the southeast corner of the operation.

To determine if any more postholes had been dug between Operation 139 and the units farther east, we established a 2m x 4m unit (Operation 141) running east from Operation 139 to Operations 136 and 137. We soon discovered that this area had undergone some major disturbance in 1979 when the landowner at the time, William Norman, had placed a trailer a little over a metre to the north of the enclosure. As we found out, Mr. Norman not only had dug a rectangular pit to accommodate the trailer but he also had dug into the areas immediately north and south of the pit to create earthen ramps so the trailer could be hauled into position and the vehicle hauling it could exit from the other end. Once the trailer had been set in place, the ramps had been filled with a mixture of sand and clay that, after more than forty years, turned out to be extremely hard-packed. Given this, it seemed the chance of any postholes surviving

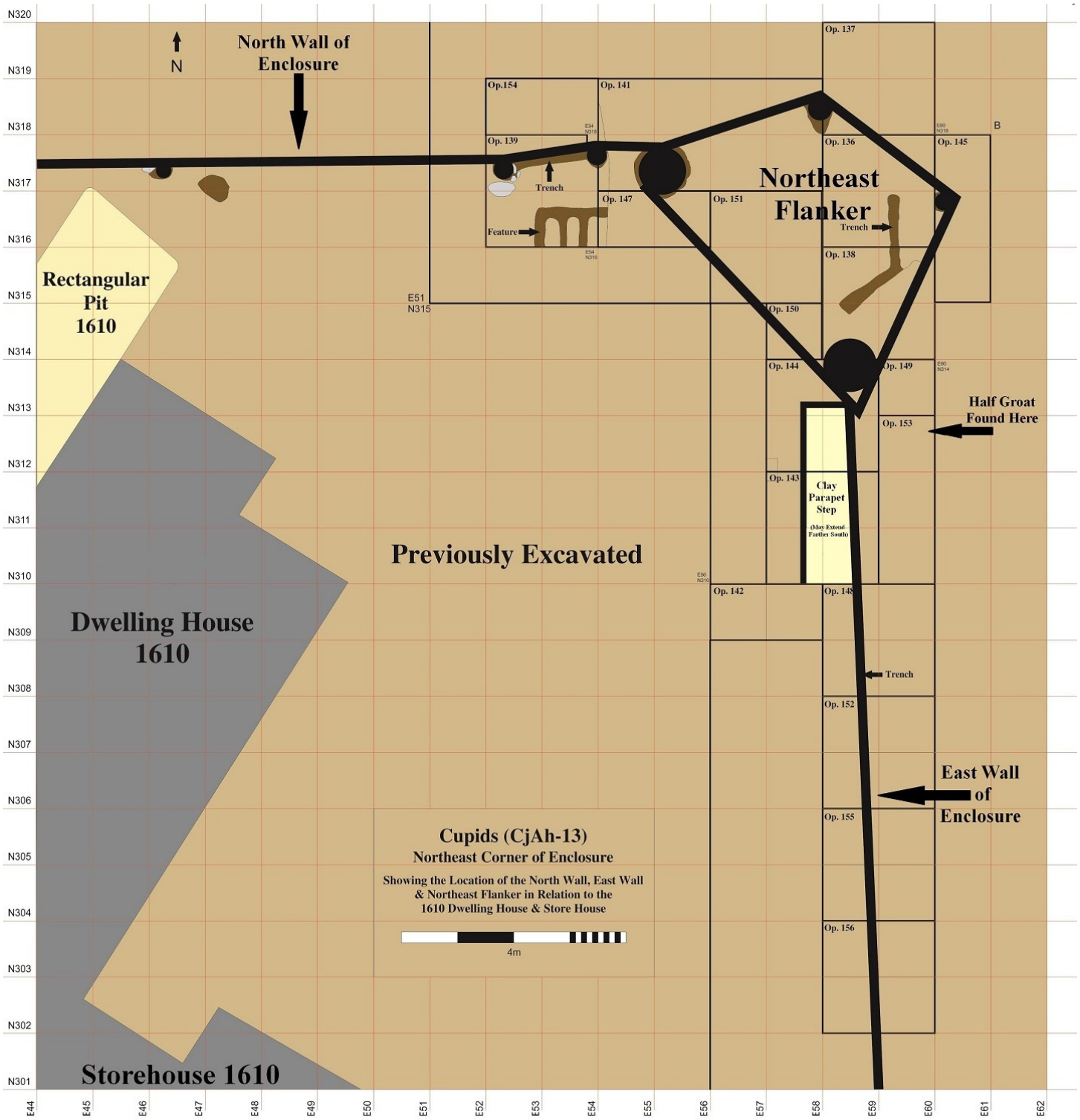

Figure 1: Northeast corner of the 1610 enclosure showing the line of the north wall, east wall and flanker in relation to the dwelling house and storehouse.

in this area was slim. However, to our surprise, beneath the sand-and-clay fill, at a depth below surface of 45cm, we uncovered the remains of a massive posthole, 95cm in diameter. Closer examination of the eastern and western edges of the disturbance also revealed the remains of two smaller, truncated postholes that had survived the teeth of the backhoe's bucket in 1979.

With the line of the north wall established, we decided to reexamine the previously excavated area

Figure 2: Looking north across Operations 148, 143 & 144. The trench for the east wall of the enclosure and the bands to the west of it can be seen in the foreground. The four postholes for the corner posts of the northeast flanker are visible north of the trench.

farther west to see if any other postholes that had seemed randomly placed might now fall into place. As it turned out, two did. Upon closer examination, one posthole, initially uncovered in 2001 just west of the Spracklin cellar, and another, uncovered east of the cellar in 2000, lined up perfectly; making a total of ten. At least one other posthole must have been destroyed when Samuel Spracklin dug the 5.5 m (18 ft) wide cellar pit for his house that cut across the line of the north wall of the enclosure in 1813 or shortly after. And another, 84 ft west of the northwest corner post, was probably destroyed when a pit was dug about 3m east of the Spracklin cellar sometime in the 19th century. Those postholes that have survived form a straight line extending from west to east for 96 ft. Beyond that, they veer slightly to the northeast for 9 ft. and then more sharply to the northeast for another 10 ft. for a total distance of 115 ft. (35 m).

During the excavation of Operation 138, we uncovered what appeared to be part of another large posthole extending north into the southwest quadrant of that unit. To determine if this actually was a posthole, and see if we could find any trace of the east wall farther south, we established two more 2m x 2m units: Operation 144 adjoining and extending south from the southwest quadrant of Operation 138 and Operation 143 adjoining and extending south from Operation 144. A 1m x 2m unit (Operation 142) also was established immediately south of the southwest quadrant of Operation 143 extending west to the previously excavated section of the site in an attempt to determine the location and width of the waterline dug between William Norman's well and the trailer in 1979.

Excavations in Operation 144 revealed that the feature was another large posthole and, like the

one to the northwest in Operation 141, it measured 95cm in diameter. Extending south from this posthole for 3.4m to the southern boundary of Operation 143, we found another trench averaging about 10 inches (25cm) wide. To the west of the trench, and running south parallel to it, was a deposit of clay averaging of about 27 inches (70cm) wide. West of the clay, and running parallel to it, were three bands of silt, extending down into the sterile subsoil, that appeared to be the remains of decayed boards from some sort of wooden platform. The easternmost of these bands was, on average, 10cm (4 inches) wide, while the two farther to the west were wider (Figure 2).

By the end of the 2020 season we had uncovered ten postholes from the north wall of the 1610 enclosure and there seemed little doubt the trench extending south through Operations 143 and 144 had been dug to accommodate the palings for the enclosure's east wall. It also seemed likely that the clay deposit and traces of wood to the west of the east wall marked the location of a clay parapet step and platform similar to that found at Martin's Hundred in Virginia and designed to allow defenders to fire over the wall (Noël Hume 1979, 218-224). Clearly the two 95cm wide postholes at the ends of the north and east walls had been dug to support something far more substantial than mere corner posts. Given their location in the northeast corner of the enclosure, it seemed most likely they were meant to hold the inner corner posts for the northeast flanker; posts chosen to withstand the recoil of the cannon mounted on it. Obviously, these posts would have been somewhat smaller than the holes dug to support them. If we assume they were about 80cm in diameter, they would have had a circumference of about 2.5m, or roughly 8ft. 2 in. It is worth noting here that in his letter to Sir Percival Willoughby, written on 6 October 1610, John Guy reported that there was then "a pine tree at the saw-pitt, that is about tenne feete about at the butt" and another "thirtie feete longe is eight feete about" (Cell 1982, pp. 61-62).

2021 Operations and Features

In 2021, our crew returned to the Cupids Cove Plantation PHS on 17 May. The site opened to visitors on 22 May and remained open until 8 October. As is the case every year, our first few weeks were spent removing sandbags from the features and preparing the site for the season. While our visitor numbers were up from last year, the total number of visitors was just 1299 - only roughly one third of our numbers in a normal year. Still, fewer visitors meant we had more time to devote to digging. Excavations began this season on 8 June and continued for 18 weeks up to 8 October. Once again, we focused our efforts on the northeast corner of the enclosure. In all twelve units (Operations 145 -156) were opened encompassing a total area of 38 square metres.

As mentioned above, by the end of the 2020 season, we had uncovered three of the four postholes marking the corners of what we believed to be the northeast flanker and two of these, the 95cm wide postholes at the east end of the north wall and north end of the east wall, appeared to have been dug to hold the flanker's inner corner posts. Another posthole, on the edge of the disturbance to the east of the inner posthole for the north wall of the flanker, appeared to have been dug to hold the outer corner post for the flanker's north wall. However, the hole dug to hold the outer corner post for the south wall of the flanker had so far eluded us. Since the distance between the inner and outer posts on the north wall of the flanker was 10 ft (centre to centre), we assumed that, if the flanker had been relatively symmetrical, the distance between the inner and outer posts of the south wall would be about the same; although the exact location would depend on the angle of the south wall as it extended northeast from the enclosure's east wall. If our assumptions were correct, we reasoned that the forth corner post should be located somewhere just east of the eastern boundary of either Operation 136 or 138. To see if we were correct, in 2021 we opened a 1m x 3m unit (Operation 145) to the east of and adjoining these two units. As we had suspected, roughly 40cm below the surface we found another posthole extending down into the sterile subsoil just east of the eastern boundary of Operation 136. When we checked the distance, we found it was located exactly 120 ft. east of the northwest corner post. John Guy's measurement was correct after all but he had included the flanker as part of the north wall (Figure 3).

Since our efforts in the northeast corner of the enclosure had been so successful, in 2021 we decided to see if we could use the same approach to locate the southeast corner post of the enclosure.

This time we ran a tape south for 90 ft. from the eastern end of the north wall along the line of the section of the east-wall trench exposed in Operations 143 and 144 and established a 2 m x 2 m unit (Operation 146) around that point. Excavations in this area proved extremely difficult. The deposits were very hard-packed and contained a high proportion of stone. Since the operation was located just a few metres southeast of the well shaft dug by William Norman in 1979, we initially thought these deposits might be debris scattered over the area when the well was dug and that we would find undisturbed deposits deeper down. However, an attempt to dig below the disturbance in the eastern half of the operation produced only more of the same material. As it turned out, our neighbours Roger and Rodney Norman both had been present when the well was dug and, when we consulted with them, we discovered that, in 1979, a hole had been dug in this area to hold the debris removed from the well shaft and afterwards the material had been packed down using a backhoe. If the southeast corner post for the enclosure had once stood in this area, it seemed unlikely any trace of it had survived.

Figure 3: Looking southwest towards the partially reconstructed dwelling house and storehouse. The four postholes for the corner posts of the northeast flanker can be seen in the foreground. Operation 145 is on the far left.

Given this, we decided our best chance of establishing the line of the east wall was to continue following the trench for the wall south from Operation 143. During the 2021 field season, we extended the excavation south in this area for another 8 metres, opening four 2m x 2m units: Operations 148, 152, 155 & 156 from north to south. Since that section of the trench exposed in Operations 143 and 144 veered slightly to the east as it continued south, Operation 148 was established adjoining the southeast quadrant of Operation 143 and extending 1m east from it. The other three operations extended directly south in sequence from Operation 148. These four units exposed another 8m of the trench extending down into the sterile subsoil, making a total of 11.4 m (37 ½ ft) uncovered by the end of the 2021 season.

Another six operations were opened in the northeast corner of the enclosure during the 2021 season. Operation 147, a 1m x 2m unit extending south from the western half of Operation 141 was opened to expose the southernmost portion of the inner posthole on the north wall of the flanker. Operations 149 and 150 were two 1m x 1m units dug to the southeast and northwest respectively of the inner posthole on the south wall of the flanker to expose sections of that feature that had previously been unexcavated. Operation 151 was a 2m x 2m unit opened to expose a previously unexcavated section of the flanker located between the north and south inner corner posts. Operation 153 was a 1m x 3m unit opened immediately east of Operation 143 and the southern half of Operation 144 to facilitate the mapping and photographing of the features immediately to the west. Operation 154 was a 1m x 2m unit opened immediately north of Operation 139 and west of Operation 141 mainly to better facilitate the drawing and photographing of the features immediately to the south of it in Operation 139. To date most of these units have only been partially excavated. The excavation of these units will continue in the 2022 season.

It is now clear that the north wall of the enclosure erected by John Guy's men in 1610 was of post-and-rail construction and the east wall, or at least that portion uncovered to date, was of slot-trench construction. Both these types of palisade walls are well known from documentary and archaeological sources (Noël Hume 1979: 221-223 & 235). Large posts were positioned along the line of the north wall, most of them at 12 ft. intervals, rails, affixed with nails, would have been run horizontally between the posts to create a frame and large palings, or "pales", probably sharpened at the top, would have been nailed vertically to the frame to form a solid wall. We now know that the north wall ran from west to east in a straight line for the first 96 ft. then veered slightly to the north for another 9 ft. at which point it connected with the back of the north wall of the flanker, which extended northeast from it for another 10 ft. The flanker most likely was also of post-and-rail construction.

In the case of the east wall, a narrow trench, originally perhaps 2 or 3 ft. deep, was dug and circular or split timbers would have been placed vertically side-by-side in it. The timbers were held in place by soil packed around them in the trench and more soil may have been banked up against the timbers to further reinforce them. We know that in some cases these slot-trench walls were buttressed by posts placed at regular intervals inside the wall with horizontal rails running between them. While no evidence of this type of buttressing has been found to date along the east wall of the enclosure at Cupids Cove, these units have not yet been completely excavated and some traces of buttressing may yet be discovered. As we have seen, 11.4 m (37 ½ ft.) of the trench for the east wall have been uncovered to date. At its north end the trench connected to the back of the south wall of the flanker, which extended northeast from the east wall of the enclosure for 10 ft. The back of the flanker, at the place where it connected to the north and east walls, was about 19 ft.(5.8m) wide but as it extended northeast it narrowed to just 10 ft. (3.2 m) creating an opening through which a cannon could fire. The cannon, possibly one of the 'minions' mentioned in the inventory of provisions left at the colony in August 1611 (Cell 1982:66), would have been mounted on the flanker to guard the entrance to the harbour. When needed, musketeers could have been positioned along the north and south walls of the flanker to guard the approaches to north and east enclosure walls. As we have seen, the clay and silt deposits to the west of the enclosure's east wall suggest the presence of a platform and parapet step that would have allowed defenders to look out and, if necessary, fire over that wall as well.

2021 Stratigraphy and Artifacts

As mentioned in earlier reports (Gilbert 2020, 2021), this portion of the site has been extensively ploughed over the years and little in the way of stratigraphy has survived. Throughout most of the area, the uppermost 20cm (8in) consists of a plough zone containing a mixture of cultural material ranging in date from the early 17th century to the present. Below this, and varying in most places between 16cm and 20cm thick, is a deposit of organically enriched sandy silt, similar to the cultural deposits found farther west. While the percentage of 19th century and early 20th century material does tend to decrease the deeper one digs, in most cases there is little sign of stratigraphy and some mixing continues right down to the underlying sterile subsoil. In some areas, we do find thin, undisturbed

patches of exclusively 17th century material above the sterile that have managed to escape the plough but for the most part, the only undisturbed deposits are those contained within the trenches and postholes that were dug into the subsoil early in the 17th century.

Figure 4: Portrait Medallion from a Westerwald vessel, Circa 1660-1710.

The area is by no means as rich in cultural material as the interior of the enclosure farther west. The most obvious reason for this is likely that there was less activity in this corner of the enclosure once the walls and flanker had been erected. However, given the extensive ploughing over the years, it is also possible that some artifacts were removed during the process of clearing the fields: larger pieces may have been tossed into piles along with the stones that were removed, while other pieces that looked interesting, or were thought to be of some value, may have been taken away. Most of the fragments that have been recovered are relatively small; no doubt a result of the many years of ploughing. Still, over the past three seasons we have recovered nearly 3000 artifacts from this part of the site.

As is the case on many historic sites, ceramics make up the bulk of the material unearthed. In all 1798, fragments of ceramic have been recovered from this part of the site. Of these, 939, or slightly over half, are various types of refined earthenware dating from the late 18th century to the early 20th century. Twenty fragments of 19th century stoneware have also been recovered. The remaining 839 fragments consist of a wide range of ceramics dating mostly from the 17th or early 18th century. Not surprising, as is the case elsewhere on the site, a high proportion of this consists of fragments of vessels from the west of England including the north Devon area, Totnes in south Devon, south Somerset, and the area around Verwood in Dorset. A number of fragments of Iberian coarse earthenware have also been recovered reflecting the connections between Newfoundland and the salt-cod markets in southern Europe. Thirty-four fragments of various types of tin-glazed earthenware, most of them manufactured on the Iberian Peninsula, have also been recovered.

A number of shards have been recovered that clearly date to the early 17th century, or perhaps even earlier. These include fragments of Werra Slipware manufactured in Germany sometime between 1590 and 1630; North Italian Sgraffito probably made in Pisa sometime between 1575 and 1640; and Raeren stoneware produced in what is now Belgium sometime between 1580 and 1610. Activity extending in to the late 17th and/or early 18th century is attested to by the presence of a number of fragments of Westerwald stoneware manufactured in Germany between 1660 and 1710. These nonporous vessels, used to hold and serve beer, wine and spirits, were imported into England and shipped to the colonies in large numbers. One shard uncovered in 2021 is of particular interest. It is a fragment of a portrait medallion depicting some as of yet unidentified person. Similar portrait medallions depicting William III (William of Orange) are sometimes found on English sites dating to the late 17th century and early 18th century but the inscription partially visible on this exam-

ple seems to differ from those usually associated with that monarch (Figure 4).

In all 279 fragments of various types of glass have been excavated to date in the northeast corner of the enclosure. Of these, 131 are fragments of window glass: 40 from clear window glass dating to the late 18th or 19th century and the remaining 91 from dark green window glass dating to the 17th or early 18th century. A total of 128 fragments of glass from various types of dark green "wine bottles" have been recovered. While some of these are clearly from late 18th or 19th century bottles, a high proportion are from various types of shaft-and-globe and onion bottles ranging in date from the second half of the 17th century to the early 18th century. Nineteen fragments of late 16th or 17th century case bottle glass and eleven glass trade beads have also been recovered.

Figure 5: Copper aglet or "point" found just outside the east wall of the enclosure. Points were among the trade goods John Guy and his men carried with them aboard the *Indeavour* when they sailed into Trinity Bay to meet the Beothuk in the autumn of 1612.

As is often the case, some of our best evidence for dating comes from the fragments of clay pipes found scattered over our, and most other, early modern sites. In the 1950s, Jean Harrington, an archaeologist working at Jamestown in Virginia, developed a chronology for dating clay pipe stems based on the diameter of their bores (Deetz 1977: 19-20). Over the past three seasons, 240 clay pipe stems with measurable bores have been recovered from our excavations in the northeast corner of the enclosure. Applying Harrington's chronology to this sample gives us the following breakdown 1590-1620 (9/64): 3; 1620-1650 (8/64): 45; 1650-1680 (7/64): 93; 1680-1720 (6/64): 29; 1720-1750 (5/64): 46; 1750-1800 (4/64): 24. If Harrington's dating system is accurate, it indicates that this part of the site was in use throughout the 17th and 18th centuries. This fits in well with the pattern found during our excavations farther to the west. When we apply Harrington's dating system to the 7548 pipe stems with measurable bore diameters ranging between 9/64 and 5/64 found on the site between 1995 and 2012 , we get the following breakdown: 1590-1620: 2.5%; 1620-1650: 24.59%; 1650-1680: 45.03%; 1680-1720: 7.23%; 1720 -1750: 10.61%; & 1750-1800: 10.03%. The low number of bores dating to the period 1590-1620 is likely the result of the site only being occupied for a third of that time span and the fact that tobacco was expensive and hard to obtain during the early years of the colony. However, it should also be noted that some of our earliest pipes, dating to 1610 or before, have bore diameters of 7/64. Therefore, it seems Harrington's system may not be as accurate when applied to the earliest pipes. The small percentage of pipes dating to the period 1680-1720 can be at least partially explained by the almost constant danger of French attack during the period from 1688 to 1713.

In addition to a number of wrought iron nails, the northeast corner of the enclosure has produced a some interesting copper and lead artifacts including five copper buttons ranging in date from the 17th century to the 19th century, three lead musket balls, a 17th century copper thimble and a 3cm long copper aglet (Figure 5). Aglets, also known as "points", are rolled pieces of metal used in the 16th and 17th centuries as the tips for laces and embellishments for clothing. While most were made of copper, they could also be made of silver or gold. According to Ivor Noël Hume, well-dressed men in the early 17th century could be seen with them "hung from the ends of shoulder laces and in rows dangling from [their] garters" (Noël Hume 1979: 58). John Guy records that when the crew of the Indeavour first met a group of Beothuk on a beach near what is now Sunnyside, Trinity Bay, on 6 November, 1612, one of the last Beothuk to come ashore, and who "seemed to have some command over the reste", was given "a dozen of pointes" (Cell 1982: 74).

Henry VII Silver Half Groat

One metal artifact uncovered in 2021 generated a great deal of interest. On Friday, 10 September, I was catching up on some paper work in my office at home when, at around 12:40 pm, our long-time crew member Patricia (Tish) Elford phoned to let me know that one of our field assistants, Faith Bursey, had just found a silver coin that looked "really old". Tish emailed me some photos of the coin taken with her mobile phone and clearly, she was right; the coin did indeed look very old, in fact, it looked medieval. I had seen examples of similar coins dating back as far as the reign of Edward I (1272-1307) but I also knew that similar-looking coins were still being minted during the reign of Henry VII (1485-1509). We had found an Elizabethan silver groat (four penny piece), minted in either 1560 or 1561, and a James I half groat (two penny piece) minted in either 1603 or 1604, just east of the 1610 dwelling house in 2000. We also had uncovered an Elizabethan three-penny piece, minted in 1573, at the Hefford Plantation in New Perlican back in 2005, so I had some idea of the relative size of these types of coins. When I arrived in Cupids later that afternoon and had a chance to examine the coin up close, it seemed to me, based on its size and weight, that it probably was a half groat. In addition, while it could have been older, my best guess was that it had been minted during the reign of Henry VII, over a hundred years before the Cupids colony had been established.

However, I am by no means an expert in these matters so, on 13 September, I emailed photographs of the coin, along with its dimensions and weight, to Paul Berry, the former curator of the Bank of Canada's Currency Museum. Over the years, Paul has identified most of the early coins recovered from Cupids, Ferryland and numerous other archaeological sites. Over the next few days, my correspondence with Paul confirmed that the coin was a Henry VII silver half groat and, more precisely, that it was a "halfgroat type IIIc" minted in Canterbury sometime between 1493 and 1499. This is, almost certainly, the oldest English coin ever found in good archaeological context anywhere in North America (Figures 6 & 7 – also see the cover of this volume).

The obverse of the coin has a stylized, full-faced portrait of the monarch with a crown and long flowing hair. Although cropped, part of the legend "HENRIC DI GRA REX ANGL Z F" (Henry by the grace of God King of England and France) can still be seen encircling the portrait. The reverse is quartered by a long cross, within which are two circles. Each of the four quarters in the inner circle contains three circular disks or "pellets". The legend "CIVITAS CANTOR" (City of Canterbury) can clearly be seen between the two circles and, although worn and partially cropped, part of the legend "POSVI DEV ADIVTORE MEV" (I have made God my helper) is still visible encircling the edge of the coin. A tun mintmark can be seen at 1:00 on both the obverse and reverse (Paul Berry, per. com.).

Understandably, when news of the discovery first reached the public, there was some speculation that the coin may have been lost long before the Cupids colony was established, perhaps by a migratory fisherman, or early explorer, or possibly even by John Cabot himself. However, such speculations simply do not hold up to close scrutiny. Shortly after the coin was found, Evan Jones at the University of Bristol sent photographs of it to Peter Preston-Morley, Secretary of the British Numismatics Society, to get his opinion. Mr. Preston-Morley replied that, based on the coin's wear-patterns, it probably had been in circulation for thirty or more years before it was lost (Evan Jones, per. com). Therefore, it clearly was not lost around the time of the Cabot voyages or any of Bristol's early exploratory voyages to the New World. Nor is it likely to have been lost in the 16th century. While it may be surprising that a coin minted around the time of the Cabot voyages was lost over one hundred years later at the site of the oldest English colony in Canada, the chances of it having been lost by a 16th century migratory fisherman seem far less likely. Prior to the 1570s, very few English vessels were involved in the Newfoundland migratory fishery and, even when the English fishery began to expand in the 1570s, Cupids was by no means a major centre of activity. In fact, it has been suggested that one of the reasons Cupids was chosen as the site of the first colony was that it was somewhat removed from the major centres of the English fishery (Cell 1969: 22-33; 63). The coin was found just outside the 1610 enclosure, 3 ft. east of the east wall and 4 ½ ft. south of the northeast flanker. Even if Cupids was being visited by English migratory fishermen in the late 16th century, one of them would have had to have carried

Figure 6: Henry VII silver half groat, 1493-1499, obverse.

Figure 7: Henry VII silver half groat, 1493-1499, reverse.

a silver coin, worth about half a day's wages, south from the beach, through what at the time would have been dense forest, for roughly 200 ft (61m) and lost it just outside what, years later, would be the east wall of John Guy's enclosure. It seems far more likely that one of the early colonists lost the coin, possibly while the palisade and flanker were being erected in the autumn of 1610.

Yet the coin still presents a bit of a mystery. While its wear patterns suggest it was in circulation for thirty years or more, it probably was not in circulation for a great deal longer. A silver coin in constant circulation for at least 111 years likely would be so worn as to be almost unrecognizable (Evan Jones, per. com.). It seems our silver half groat must have been taken out of circulation for some time and the most likely explanation for this lies in the economic policies initiated by Henry VIII and continued by his son Edward VI. In 1542, Henry began the process of decreasing the silver content of English coins (Downey, 1997). Most of the earlier coins were recalled by the Royal Mint to be melted down and reused. However, at a time when few people had access to banks, it was not uncommon for those who could afford it to store away some silver either in coin or some other form. Since the silver content of his father's coinage would have been considerably higher than that of the new, debased coins issued by Henry VIII, many of the earlier coins that survived probably would have been hoarded. Most likely, our coin was part of one such coin hoard, kept, perhaps, somewhere in the Bristol area, that made its way back into circulation sometime before the first colonists left for Newfoundland in 1610.

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Bauline Cannons Site - CkAf-02 Investigation for Purposes Of Non-Scientific Filming By Prometheus Entertainment

Scarlett Janusas
Scarlett Janusas Archaeology Inc.

Figure 1: Bauline Cannons site (source: Burgess 2016: Site Record Form).

Background

Prometheus Entertainment engaged Scarlett Janusas to apply for an archaeological permit and direct activities in water at CkAf-02, known as the Bauline Cannons Site for the purposes of filming an episode of "Beyond Oak Island". The intent was to "pretend" to have discovered this site, and to use the cannons as a possible tangent into the possibility of discovering the pirate treasure of Peter Easton, a former privateer, then later a pirate who plied the waters of Newfoundland and beyond. All activities were "acted" rather than reflecting any true discovery or survey. An echo sounder was used during the filming to look for these three cannon, of which only two were located limited by the survey area and time on site. Divers were then sent into the water to search for evidence of a possible battle in this location, and possible treasure. The bottom was never disturbed, and a marine archaeologist was in the water during all in-water activities while another marine archaeologist was topside monitoring through equipment. A remote operated vehicle "filmed" the underwater footage, and there were in addition, two still photographers/safety divers in the water. Basic measurements of two of the cannon were taken, taking care not to disturb the cannon. In addition, a metal detector was used to "search" for pirate treasure, such as coin. No "hits" of any kind were detected using the metal detector. The site re-

mained undisturbed by the film crew of Prometheus Entertainment.

Historical Overview

The Bauline Cannons site was first recorded by Ken Keeping (Permit Number 15.39), where three cannon were located underwater on the northwest side of a small islet approximately 120 metres northwest of the mouth of Bauline Harbour. The suggested date for the cannon was between the 17th and 18th century. Burgess (Neil) completed the site record form indicating that the three cannon were intact and encrusted with coralline algae. Of the two cannon viewed during the Prometheus Entertainment visit, only one cannon was intact, and the other showed signs of possible catastrophic accident such as misfiring, evidenced by a large hole in the side of the cannon.

Figure 2: Bauline Cannons Site, 1:50,000 scale map.

Neil Burgess conducted research for the site in 2015 and 2016, and the site record form completed in March of 2016. Figure 1 illustrates the location of the three cannon known as the Bauline Cannons Site (2016 site record form).

2021 Investigations

Prometheus Entertainment engaged avocational historian Bill Smith, who had been accumulating historical documentation on the pirate Peter Easton for approximately 20 years, with the anticipation of publishing a book on Peter Easton. Smith acted as the historian for the project. The site was chosen for two reasons: 1) known archaeological site with large artifacts that would be enticing for viewers, and 2) a suggested battle in this location between Easton and unknown parties.

During the filming, Smith indicated that he did not really believe that the battle at Bauline had anything to do with Peter Easton (personal communication with Scarlett Janusas August 2021). Literature about Peter Easton exists on various web sites, and a very general description of the pirate is presented here.

The pirate Peter Easton based his "operations" out of Newfoundland and was largely present between 1611 and 1614. His ship was named the "Happy Adventure". He made short work of capturing ships, including those of French, Dutch and Spanish origin. At one point, he reportedly (htpps://www.cbc.ca/strombo/videos/show-clip/jason-jones-Peter-Easton-pirate-Newfoundland/P120) captured three Spanish ships with a treasure of about 50 million dollars.

In another online item about Peter Easton (www.thewayofthepirates.com/famous-pirates/peter-easton/), it is stated that there is very little known about Easton. In general, however, what can be said, is that during this early time period, pirates would capture ships, and then utilize what was aboard those ships, not only searching for "treasure", but also practical materials for reuse, given that the "New World" still had limited manufacture of armaments, equipment, etc. Therefore, it is quite likely that if a ship was captured, the entire ship would be seized and reused, and where not possible due to extreme possible damage to those ships, then elements thereof

would be scavenged for reuse. Therefore, cannon that predated 1611-1614 might belong to Peter Easton, or those cannon of similar vintage but of different origin, would likely be reused. Consequently, the search for only "British" cannon would be inaccurate in identifying activities of Peter Easton, albeit British in origin.

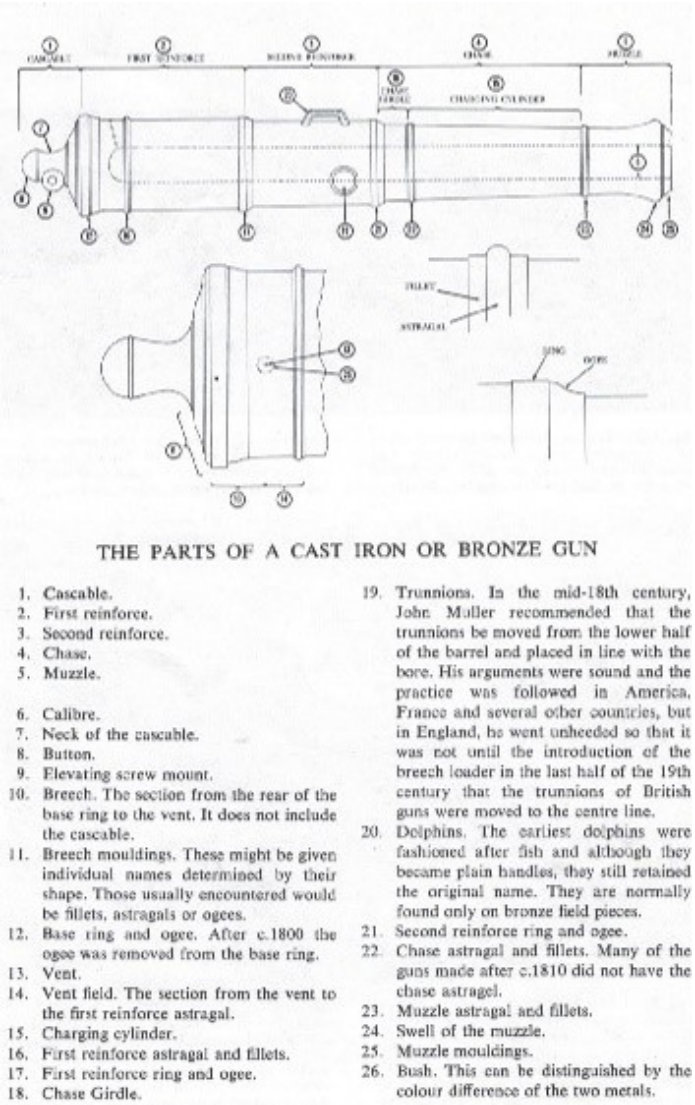

Figure 3: Parts of a Cast Iron or Bronze Gun (Gooding 1965: 16).

The Site

The Bauline Cannons site location is presented in Figure 2 on the 1:50,000 scale topographic map.

Activities on Site

The film crew visited the site twice on August 18th and 19th, 2021. There were two boats, the main vessel and a support boat. Safety was key to the entire operation.

Echo sounder survey

An echo sounder survey was conducted on August 18th, 2021, and two of the three known cannon were detected. These positions were marked (latitude and longitude) in order to return to the cannon on the 19th of August. No additional "hits" were noted during the survey, and it was limited to the north and northwest side of the small islet of Bauline Harbour. The two cannon "found" were those identified in the site record form of 2016 as cannons 2 and 3 (refer to Figure 1). The objectives for the 19th of August were to locate the two cannon located on the 18th by echo sounder, and to film the "discovery".

ROV

The ROV was placed in the water on August 19th prior to the dive team to capture and film the proceedings. Operator Ken Deboer ran the ROV and Scarlett Janusas, marine archaeologist, observed activities on the live feed.

Dive

The objectives for the 19th of August were to locate the two cannon located on the 18th by echo sounder and to film the "discovery". Two dives in total were conducted. Dive 1 was to film the "discovery" of the two cannon, and Dive 2 was conducted to provide some basic cannon measurement and to conduct a metal detector survey in a small area around the two cannon.

Real Time Communication was used, although it did not prove as reliable as hoped. Both Tony Sampson and Allanah MacDonald wore masks that allowed communication (AGA), push to talk and voice active from a wireless transducer to top box). As indicated, this system experienced problems but active "eyes on" the in-water diver was conducted by marine archaeologist Allanah MacDonald and also by marine archaeologist Scarlett Janusas (topside) via means of a live feed from the ROV.

Metal Detector

The film crew also wanted diver, Tony Sampson, to use a metal detector to suggest a further survey for metal objects in the area. The metal detector used was a Garret Sea Hunter II, Fisher Pulse 8X. Under guidance of Allanah MacDonald (in-water) and Scarlett Janusas (topside), the bottom was not disturbed during this process.

Basic Measurements

In addition, with specific instructions from Scarlett Janusas, marine archaeologist, Tony Sampson and Allanah MacDonald were permitted to take basic measurements of the two cannon, but without any disturbance of the bottom or the cannon themselves. The cannon were quite heavy and partially embedded in organic material, and were not displaced in any way.

Measurements were taken with feet and inches tape measures. Scarlett Janusas instructed divers how and what to measure in a pre-dive session. Length of the cannon was measured from the first reinforce to the muzzle and excluded the cascable (Figure 3).

Results

The first cannon, which is the same as cannon 3 from the 2016 site record form, is partially buried at the muzzle end. Its length from the muzzle to the cascable is 64" (5.3"). The distance from the muzzle to the trunnion is 37". The second cannon, (cannon 2 from the 2016 site record form), is split open along the length, has about the same dimensions as the first cannon, and a muzzle bore diameter of 4". There is a trunnion on both cannon.

Cannon 2 (2016 cannon 3) has a large rift in the metal (parallel to cannon length).

There was no obvious symbols or words noted on either of the cannon.

Images 1 - 3 illustrate the two cannons.

Research and Analysis

As this is not an earnest marine heritage project, only the most cursory of attempts was made to date these cannon. It can be stated that the cannon postdate the 15th century but date certainly not later than the 18th century. There is no definitive association of a ship with these cannon at this time.

Conclusions

The absence of any obvious symbols, numbers or words on the cannon (heavily concreted) does not provide an obvious clue to origin or date. There are, however, a number of notes that can be made about the two cannon, some based on negative evidence.

There were no "bands" seen on either of the cannon, which was more typical of cannon from the 15th century. This suggests that the cannon dated later than the 15th century.

"The cost of heavy guns was high and captured guns and older types were reused until they were no longer serviceable, resulting in considerable variation in specifications of guns in service" (Collins accessed August 2021).

In addition, by 1637, there were eight types of heavy guns in use which included: cannon, demi-cannon, culverins, demi culverins, sakers, minions, falcons and bases (Ibid).

The above suggests that these two cannon may have been utilized by Easton or others after capture – and may be of non-British origin. Without the aid of turning the cannon (symbols may be on the underside) or removal of the coral encrustrations, or using x-rays, origin of the cannons is not possible with only the most cursory of examinations conducted during the current project.

The fact that Easton was active as a pirate in Newfoundland from 1611-1615, suggests that he may have been using turn of the century cannon. The cost of cannon and the availability of "new" cannon would have factored into what cannon Easton or others were using at the time. Undoubtedly there would be a crossover from the old century to the new century, where construction continued in the same fashion as previously. Change, even though it may have occurred, does not necessarily translate into an automatic use (or availability) of a particular product, in this case, type of cannon.

Based on the size of the two cannon, it is possible that they are "minions" and based on the bore diameter, they were probably four-pounders. The second cannon (cannon 2 in 2016 report) had a large fault which ran parallel to the cannon length. The type of force necessary for this rendering of metal was great, and may have been a consequence of a misfiring.

The cannons date post 15th century to the 18th century. There is no known association with a specific ship or person at this time.

Although conjectured during the filming by Tony Sampson as possible ballast, this is less likely than that of a comprised cannon on deck or on the firing deck. Ballast would have been in the hold and not easily accessed and the weight of the cannon would have made it prohibitive to "cast" the cannon overboard as suggested.

Image 1: Cannon 1 (2016 cannon 3).

Image 2: Cannon 1 (2016 Cannon 3), Muzzle.

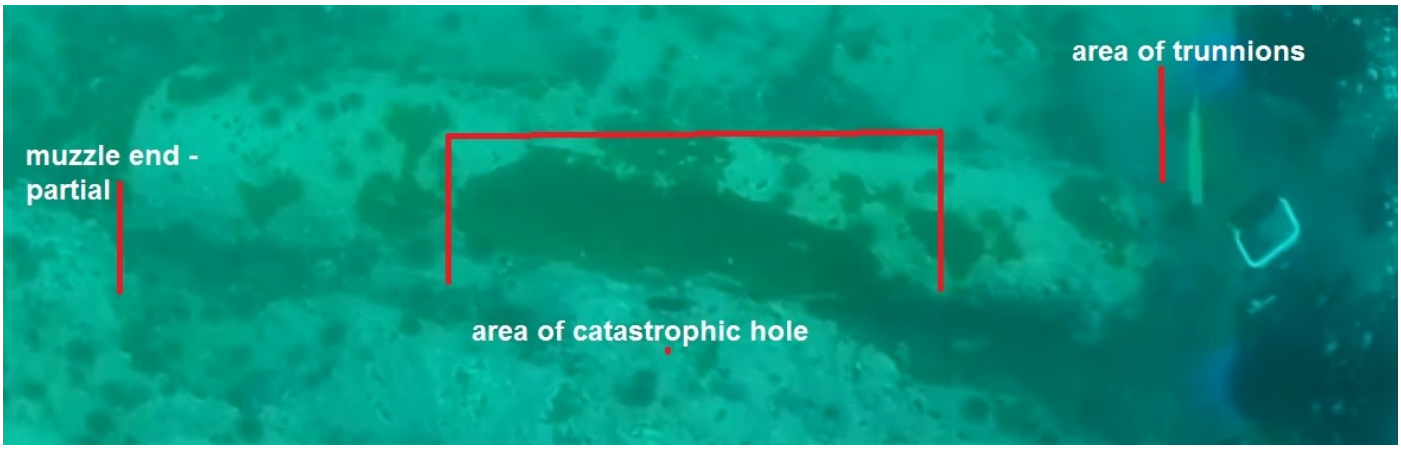

Image 3: Cannon 2.

If there is a ship that foundered or sank in this area, enhanced side scan sonar and magnetometer survey might be able to locate wreckage if the ship slipped into deeper waters. There is no plan at this time to return to the site for further investigation.

There is also no indication that a battle ensued here based on physical evidence alone.

An added point to this conclusion is the initial reluctance as a professional archaeologist to be involved in a strictly for entertainment type of project. While there was some trepidation at the onset, and some anxiety during the project, there are some positive take always from being involved in such a project. First, by being present on site and conducting pre and post dive briefs, having a marine archaeologist both in the water and monitoring topside through equipment (live feed), provided an assurance that the site would indeed remain protected. Second, a site visit allowed for an update on the site itself, a monitoring exercise where the state of the archaeological site can be updated since it was initially reported. Third, and there is some discretion necessary on the part of the archaeologist, if the site/artifact is stable, it may allow for some additional data collection, such as measurements. In this case, the cannon were stable and measurements of the two were allowed, and a new piece of evidence was able to be recorded.

There is no doubt that the television show will sensationalize the discovery (it has been a known site since 2016) "pretending" that the stars were the first to discover this site. There will be suppositions made that are wholly implausible and totally unsupported by any known documentation. There will be misrepresentation and statements taken out of context. The upside however is positive. The site remains undisturbed and there has been, albeit small, additional data recovered from the site visit. There is no doubt that there will be appreciable squirming at my end when watching the episode, but I know, and through this publication, others now know, that the site and the archaeology were uncompromised.

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Stories of lives lived in a land carved by ice: Tshiskapisk Archaeology at Kamestastin and Sheshatshit in the Spring and Fall of 2021

Anthony Jenkinson
Tshikapisk Foundation

Figure 1: Mistanuk Site (GlCs-08) at close of 2021 excavation. Mistasuapi Component to the left and Napanakapeu Component to the right. The sloped approach to one of the two main caribou crossings at the outlet narrows is visible in the top right corner of this photograph. June 25th 2021 Kamestastin Ekupitats.

In 2021 news from Tshikapisk was again dominated by continuing excavations at Kamestastin and to a lesser degree by work on a small project at FjCa-79, the Shukapesh 2 site, on the highest terrace in the Sheshatshit series. At both locations, we undertook small expansions of existing excavations.

Kamestastin

GlCs-08 Mistanuk Mistamunik Site

Mistasuapi Component

Thirteen new units were opened around the perimeter of the existing (2020) excavation at Mistasuapi. A line of spaced rocks roughly paralleling the linear hearth was exposed to the east, and may have served as tent hold-downs. Another of the now familiar informal combustion features with attendant red ochre, small Ramah flakes, bifacial tool fragments and calcined bone pieces, sat on an area of sand stained black with greasy carbonized material and set in a shallow scooped out depression. The latter carbonized material does not appear to be derived from wood charcoal. We have speculated in earlier reports about the possibility that bone may have been not only placed in fire but actually used as fuel for small combustion events. Evidence of a practise involving the burning of crushed caribou bone in the company

Figures 2 and 3: Left – subsurface horizontal profile of rectangular object as it appeared beneath vegetation mat. Right – object after limited excavation and just prior to reburial.

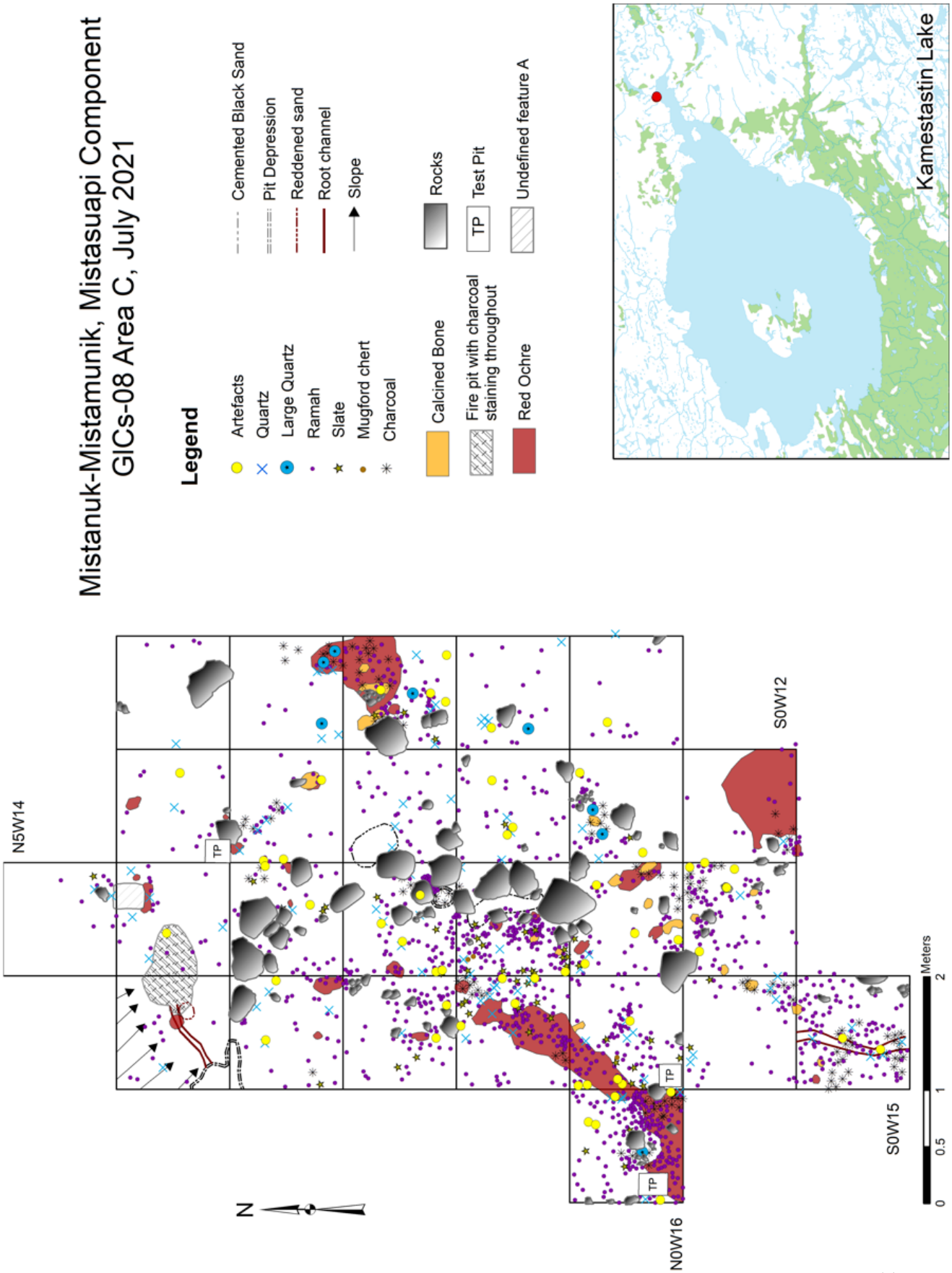
of deposited small and micro flakes of Ramah with dustings of red ochre is widespread at GlCs-08.

At the northernmost section of the Mistasuapi Component excavation, removal of the living vegetation layer revealed the roughly square outline of an object, which seemed to consist entirely of stained sand. A beige outline on the revealed surface, approximately a centimeter thick, traced a profile with more or less straight sides and rounded corners. However within the area described by the outline the colour of the "contents" was markedly different. As a first step, a decision was made to try to define its exterior limits by carefully removing the soil in which it was encased. By using the envelope of stained orange beige sand as a guide the shape of what had become a "ghost object" (presumably produced by decay of the organic material of which it had originally consisted) gradually emerged.

The object's exterior sides possessed a slight taper making the base (or as much of it as could be excavated without triggering collapse of the compacted sand which defined it) of it slightly smaller dimensions than the rim. The same process was repeated inside the object by once again using the envelope of orange beige sand to guide the excavation. However, because of fears that removal of too much material would risk collapse of the structure, the exercise was halted once the internal shape became evident. The latter cavity was of roughly conical proportions, with the thickness of the body (measured by the distance from the exterior wall to the interior cavity) increasing with depth. A sample of the contents was collected but has not yet been analysed. Beside the object's eastern side, and at only a few centimeters distance from what is assumed to be the base, lay five biface thinning flakes. Abutting the object on its southern side at the same depth was a deposit of red ochre including both ochre-stained sand, small ground up fragments and larger "kernels." As far as the limited excavation allows one to determine, the object is shaped like some form of vessel, though for the reasons referred to above it was not completely excavated and was subsequently stabilized by being reburied. Sod was placed over the soil used to bury it in an effort to prevent wind-blown erosion of the exposed feature.

Napanakapeu Component

In June 2021 the baulk left in place in 2019 between the main occupation area at the Napanakapeu Component and the large fire pit was excavated and removed. The section closest to the fire pit and actually sitting on the southern flank of it, contained three projectile point fragments (all of Ramah Chert) generous amounts of Ramah debitage (including biface



Mistanuk-Mistamunik, Mistasuapi Component, GlCs-08 Area C, excavation diagram as of July 2021. National Topographic System, 1: 50,000 Canvec 2007 hydrology, vegetation. Esri. ***ArcGIS Release 10.6.1.*** Redlands: CA. C.Arbour, 2022.

Figures 4, 5,6 and 7: Left to Right - Three Stark type points and one Neville type (BiEr-15.10) from the Grosses Roches site, BiEr-15, at Lac des Joncs, Méganticois, P.Q.; Point from Mistanuk Site (GlCs-08) at Kamestastin; Point from Nukasususutok 5 (HcCh-7) of Ramah chert; Stark style point of Mt Kineo rhyolite from Gros Bouleau Site (BiEr-8) at Décharge du Lac des Joncs, Méganticois, P.Q.

thinning flakes,) limited white quartz debris, a few slate chips and small amounts of calcined bone fragments. As is usual at the Mistanuk occupations, the calcined bone was associated with red ochre stains and in some cases with ochre nodules. On the western side of the same large fire pit feature, though not actually on its flank, was the find site of the large stemmed black chert projectile point described in last year's PAO Annual Review. This point, though made from different material, is strikingly similar, both in form and dimensions, to one fashioned from Ramah chert and collected from the surface of Nukasususutok 5 (HcCh-7) in the course of survey work in the 1970s by a Smithsonian crew. Both of those points share close affinities with some Stark points from New England and Québec.

GlCs-57 Ushikuish Site

Ushikuish GlCs-57 lies only 75 meters west of the Mistanuk site and elements of it suggest a close relationship to its easterly neighbour. The site seems to have been occupied repeatedly. The presence of a nipple base projectile point fashioned from Ramah chert and the heavy dominance of Ramah among the tools and debitage (with only modest quantities of white quartz) sometimes presented an appearance much like that of the Mistanuk Site. Furthermore, Ushikuish also contained Ramah chert debitage de-

Figure 8: Biface of Ramah Chert (heavily stained) from the new unit excavated at Ushikuish in 2021. What is likely the distal portion has been snapped off.

positories at which large numbers of small flakes were concentrated in discrete deposits and then heavily anointed with red ochre. The latter events are very reminiscent of the scene at GlCs-08 where these features are common. However, the picture is complicated by markedly divergent radiocarbon dates on two calcined bone samples from separate areas of the site and on one wood charcoal sample from a fire pit feature. The dates imply that the site is a palimpsest left by repeated occupations at the same location. Because of flakes noted newly eroding from units previously believed to have been fully excavated, four contiguous units were re-excavated and one new unit was opened adjacent to the re-excavated 2 meter by 2 meter. In addition to a small combustion feature with carbonized material and calcined bone fragments, the new unit produced an almost complete oval biface of Ramah chert and a distal biface fragment of white semi-translucent material.

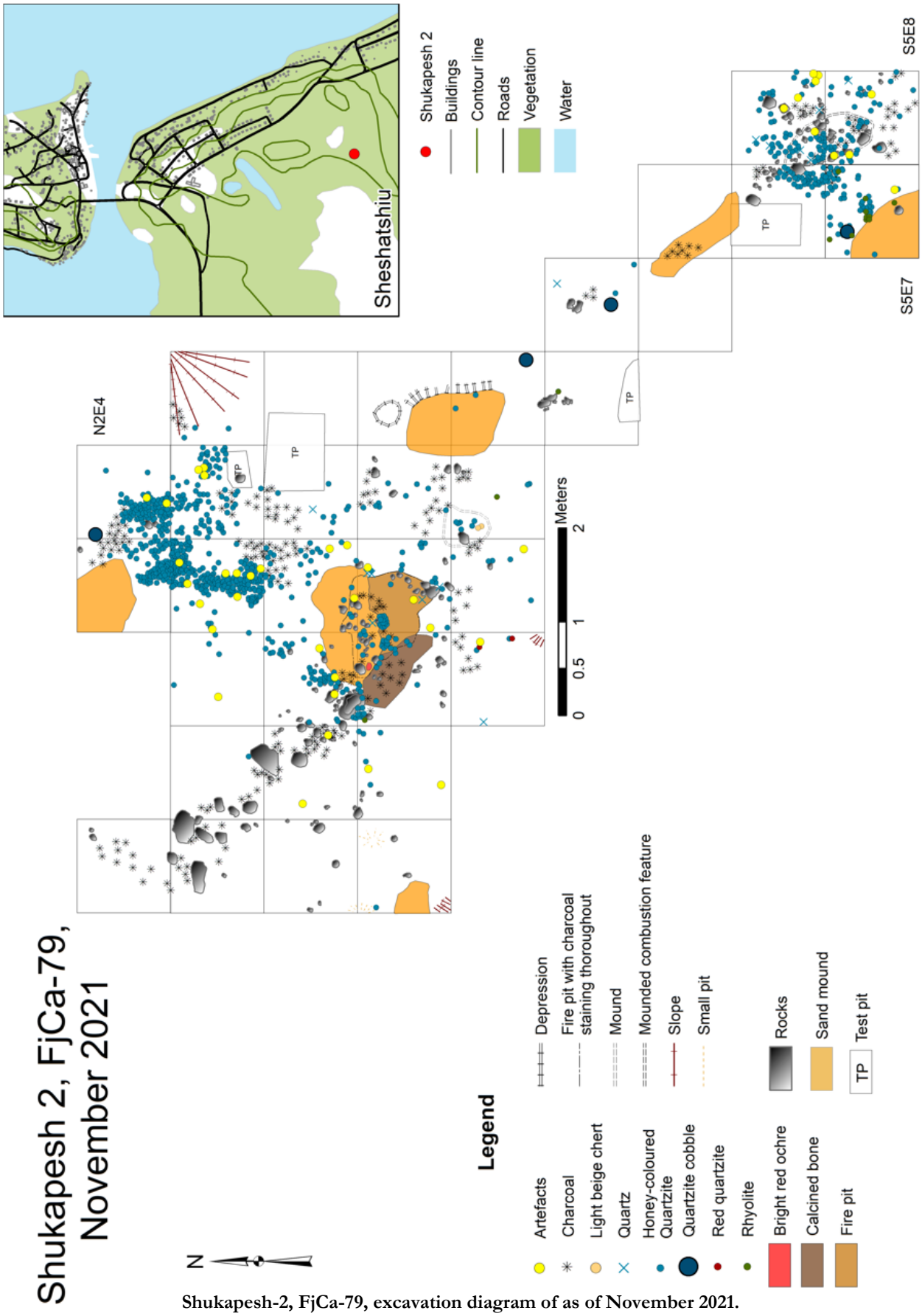
Figure 9: Ungava Freshwater Seal, a Phoca Vitulina/Harbour Seal subspecies (*Phoca Vitulina Mellonae*), photographed in Lac Des Loups Marins, Nastapoka River headwaters, by Rob Mullen, August 14, 2018.

Sheshatshit 2021 FjCa-79 Shukapesh 2

In the fall of 2021, ten new one-meter square units were opened around the northern, eastern and southern perimeters of the existing (2020) excavation at the Shukapesh 2 site. The 2020 excavation revealed a linear hearth containing medium sized boulders, smaller rocks and a fire pit feature. The most intense combustion had occurred in association with the pit and its surrounds where the sand was blackened, heat cemented, and charcoal fragments had become embedded in the walls and sloping sides of the pit. Close to the margins of the pit a number of pieces of calcined bone were recovered. The latter occurred both as well-formed larger fragments and as delicate, very fragmented smaller pieces for which species identification would have been difficult or impossible. The assemblage was sent for analysis to the laboratory of Art Spiess in Maine and all the bone pieces, which were identifiable as to species, were seal (genus Phoca.) The examples examined by Dr. Spiess were slightly smaller than the Harbour Seal in his comparative collection but if the bones were not from an unusually large Ringed Seal (*Phoca Hispida*) then Harbour Seal (*Phoca Vitulina* - Inatshuk in Innu) seems most likely. The habits of the two species are markedly different; Harbour Seals do not stray far from open water and do not maintain breathing holes while Ringed Seals do. This means that the distinction may have implications both for how the site where they were found is interpreted and for understanding the hunting practises of the Innu ancestral inhabitants who occupied it. Represented in the seal bone assemblage from Shukapesh 2 were both fore flipper bones and small cranial and postcranial fragments.

A sample of the calcined bone recovered from the Shukapesh 2 fire pit margins, selected from the pieces, which were smallest, most fragmentary and least likely to produce identification as to species, was sent to Beta Analytic for radiocarbon dating. The sample on cremated bone from beside the larger fire pit at Shukapesh 2 (BETA 584983) gave a date of 4180 +/-30 RCYBP. Once calibrated this produced dates of 4768 - 4615 cal BP (71.9% probability) and 4835 - 4785 cal BP (21.6% probability).

Because of an ongoing project of faunal identification on Tshikapisk sites, we chose to send out for AMS dating a sample drawn from "not-identifiable-to-species" fragments. Subsequently some of the better-preserved larger bone fragments were



Shukapesh-2, FjCa-79, excavation diagram of as of November 2021.
National Topographic System, 1: 50,000 Canvec 2007 013F09 building, 013F09 hydrology, 013F09 road, 013F09 vegetation.
Esri. *ArcGIS Release 10.6.1.* Redlands: CA. C.Arbour, 2022.

identified as seal. That seal was possibly Phoca Vitulina though Harbour Seals are not now common at the western end of Lake Melville and large Ringed Seals or Jars (Phoca Hispida) are as big as Harbour Seals; furthermore, a freshwater favouring variant of the Harbour Seal is recognized by some local seal hunters and said to be physically distinctive. It is described as being generally smaller with darker fur and a broader and flatter head than their saltwater favouring relatives are. Assuming for the moment that such accounts are accurate, description of the seal's appearance and behaviour meets the description of the animal (or a very similar one) known to live in the large lake systems about 150 kms east of the Hudson Bay village of Umiujaq (Phoca Vitulina Mellonae). "An external morphological character which Doutt regarded as distinguishing his lake seals from P. v. concolor was the darker color of the coat. However, as Dunbar (1949) has pointed out, the arctic harbor seals are, as a rule, much darker than those from the southern part of their range." (Mansfield). The latter point may not however be relevant as neither western Lake Melville nor Les Lacs des Loups Marins are close to arctic latitudes. Freshwater seals were present within living memory at Atshukunipi ("Seal Lake") and in the river into which it discharges (Meshikamau Shipu or "Naskaupi River"). Prior to the blocking at Kaupuamiskat of one of the two separate outlets by which Meshikamau waters flowed to the east (the other discharge point fed the falls at Patshetshunau/"Churchill Falls") the water volume in the Meshikamaushipu ("Naskaupi River") was much greater. (That is before the damming and dyking of Meshikamau and its associated large lakes created Smallwood Reservoir.) Added to this is the factor that at the probable time of occupation of Shukapesh 2, post-glacial isostatic rebound had not occurred to anywhere near the extent it has today and therefore the characters of both the local area of Sheshatshit and of the stretch of river from Kakatshutshistun/Grand Lake to Atshukunupi/Seal Lake would have been very different to how they appear today. The known propensity of Harbour Seals for temporarily entering freshwater rivers and lakes, and in the course of these travels sometimes penetrating quite deeply into the interior, means it cannot be safely assumed that all interior sightings are necessarily evidence of established interior populations. It is not inconceivable that the seal bone at Shukapesh 2 could be Mellonae or similar Harbour Seal variant or simply regular Harbour Seals penetrating interior waterways, particularly if the group that established itself at Shukapesh 2 had newly arrived from the west bringing with them seal products hunted in freshwater. It needs to be stressed however that there is presently no substantive evidence either way and so, for the moment, talk of Mellonae, or a version of it, being present on this side of the Quebec/Labrador Peninsula as a sub-species of phoca vitulina is very speculative. On the other hand, that Harbour Seals (Phoca Vitulina) enter rivers and in some cases, travel far up them and into interior lakes is a well-known phenomenon, particularly during the time of year that salmon are swimming up river to spawn. We ought therefore to leave open to consideration the possibility that over the milennia a version of the events that left a harbour seal population as permanent residents of large lakes at the headwaters of rivers flowing into Hudson Bay may

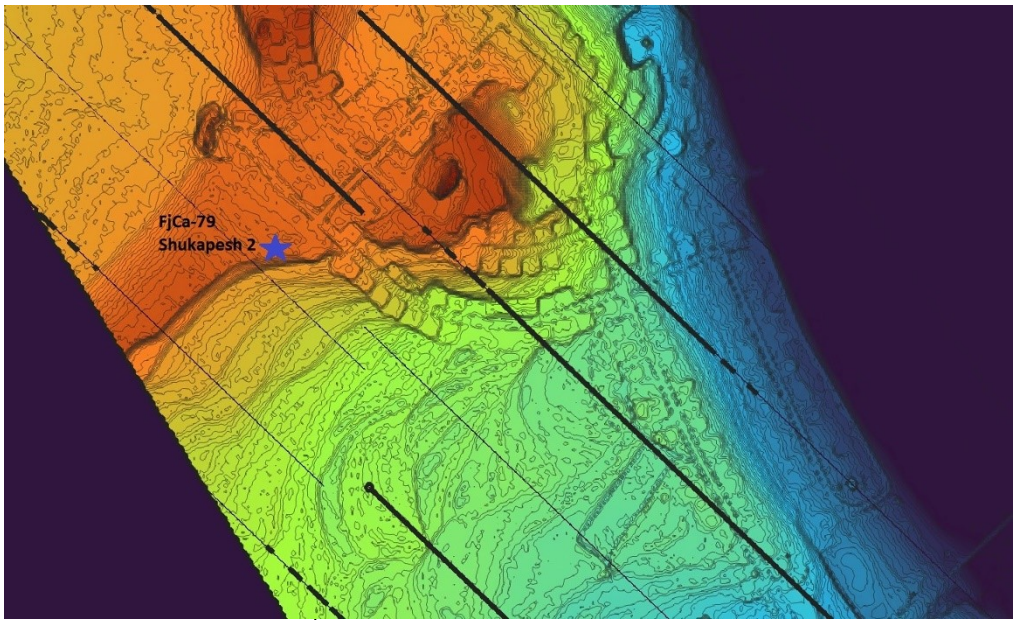


Figure 10: Lidar image of part of Sheshatshit, showing location of Shukapesh 2 site atop 33-35 meter asl terrace.

also have occurred in the eastern portion of the Quebec/Labrador Peninsula. In the course of an archaeological survey up Pakuashipu / St. Augustine River, the archaeologist Jean-Yves Pintal witnessed an Innu group hunting harbour seals beneath a set of falls about 100 kms inland and north of the Innu community of Pakuashipit. The seals seem to have been there feeding on salmon. During such interior movements, the seals are known to sometimes travel overland, usually along riverside paths through wooded areas, to avoid obstructions in waterways such as falls and difficult rapids. The Inatshuk/Harbour Seals give birth much later than Ringed Seals and generally do so on beaches, sandbars or exposed rocks after the snow and ice are gone from the land, lakes and waterways. Large rivers and lakes in the interior offer many opportunities for such haul out spots at a safe distance from most terrestrial predators.

Until we manage to date the identified seal and then compare those results with the already obtained date on the "unidentified-as-to-species" cremated bone from Shukapesh 2, we will not be in a position to judge whether the date on the BETA 584983 sample was likely from terrestrial mammal bone. Depending on the results, it will be easier to decide whether or not we need to incorporate possible adjustments for marine reservoir effect on the 4180+/-30 RCYBP date. However, even if, for the sake of argument, we do adjust for marine reservoir effect, this would not bring the date anywhere close to the period with which the North West River phase, as defined by Bill Fitzhugh, is associated. So, presuming that the association between the high terrace location, the calcined bone, the fire pit feature and the assemblage is valid (and it seems to be) we may have to seek alternative explanations for the look of the assemblage. This is not particularly characteristic of the period into which the obtained dates place it (at least from the vantage point of conventional thinking). One such interpretation of the appearance of the lithic assemblage at Shukapesh 2 would associate the occupants with the same group that left the "different looking" assemblage at Black Island 2 (GcBk-13) and the similar looking sites on the North Shore which Pintal places in his *Bonne-Espérance* Complex. Another might consider the possibility of a separate interior focussed regional group with distinctive tools and lithic choices. Assuming for the moment that the 4180+/-30 RCYBP date at Shukapesh 2 is valid without adjustment, it is interesting to note the uncalibrated RCYBP dates from Black Island 2 at c 4200 RCYBP. Around the mouth of Aisimeushipu/ St. Paul's River Jean-Yves Pintal notes the presence of several sites which he places in the company of Black Island 2 and which he assigns to his Complexe *Bonne-Espérance*. Pintal suggests that these less coastal Bonne Espérance/Black Island 2 sites, which on the Lower North Shore (Basse Côte Nord) are mainly clustered close to St. Paul's River, belong to a population with a more interior focus than those of coeval groups defined as Maritime Archaic. The use of what Pintal describes as whitish grey cherts, which he believes are sourced in Newfoundland, is characteristic. He relates these occupations to the populations who produced the Graveyard type points described at sites on the North Shore and on both sides of the Straits of Belle Isle.

Shukapesh 1 is another site on the same high terrace in Sheshatshit discovered during earlier test pitting and partially excavated in 2016. It is located 30 meters from Shukapesh 2 and while Shukapesh 1 is only a couple of meters back from the top of the bank, its neighbour Shukapesh 2 sits 14 meters back of the terrace edge. Shukapesh 1 consists of a linear hearth at opposite ends of which lay a large ground stone celt and an ovate quartz bifacial preform. Very modest quantities of slate, quartz and quartzite debitage lay principally on and about the northern flanks of the hearth feature against which was leaning a flat platter rock well burned and blackened on one side. The latter item actually revealed the existence of the hearth because a test pit dug in 2016 came down directly upon it. A red ochre stain in association with charcoal lay close to the feature near its northwestern end. This charcoal produced the older of the two dates from the Shukapesh 1 hearth.

The first charcoal sample (BETA 522803 Shukapesh 1 (N0E1: 1), gave an age of 4410 +/-30 RCYBP. When calibrated it gave dates of 5055-4866 cal BP (90.3% probability) and 5214-5189 cal BP (4.1% probability). The second sample (BETA – 522804 Shukapesh 1 N0E1: 2) gave an age of 3110+/ -30 RCYBP which, when calibrated, gave a date of 3386 – 3237 cal BP (95.4% probability).

Work on the Shukapesh 2 site in the fall of 2021 sought to answer questions about the spatial

Figure 11: Cranial fragments and foreflipper phalangeal bones from what is probably Harbour Seal (Phoca Vitulina) collected from margins of the firepit at FjCa-79, Shukapesh 2 in Sheshatshit. Faunal analysis by Art Spiess.

extent of the occupation and the relationship between elements revealed in earlier excavations at the location. We began by opening two new units beyond the existing northern limits where work in 2020 had revealed heavy debitage trending north from the unit (N1E4) which had produced two notched projectile points. Although both new northern units contained plentiful quartzite debitage it seemed to be associated with activity in adjacent neighbouring units to their south and to peter out or cease entirely as one progressed north.

The same story played out on a north to south series of units, which we then excavated along the eastern margins of the 2021 excavation of Shukapesh 2. Lithics diminished here as one went from west to east. This suggests, but does not quite prove, that the activity in the excavated units continues to be focused on and around the linear hearth and is less likely to continue to the north and to the east. A substantial spoil heap from screening of material from the excavation has accumulated over the latter area and it would be nice to believe that cultural elements do not lie beneath it!

To determine whether the two features were physically linked, units were then excavated in the area between the larger linear hearth and a smaller combustion feature in the vicinity of Test Pit 22 which was on the same alignment as its larger neighbour. Though the combustion features were similarly aligned, excavation of these new units revealed that they did not form a single whole and were separated by more than 3 meters of essentially empty space virtually devoid of cultural materials. This does not rule out the possibility that both combustion features were within a single structure. If that were the case such a structure would be at least 12 meters in length, and perhaps more, as the area beyond the smaller combustion feature remains unexcavated.

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Report on the S.S. Fleetway: A Freshwater Shipwreck

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Memorial University

Figure 1: View looking eastward at the S.S. Fleetway. Beothuk Lake, September 2021.

Introduction

There have been hundreds or maybe even thousands of shipwrecks off the shores of Newfoundland and Labrador, and so, it is unsurprising that this province is known for its maritime history and its shipwrecks (See, https://www.newfoundlandlabrador.com/trip-ideas/travel-stories/the-shipwrecks-of-newfoundland-and-labrador, www.shipwrecksnl.ca). However, little attention has been given to the 'interior-flotilla' – the boats used on the inland waters of central Newfoundland for logging purposes (Marsh, 2014). One such vessel, the steamer S.S. Fleetway, was used on Beothuk Lake (formerly known as Red Indian Lake) as part of logging operations in the interior of the island.

The final resting place of S.S. Fleetway on Beothuk Lake is a well-known site to the residents of the communities that border the lake – Buchans, Buchans Junction, and Millertown. I was raised in Buchans Junction so I have known about the wreck of the S.S. Fleetway since I can remember; however, I have only recently taken an archaeological interest in the wreck.

Out of a sense of curiosity, I contacted the Provincial Archaeology Office (PAO) in September of 2021 to determine whether the wreck was a known archaeological site, and surprisingly, the wreckage had never been recorded. I formally reported the site to the PAO, and then undertook a small-scale project to photographically document the wreck. The initial objective of the project was to conduct non-invasive reconnaissance of the site and gather photographs to serve as a visual record of the wreck. However, the project evolved to include photogrammetry and resulted in the creation of a 3D rendering of the wreck.

Historical Context

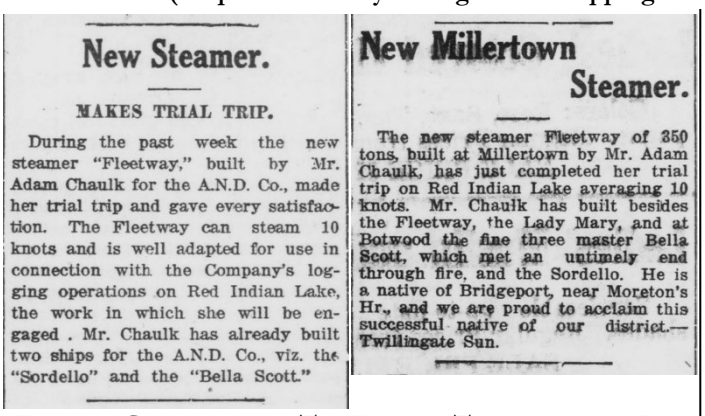
Built at Millertown by Mr. Adam Chaulk, the S.S. Fleetway was the largest ship built in the interior of Newfoundland (Marsh, 2014). She received much fanfare in the news – likely due to her size, her anticipated contribution to interior logging operations, and the acclaim given to her builder.

The steamer was surveyed for Bounty – a system meant to encourage shipbuilding and stimulate economic growth (Alexander, 1976). She received a bounty of $20.00 per ton, less fees and was built to Schedule A – a code signaling that the steamer was of

Figure 2: S.S. Fleetway, date unknown (Town of Millertown).

Material	Wood, 1 Deck
Registered Tonnage	Gross Tons: 250 Under Deck Tons: 191 Net Tons: 169
Particulars of Classification	Built under special survey (as signified by the symbol ✠ in the register)
Build Information	When: 1919 By Whom: Mr. Caulk Where: Millertown
Owners	Anglo-Newfoundland-Development Company Limited. (Donaldson Brothers Limited, Managers)
Registered Dimensions	Length: 118.6 Width: 24.6 Depth: 11.2 Bridge: 40
Port of Registry	St. John's, NFL, British
Engine	Compound, 2 Cylinder, 16" & 32"-24", 55RHP (Nominal Horsepower)
Engine Maker	Grant & Ritchie, Glasgow
Moulded Depth (ft. in.)	11"9

Table 1: Details of the Fleetway (adapted from Lloyd's Register of Shipping 1924-25, Vol. II).



New Steamer.

MAKES TRIAL TRIP.

During the past week the new steamer "Fleetway," built by Mr. Adam Chaulk for the A.N.D. Co., made her trial trip and gave every satisfaction. The Fleetway can steam 10 knots and is well adapted for use in connection with the Company's logging operations on Red Indian Lake, the work in which she will be engaged . Mr. Chaulk has already built two ships for the A.N.D. Co., viz. the "Sordello" and the "Bella Scott."

New Millertown Steamer.

The new steamer Fleetway of 350 tons, built at Millertown by Mr. Adam Chaulk, has just completed her trial trip on Red Indian Lake averaging 10 knots. Mr. Chaulk has built besides the Fleetway, the Lady Mary, and at Botwood the fine three master Bella Scott, which met an untimely end through fire, and the Sordello. He is a native of Bridgeport, near Moreton's Hr., and we are proud to acclaim this successful native of our district.—Twillingate Sun.

Figure 3: Clippings from The Evening Telegram (Left) July 9th, 1921, and (Right) July 28th, 1921 (Source: MUN Digital Archives).

the highest build (Department of Marine and Fisheries, 1921). As well, Lloyd's Register of Shipping – a worldwide known classifier of ships, classed her.

The S.S. Fleetway was used for various purposes during her time in service on Beothuk Lake. She hauled booms as part of logging operations and transported men and horses around the lake. She hauled booms as part of logging operations, transported men and horses around the lake, and "played a large role in bringing in supplies and men for the development of the Buchans Mine" (Marsh, 2014, para 8).

Fate of the Vessel

In 1927, a dam was built at the head of the Exploits River, which raised the water level of Beothuk Lake considerably. This necessitated that the entire town of Millertown move to higher ground (Marsh, 2015, para 5). As seen in Figure 4 (a) and (b), the shoreline of Beothuk Lake has changed significantly since the lake's flooding. The town of Millertown was once situated on a point of land that marked where Mary March Brook emptied into the lake; however, this location, known locally as 'the sandbar,' is usually submerged and only becomes accessible during periods of low water.

Sometime around the period when the lake was flooded, the S.S. Fleetway was taken to a sheltered cove near Millertown for the winter. However, while anchored there, her hull was punctured by a stump or a deadhead that had been submerged when the area was flooded (Marsh, 2014; Marsh 2019). The S.S. Fleetway was thus grounded on a sandbar and unable to be refloated (Marsh, 2014) so she was left abandoned to sink in situ (Figure 5). By the 1950s, most of the steamer's cabins and superstructure, which had remained above water, were gone (B. Marsh, personal communication, September 16, 2021), and over time much of the remaining wreckage deteriorated.

During most summers, the water level of Beothuk Lake drops low enough to reveal the boiler of the S.S. Fleetway, and many residents, myself included, believed that the boiler was the only significant feature left at the site. However, during the summer and fall of 2021, additional features of the wreckage became visible at the site due to the extremely low water level of the lake – a situation likely influenced by minimal winter runoff and low precipitation during the summer of 2021 which necessitated using the lake's water to supply the Exploit's River. The result – kilometres of shoreline around the lake were exposed and I was presented with a rare opportunity to document the wreckage site before it became resubmerged.

Fieldwork

I conducted several non-invasive surveys of the wreckage site over the course of three visits to the site during September and October of 2021. The majority of the information gathered about the site was obtained using an unmanned aerial vehicle (UAV). UAVs provide an affordable and reliable method of surveying and documenting cultural heritage and ar-

chaeology sites. As well, UAV's areaa non-invasive, non-contact, and time-efficient way of documenting sites (Themistocleous, 2020). These devices aid in the detection of sites, and enable researchers to map sites, collect data for the creation of realistic 3D models, study inaccessible and/or dangerous areas, and conduct site monitoring activities (Bagnolo & Paba, 2019; Themistocleous, 2020).

The aerial surveys conducted at the site were done using a DJI Mini 2 drone controlled through the *DJI Fly* app on a Samsung A8 android device. The DJI Mini 2 is a compact, low-cost UAV with 4 motorized propellors and has a flight time of 30 minutes per battery. It is equipped with GPS tracking, a 12-megapixel camera sensor, a 35mm lens equivalent at 24mm, takes photographs in both JPEG and RAW formats, and weighs 249 grams. A pilot license is not required to operate this device making it a great option for remote sensing and surveying by hobbyist and professionals alike.

Figure 4: (Top) Millertown, Fall 2021 showing the site of Fleetway (circled) and 'the sandbar,' and (Bottom) Millertown, early 1900s prior to flooding of the lake (Source: Community Stories, 1901).

During the second visit to the site, I used the DJI Mini 2 drone to survey the site from shore, and then while working non-invasively from a 10-foot kayak, I used a Canon EOS Rebel SL2 camera to further document the wreckage.

Results of Survey 1

The initial survey of the site was done in early September by drone flight from the southeastern shore of the lake. Twenty-three photographs were taken of the site during this time to serve as a visual record of the wreckage. The Fleetway was noted to have grounded on a sandbar which can be seen in Figure 6 below.

The sunny conditions during this survey presented a unique opportunity to capture photographs that showed the remnants of the wreckage lying just below the surface of the water (See Figure 7 below); however, these conditions are not ideal for photogrammetry. Photographs used for photogrammetry are best taken in overcast conditions to minimize the impact of shadows and differing lighting levels (Micheletti, Chandler, & Lane, 2014).

Grant Ritchie and Company located in Glasgow, Scotland made the steamer's engine. This company was well known for its steam engines and steam locomotives. Some of the mechanical features of the ship's steam engine system, including the boiler and pistons, can be seen in Figure 8. Features of the steamer's anchor system are also still visible at the site as seen in Figure 9. The anchor may have been taken when the cabins were dismantled in the 1950s, or it may be buried under sand and silt at the site. The chain is easily discernible lying across the bow area of the wreckage, and it can be seen in the historical photographs of the steamer (Figure 2 and Figure 5).

Results of Survey 2

The next survey was conducted in mid-September on a day with overcast conditions. The explicit purpose of this survey was to obtain data for photogramme-

Figure 5: S.S. Fleetway at her final anchor (Source: Community Stories, 1925).

Figure 6: Aerial shot from the first survey showing the sandbar on which the steamer grounded.

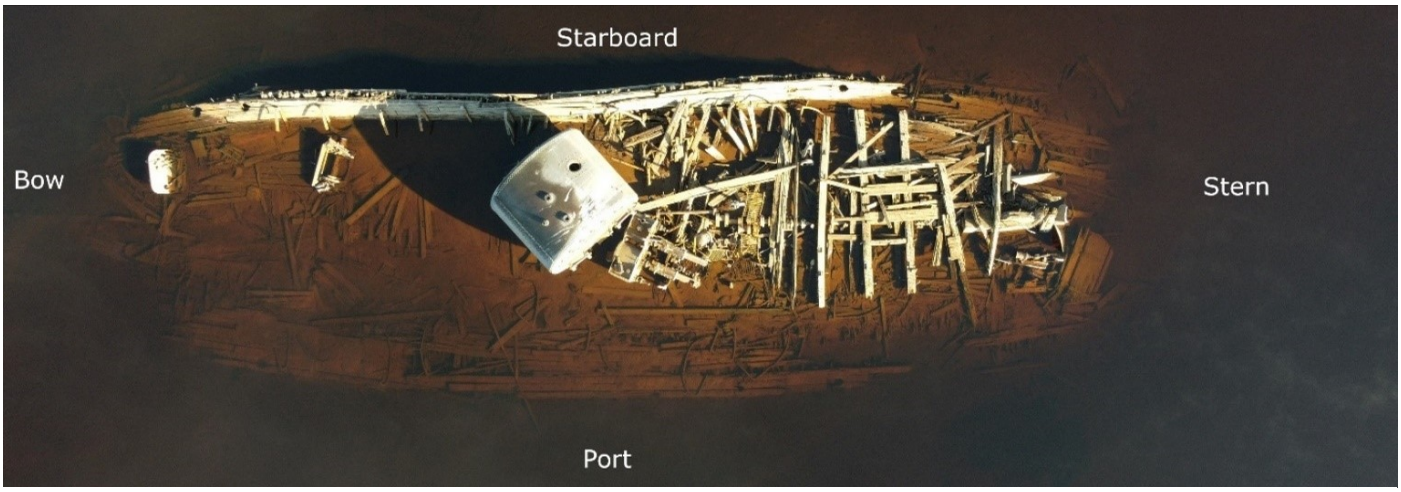


Figure 7: Entirety of the wreckage showing submerged features.

try. During this survey, 99 photographs were obtained with a DJI Mini 2 drone, and 154 photographs were obtained with a Canon EOS Rebel SL2 device. Most of the images obtained using the Canon EOS Rebel SL2 device were taken from a personal kayak., which was cost-effective and allowed me to gain up-close, yet non-invasive, access to the wreckage, as I was able to float around the site without disturbing it. The photographs obtained during this survey by both the DJI Mini 2 and Canon EOS Rebel SL2 devices were used to generate a 3D model of the wreckage – a process discussed later in the article.

The steamer's propeller is still present at the site and remains in fairly good condition – it has some rusting and one of the visible propeller blades is cracked along the trailing edge (See Figure 10). As seen in Figures 11 and 12, the only noticeable disturbance to the site is some graffiti on the boiler. On Figure 12, note the faint 'line' of discoloration as seen crosswise on the boiler signalling a previously higher water level, either from earlier in the summer of 2021 or a prior summer. Figure 11 also shows a couple of boards jutting out from the rest of the hull. These boards once ran along the entire length of the steamer's hull and can be seen on the historical photos of the steamer (Figure 2 and 5). Areas on the hull without these boards show a noticeable run of nails pro-

Figure 8: Mechanical features of the ship's engine system.

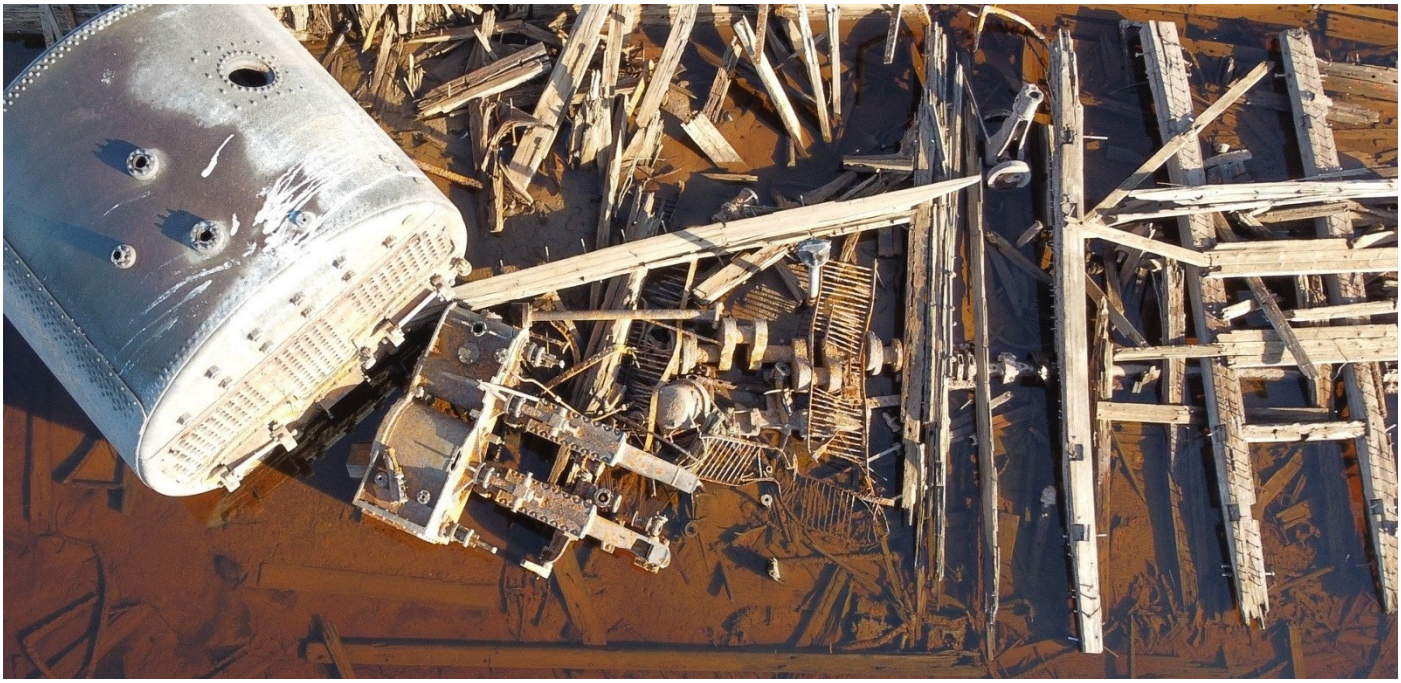


Figure 9: The steamer's anchor system.

Figure 10: Propeller of the ship partially emerged from the lake. Taken from kayak with Canon EOS Rebel SL2.

Figure 11: Ship's boiler showing some faded graffiti. Taken from kayak with the Canon EOS Rebel SL2 device.

Figure 12: Starboard side of the hull and boiler from rear view, which shows further faded graffiti.

Figure 13: Aerial shot taken during the third survey of the site. The drone operator, sitting in a 10-ft kayak, demonstrates the scale of the wreckage.

Figure 14: Drone operator demonstrating the size of the ship's boiler.

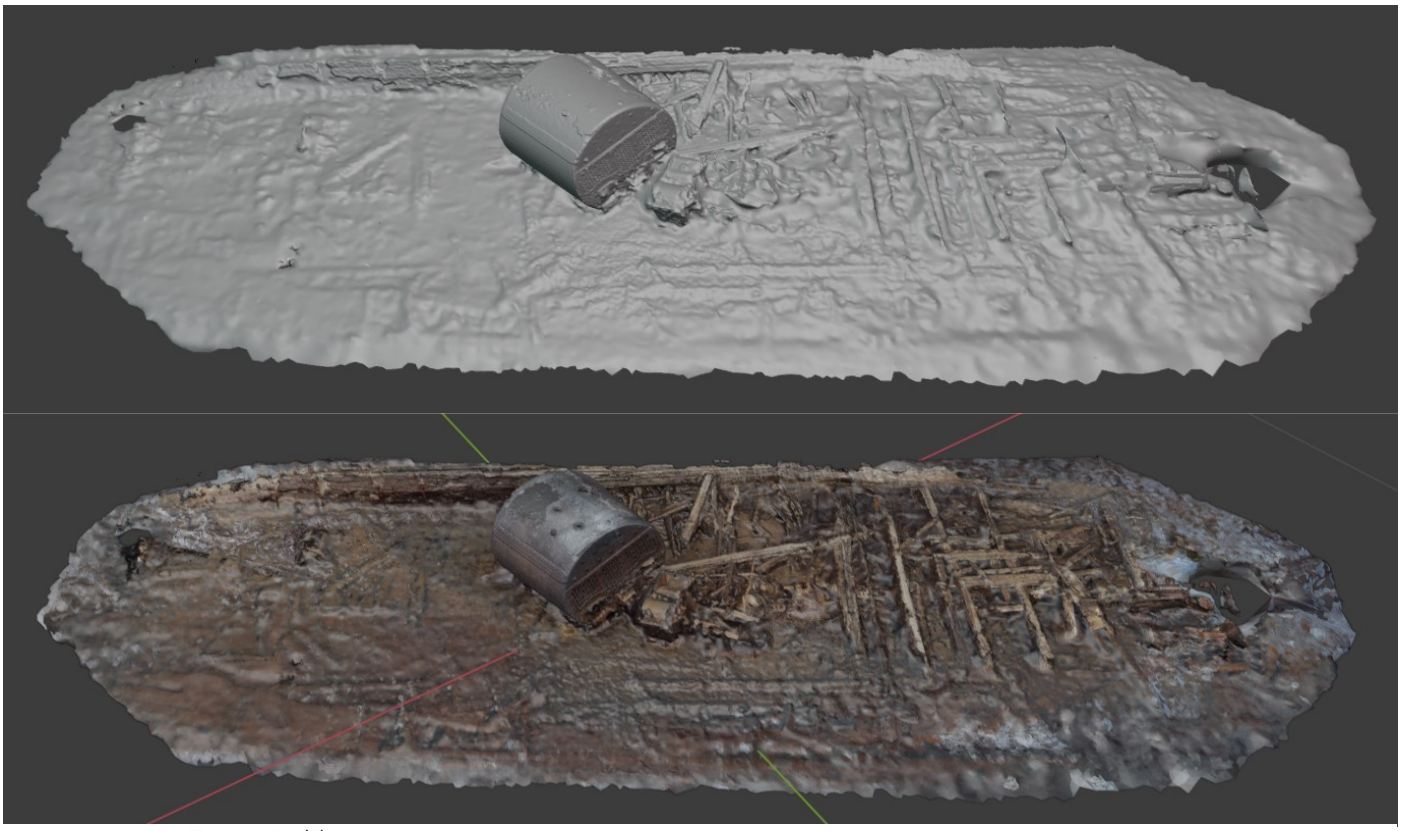


Figure 15: Textured mesh of the wreckage (above), and textured mesh with colour (below). Note the holes in the mesh caused by the water surrounding the wreckage.

truding from the wood signalling where they once were.

Results of Survey 3

Twenty-one photographs were obtained during the third and final survey of the site in early October. During this visit, I noticed that the wreckage site was already becoming resubmerged by the lake, and features of the wreckage that had been visible during the previous month could no longer be seen. The purpose of this visit was to obtain photographs demonstrating the scale of the wreckage in comparison to a watercraft of known size – a 10-foot kayak. The DJI Mini 2 drone was launched from the operator's kayak while floating alongside the wreckage. Figure 13 and Figure 14, as seen below, reveal the immense scale of the site. Without such a visual reference, the scale of the wreckage site can easily be underestimated.

Photogrammetry Process

Using photographs collected by the DJI Mini 2 and the Canon EOS Rebel SL2 devices, a 3D reconstruction of the wreckage was generated using Meshroom, which is a free, open-source 3D reconstruction software that functions off a node-based workflow system. Each node can be worked on individually and the software allows the user to see their 3D model in real-time as the model is constructed. The node-based workflow system is user-friendly for individuals with no previous photogrammetry experience. This software requires a NVIDIA GPU card with a CUDA compute capability >=3.0 for the dense high quality mesh generation and a recommended 32GB of RAM for the meshing process (Meshroom Contributors, 2020).

For this project, I ran Meshroom on an ASUS TUF A15 laptop with an AMD Ryzen 7 4800H processor and a NVIDIA GeForce RTX 2060 graphics card with a CUDA compute capability of 7.5. All photographs obtained during the second survey were imported onto this laptop, and then any unsuitable images (e.g., blurry, overexposed) were deleted. The remaining photographs were imported into Meshroom to begin the process of generating a 3D model of the wreckage using the software's node-based pipeline system.

Once the whole pipeline had been computed (a process that took hours), a high-poly textured mesh of the wreckage could be loaded and visualized in Meshroom. Next, a low-poly version of the mesh

Figure 16: 3D rendering of the boiler and the hull of the ship. Note the graffiti on the boiler as seen in Figure 11. Also note, poor rendering of parts of the hull due to refraction from water surrounding the wreckage.

was created through mesh simplification – a process used to reduce the number of faces in a surface mesh while retaining its overall shape, volume, and boundaries. This step was undertaken because the initial mesh generated in Meshroom was extremely large (i.e., maximum vertex count was in the millions) and thus, it had the potential to create issues when conducting further work on the mesh (e.g., slow processing). The new low-poly mesh was retexturized in Meshroom before going through further post-processing in Blender, a free, open source 3D computer graphics software toolset. Once the mesh was further refined (e.g., removal of unnecessary vertices, deletion of faces), a satisfactory 3D model of the wreckage was produced as shown in Figure 16 and 17. The 3D model wreckage is not without issue but given the challenges of the site (as discussed in the next section) the model is quite pleasing.

Challenges

The wreckage is located approximately 100m from the northern shoreline of the lake making the site difficult to document. Access to the wreckage must be obtained via watercraft or drone flights conducted from shore. Given that the wreckage is often submerged, the site has been protected from major disturbances (e.g., looting); however, the boiler has been defaced with graffiti in the past.

During the survey period, the wreckage was partially submerged so it could not be documented in its entirety. As well, refraction from water surrounding the wreckage resulted in holes (lack of information) in the mesh of the wreckage. As noted by Nocerino and Menna (2020), objects that are partially emerged and partially submerged are difficult to survey for the purpose of 3D modelling due to the physical characteristics of water (e.g., refraction) and challenges of working at this type of site.

Anyone planning to work at the site in the future must consider the ever-changing water level of Beothuk Lake. The lake's water level cannot be predicted with any certainty (i.e., year-to-year, month-to-month, week-to-week) which makes it difficult to study the wreckage with any consistency. It is nonetheless advisable to plan future work during the late summer or early fall period, as this is when the water level of Beothuk Lake is typically, at its lowest presenting the best opportunity for access to the wreckage.

Conclusion

The low water level of Beothuk Lake during the fall of 2021 presented a unique opportunity to document a freshwater shipwreck, the steamer the S.S. Fleetway,

located near the town of Millertown, Newfoundland. Left in situ when her hull was punctured by a stump or deadhead, the steamer deteriorated over the next 90 years. The steamer's boiler usually emerged from the depths of the lake at the end of hot summers, likely leading to the perception that it was all that remained of the once great steamer that had powered up and down the lake as part of the 'interior-flotilla.'

However, three non-invasive surveys conducted of the site revealed that the wreckage is more intact than preciously suspected. The lower section of the steamer's wooden hull and numerous mechanical components of the ship's steam engine system were still present at the site, preserved and protected, by the cold water of Beothuk Lake. Through the use of an UAV, the wreckage of the S.S. Fleetway was documented, and a visual record of the site was obtained. Additionally, photographs taken during the second survey with a DJI Mini 2 drone and Canon EOS Rebel SL2 camera were used to generate a 3D model of the wreckage to serve as an additional form of documentation.

Acknowledgements

I would like to thank my supervisors, Dr. Scott Neilsen and Dr. Barry Gaulton, for their advice and support as I work through graduate studies at Memorial University of Newfoundland. I would also like to thank my brother Brian for assisting me during the second site survey, and Bryan Marsh for sharing his knowledge of the historical logging industry in central.

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2021 Fieldwork Season
New Perlican Burial Ground Survey

Robyn S. Lacy
Memorial University

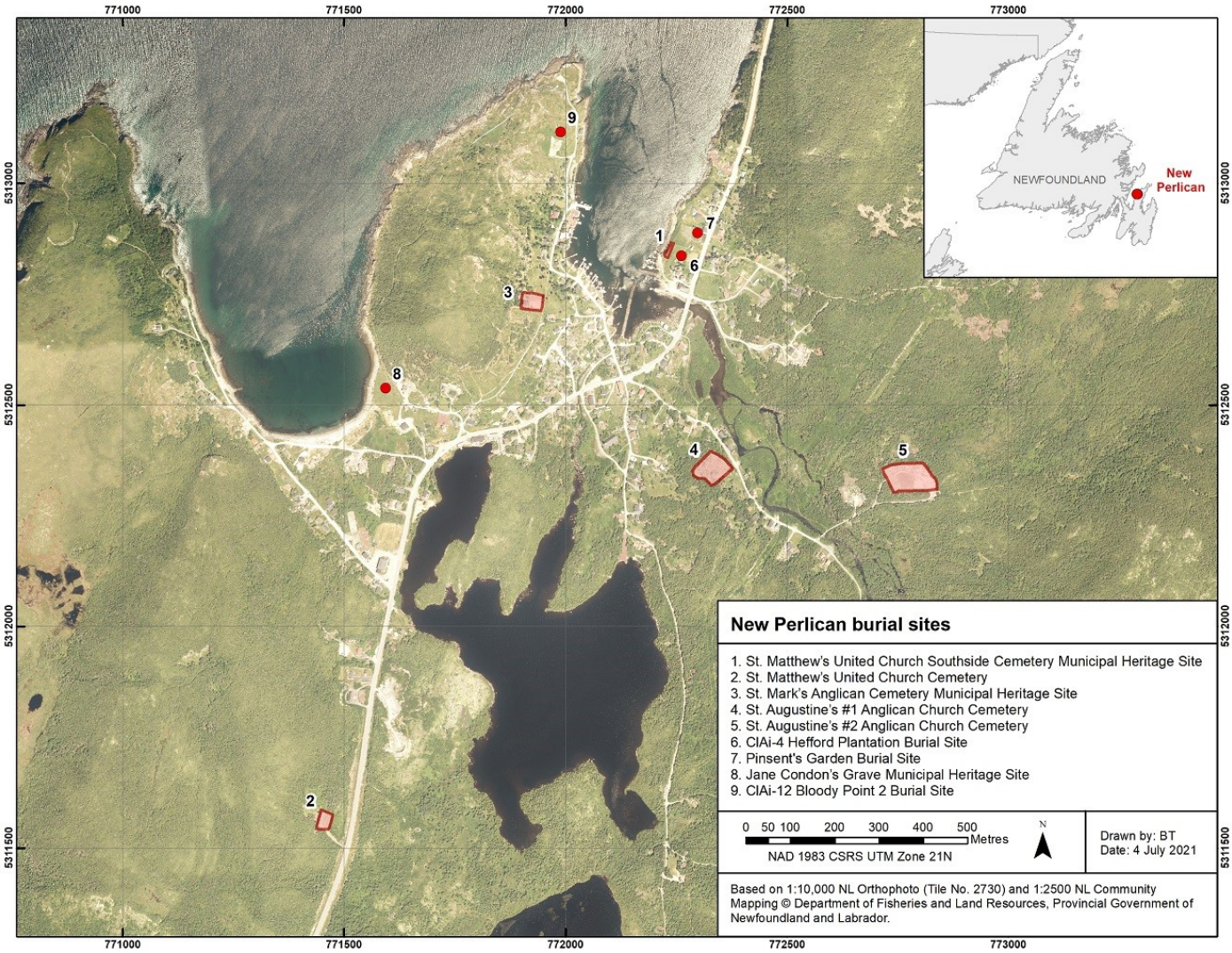

Figure 1: Overview of the burial grounds located within the community of New Perlican.

The 2021 field season marked the start of my PhD fieldwork research, under the supervision of Drs. Barry Gaulton and Shannon Lewis-Simpson. A portion of my project is exploring the burial landscape development in the community of New Perlican, on the west coast of the Avalon Peninsula in Trinity Bay. New Perlican was established in the late 17th century. The community is deeply invested in its heritage, and has an active local heritage group, 'Heritage New Perlican', with whom I am working closely with on this project.

My research goal in exploring the burial landscape in New Perlican is to investigate the changes to burial spaces in the community over 400 years since European settlers first made a permanent settlement there. In doing so, I also aimed to talk to the community about the burial spaces and record what they know about these spaces as locals. In order to do so, I obtained ethics approval from the Interdisciplinary Committee on Ethics in Human Research (ICEHR) at MUNL. Further aspects of the project include working with Heritage New Perlican to answer ques-

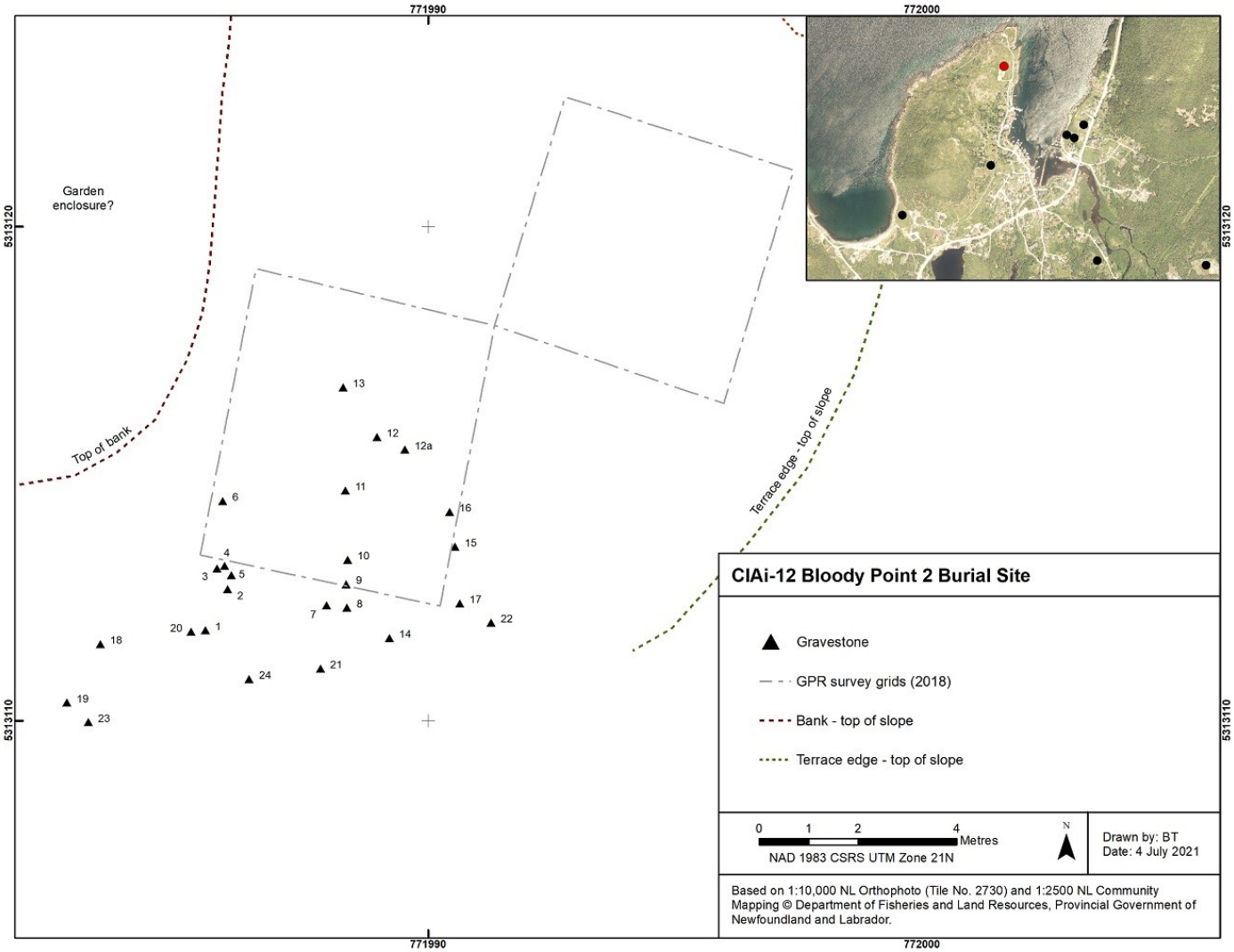

Figure 2: Survey map of Bloody Point 2 Burial Site.

tions from an archaeological perspective that the community has with regards to burial grounds.

The first step of this research was to identify the historic burial grounds within the town limits of New Perlican. While the community has strong ties to other nearby outports, I wanted to focus just on one community, in order to explore what the contemporary community understands as their cemeteries and burial grounds as part of their living and historic culture. Dale Jarvis, Director of Heritage NL, aided my fieldwork by connecting me with board members of Heritage New Perlican as well as collecting GPS points for the burial grounds while I was in Ontario (see figure 1).

Part of the goal of the field survey was to record the boundaries and the location of each grave marker, in order to provide the community with a georeferenced record of each historic burial ground. For this season, I identified six sites that would be surveyed 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 Southside Cemetery Municipal Heritage Site.

Using funding provided by a Smallwood Foundation Grant, I was able to hire Bryn Tapper to run the TST survey and produce maps after the fieldwork was completed. These maps have since been provided to Heritage New Perlican for their archives. My fieldwork team consisted of myself, PhD Candi-

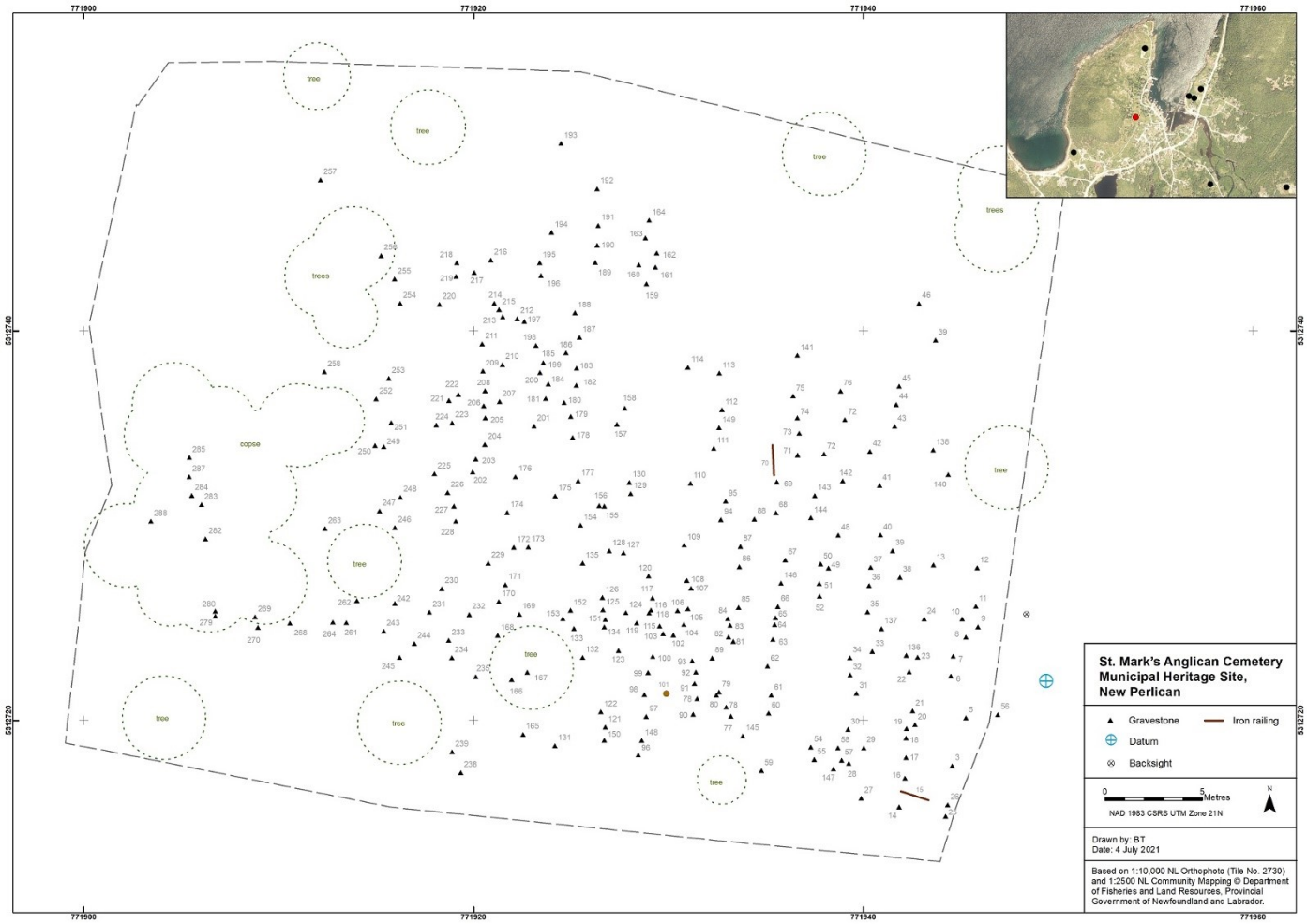

Figure 3: Detailed survey map of the boundary and grave markers at St. Mark's Cemetery.

date Bryn Tapper, and PhD student Ian Petty who was volunteering on the project.

ClAi-12 Bloody Point 2 Burial Site

In 2019, Dr. Shannon Lewis-Simpson, Maria Lear, and graduate students Rita Uju Onah and Elsa Simms conducted the first archaeological investigation of the Bloody Point burial ground (Lewis-Simpson et al. 2020). A GPR survey was completed over two grids on the site (see figure 2), which identified 19 potential grave markers (18 field stones and one limestone headstone) and two anomalies via the GPR that are synonymous with burials. During our 2021 survey, we identified five additional field stones, bringing the total up to 24. We also surveyed the surrounding earthwork features such as the foundations of two root cellars and garden plots, as well as stone piles from gardening, in order to situate the burial ground within the agricultural and domestic landscape.

ClAi-11 St. Mark's Anglican Cemetery Municipal Heritage Site

I was involved in a community clean-up day at St. Mark's Cemetery in 2017, organized by Dale Jarvis and Dr. Lewis-Simpson. While the burial ground has long been known to the community as one of the earliest in the community, as well as likely the location of the first Anglican church in New Perlican, a full survey of the site had yet to take place. The site was consecrated in 1842, but the burial ground likely already existed by that point, pre-dating the religious structure. While it was estimated by members of Heritage New Perlican that the site might contain 150-200 grave markers, our TST survey identified 306 potential grave markers (Figure 3). The majority of these were field stones, with a small number of inscribed stones, primarily made from imported materials, with at least two inscribed stones made from locally sources slates.

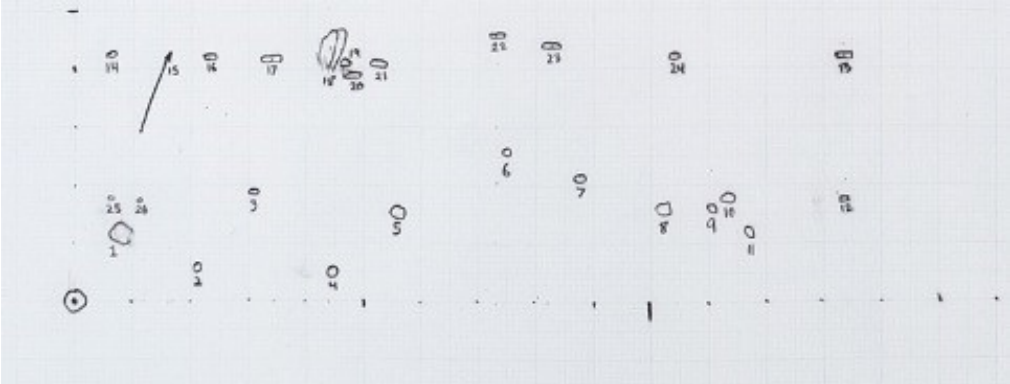

Figure 4: Detail of 2017 survey map, with markers 1, 2, 4, 8 and 11 indicated by arrows. Yellow dotted line indicates approximate west side of ditch.

Unfortunately, there was also some recorded damage to the St. Mark's site, due to a ditch dug in late 2020 at the east extent of the site, negatively impacting it. Based on the 2017 survey began by Dr. Lewis-Simpson and myself during the community clean-up day, this ditch impacted the recorded grave markers 1, 2, 4, 8, and possibly 11, which were unable to be located in the 2021 season (Figure 4). It is unknown whether these markers were footstones or headstones, but several fragments of wood with small, oxidized iron nails embedded were recorded in the ditch. This disturbance was recorded and reported to the PAO on July 1st, 2021.

ClAi-15 Jane Condon's Grave Municipal Heritage Site

Designated as a Municipal Heritage Site in New Perlican, the Jane Condon site consists of a single lime-

Figure 5: Map showing the Hefford Plantation and St. Matthew's Southside Cemetery.

stone grave marker and two fieldstones. Surveying this site did not take long, and notes were taken on the condition of the limestone grave marker, as the top half had broken and been painted and glued back together in the past. Unfortunately, the repair is irreversible.

ClAi-4 Hefford Plantation Burial Site

The later 17th-century Hefford plantation site is also a designated heritage property and archaeological site in New Perlican. The burials are located on private property, and Heritage New Perlican arranged access for my team. We identified one inscribed limestone grave marker, and four fieldstones, all set within the boundaries of the residential property.

ClAi-16 St. Matthew's United Church Southside Cemetery Municipal Heritage Site

This 19th-century burial ground is located on the east side of the harbour, at the top of a steep bank. The site is west of the adjacent Hefford Plantation Burial Site, separated by a fence. There were 37 grave markers recorded at the site, 10 of which were stone and 27 were wood crosses. Many of the crosses were rotten or fallen, and it is likely that there are a number of unmarked graves at this site.

Additionally, the erosion of the west extent of the site should be monitored in the future, as the bank is steep and comprised of soft sediment, with the west row of graves close to the edge and at risk of damage.

ClAi-14 Pinsent's Garden Burial Site

Finally, the Pinsent's Garden Burial site on Pinsent's Lane was surveyed. Unfortunately, it appears that the two limestone gravestones were likely out of situ, due to their placement. Additionally, the gravestones are partially enclosed within a fence and slatted trellis roof behind a shed. As a result, we were unable to get total station points for the gravestones. A GPS was used to record the two gravestone points, and they were placed on the geo-referenced map.

In conclusion, the short 2021 field season was successful in getting six historic burial grounds recorded within the community of New Perlican. In 2022, I aim to record St. Augustine's 1, as well as at least document the uninscribed field stones at St. Augustine's 2 and the contemporary United Church cemetery in New Perlican, if not also record them using the total station. I also aim to present my research and fieldwork to the community, as an opportunity for feedback and to discuss where the community wishes my research to expand.

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2021 Fieldwork Season – Black Cat Cemetery Preservation

Robyn S. Lacy and Ian Petty
Black Cat Cemetery Preservation

Figure 1: St. John the Evangelist Churchyard and gravestones, Coley's Point, NL. Lacy 2021.

In late 2020, Black Cat Cemetery Preservation (BCCP) was formed to address the need for heritage-aligned preservation of historic gravestones and burial grounds in the province and the greater Atlantic Provinces. This report encompasses the first field season of BCCP. This year we worked in several outport communities, consulting on how they should proceed with their historic cemetery landscape preservation, as well as working on conserving gravestones and completing multi-step repairs. We also had the opportunity to work with Heritage NL as part of their workshop initiative.

Much like archaeology that involves excavation, gravestone conservation has a set field season dependent on drier weather and milder temperatures. This is because the epoxy and lime mortar used to repair gravestones cannot be used safely below around 5 degrees Celsius or in very wet weather. This makes it a challenge when working in Newfoundland and Labrador, or any of the Atlantic Provinces.

In our first season, we completed fourteen (14) projects across several communities, including Petrolia in Ontario, and Rose Blanche-Harbour Le Cou, St. John's, Brigus, Little Heart's Ease, Bonavista,

Figures 2 and 3: Before and after of the Cashin stone, restored during the second Heritage NL and Black Cat workshop in Cape Broyle. Photos by Lacy 2021.

Harbour Grace, Greenspond, New Perlican, Cape Broyle, Heart's Content, Coley's Point, and Bay Roberts. Three (3) of these projects involved consultations with clients, in order to provide recommendation reports for future fieldwork at their historic sites, as well as conservation recommendations as they move forward with their own protection for these sites. As we all know, historic burial grounds are a valuable historic resource, and communities are deeply investing in their upkeep and protection, but sometimes they do not have the knowledge base or background to do so safely. By working with these communities, we hope to provide contemporary stone conservation techniques and knowledge for working with these gravestones. Helping communities take care of their own sites through consultation is part of this goal.

Throughout the season, we worked on twenty-two (22) gravestones, with the primary focus being restoration and repairs, while some clients only wanted cleaning and recording carried out. Repairs typically involved removing the pieces of the grave marker from the ground to be cleaned with water and D/2 Biological Solutions, a non-ionic, PH-neutral cleaner that does not deposit salts or acids in the pores of the stone, and a soft natural or plastic bristle brush. A new foundation for the grave marker is laid using compacted crushed dust / limestone screening for drainage, which is levelled before reinstalling the marker. Breaks are repaired using a UV-stable stone epoxy designed for outdoor repairs, and cracks are filled with lime mortar, which does not contain Portland cement. For larger monuments, a reinforced soil system called MonuGrid is used in addition to the crusher dust to provide a stable foundation that will not sink.

During the summer, we collaborated with Heritage NL to run two gravestone conservation workshops in Cape Broyle at the Immaculate Conception Cemetery. The first workshop had 26 participants, who spent four hours learning to safely clean gravestones using the methods mentioned above.

Figure 4: All four gravestones restored during the Heritage NL and Black Cat workshop. Photo by Lacy 2021.

During the workshop, at least 10 gravestones were cleaned by the participants, whose families had given consent for their relatives' stones to be cleaned. The second workshop, held on August 11, 2021, had 18 participants. For that full-day workshop, we taught the group not only how to clean gravestones, but how to safely disassemble a fallen marker, clean and prep the pieces for restoration, and to reset the base on a safe and level foundation. We ran into an issue when two of the monuments had massive subsurface concrete foundations, which were not only difficult to get out of the ground, but the resulting space used up the majority of the screening that we had estimated for the workshop. Luckily, one of the participants knew someone with a small quarry nearby, who graciously donated a truck-bed of screening to our workshop, and we were able to complete the restoration of four gravestones over the course of the day. It was a wonderful experience and we were able to restore several gravestones with the help of everyone at the workshop.

Our fieldwork for 2021 continued until late September with the restoration of four monuments at the General Protestant Cemetery in St. John's, for the cemetery Board. The largest of the monuments was a marble chest tomb (named for its resemblance of a large chest or trunk) dedicated to Andrew McCracken. The monument was in multiple pieces, and it was clear that it had seen repairs in the past with concrete, which affected how it would fit back together. After multiple days of disassembly, cleaning, and leveling a new base for the tomb, we were able to piece it back together using the original labels marking each pillar and panel from the original mason. Another interesting feature of this monument was found under the base. When we lifted the marble base, an unusual feature in itself, we exposed the top of the brick-lined grave shaft with its original fill. It was a special moment to see this feature, and we documented it thoroughly for the client before covering it again with compacted limestone screening to level the sloped base of the monument.

Overall, it was a productive first season for Black Cat Cemetery Preservation, and we are excited to continue working with the province and with a variety of communities and historical associations to help preserve the burial grounds and historic cemeteries of Newfoundland!

Figures 5 and 6: Before and after images of the McCracken chest tomb. Photos by Lacy 2021.

Geophysical Survey at CjAd-02, the Former Star of the Sea Stone Church at Blackhead

Maria Lear
Memorial University

On August 10, 2021, a geophysical survey (Ground Penetrating Radar) was completed on the grounds of the Blackhead Museum at the request of the Provincial Archaeology Office (PAO.) This was an expansion to the GPR geophysical work completed as part of the onsite component of the 2021 Blackhead Museum Fieldschool course ARCH3585 (CjAd-02) as directed by professor and permit holder Dr. Catherine Losier of the MUN Archaeology Department. For the expansion phase, two (2) grids were marked and surveyed with the assistance of representatives of the PAO, Jamie Brake, Provincial Archaeologist & Stephen Hull, Archaeologist.

Figure 1: Area of Grid 1 (15m x 3m).

Two areas of interest were identified by the PAO as requiring GPR investigation. One was located directly in front of the museum (west) and the other situated along the side of the building (south). The grids varied in size but both included transects spaced at 0.25m to allow full coverage along both the X and Y-axis. The antenna chosen for the geophysical survey was a 500MHz antenna belonging to the Noggin© Smart-Tow GPR system. This antenna frequency records a depth of radio signal penetration typical of historic contexts as well as providing good data resolution and target identification. Each grid was surveyed individually with three people (two PAO representatives + GPR operator: Maria Lear). In addition to the GPR survey operator, additional people are required to assist in the grid survey by constantly moving the individual 0.25m transect strings and monitoring the axis tape-measurement to ensure accuracy and maximize survey efficiency.

The collected GPR data was analyzed off-site using the corresponding geophysical software located within the MUN Archaeology Department. For consistency, each grid was downloaded, analyzed and processed using the same post-processing procedure available from the affiliated software. During the off-site analysis, the GPR data is displayed both as a section view of each individual transect line (black and white reflection profile) and as an overall, birds-eye map of each grid at a particular depth (color amplitude slice.) For both of the grids described, specific static images from individual transect lines were chosen that depicted the best examples of possible subsurface contexts within a reflection profile. The black and white reflection profile with the red highlight (transect line) is mirrored in the corresponding color amplitude slice as positioned within the overall grid. The images are a good example of how varying attributes of a target or target context can affect the visual reflection/amplitude created from the data collected. It can show up as a strong result (distinct hyperbolas or yellow/red images) or less strong in the pictures (faint hyperbolas or light/dark blue colors) in the

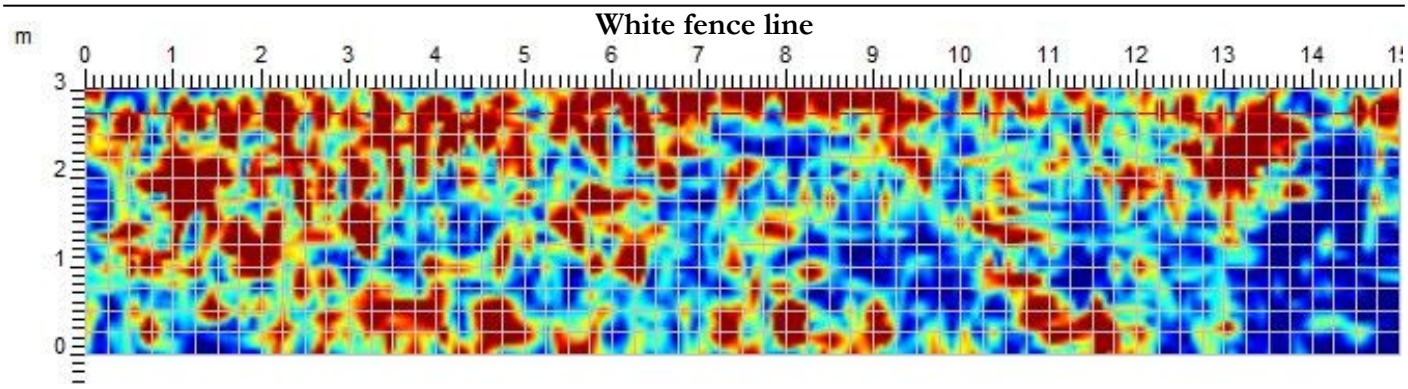


Figure 2: Amplitude slice of Grid 1 at 0.65m-0.70m depth

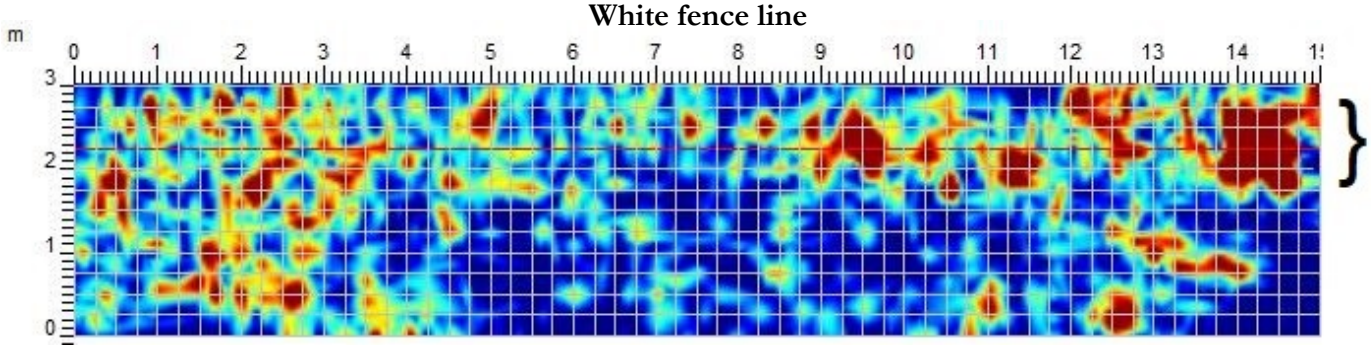
black and white reflection profiles and colored amplitude slices. In all cases, confirmation of suggestions given in GPR cannot be established without an element of ground-truthing (testing or excavation) which can immediately follow the non-intrusive, geophysical phase should that be required.

Grid 1 measured 15m x 3m and was located within the narrow corridor of land between the museum and the white perimeter fence (Figure 1) The ground surface was grass-covered, relatively clear but did have areas of irregularity that were both visible on surface as well as felt underfoot. Those irregularities seemed to be of modern modifications such as the fence placement, displaced rubble and physical disturbances as related to drainage. The narrow dimension of the survey area did present some hindrance of transect lines along the X-axis as the short length (3m) meant the data collection was undertaken in a confined space – however, with the help of PAO representatives, the survey was completed in a timely manner.

Results from Grid 1 produced 74 lines of data that were processed and provided several images. For the most part, the majority of the line-sets within this grid did not provide many areas of potential due to the nature of the size of the grid, the close proximity of the building and the modern fencing along the border. The red/yellow concentration areas along the top and bottom borders as well as scattered throughout are concentrations of signal that are difficult to decipher given the smallness of the grid and knowing the area did have a volume of unevenness underfoot as well as visible disturbance on the ground surface. However, sometimes what is interesting is the absence of a strong contract. For example, the area towards the end of the grid (13-15m length along X-axis) there is a dark blue 'void' that appears in the dataset at an approximate depth of 0.65m. This may be indicative of a homogenous area of ground that is of a purposeful nature (ex. an area of soil removal) or may simply be of natural origin such as soil composition variation, water content, geological or other matrix differences.

The aforementioned area of interest continues as the depth increases in the same location. Figure 3 is of the same grid (Grid 1) but at a deeper depth (1.15m-1.20m) along the X-axis at 13-15m. Other areas of homogeneity (clear of contrast) at this depth are also visible which are not unexpected as the signal travels down further into the subsoil. A possible target of interest may be the sub-square feature

Figure 3: Amplitude slice of Grid 1 at 1.15m-1.20m depth



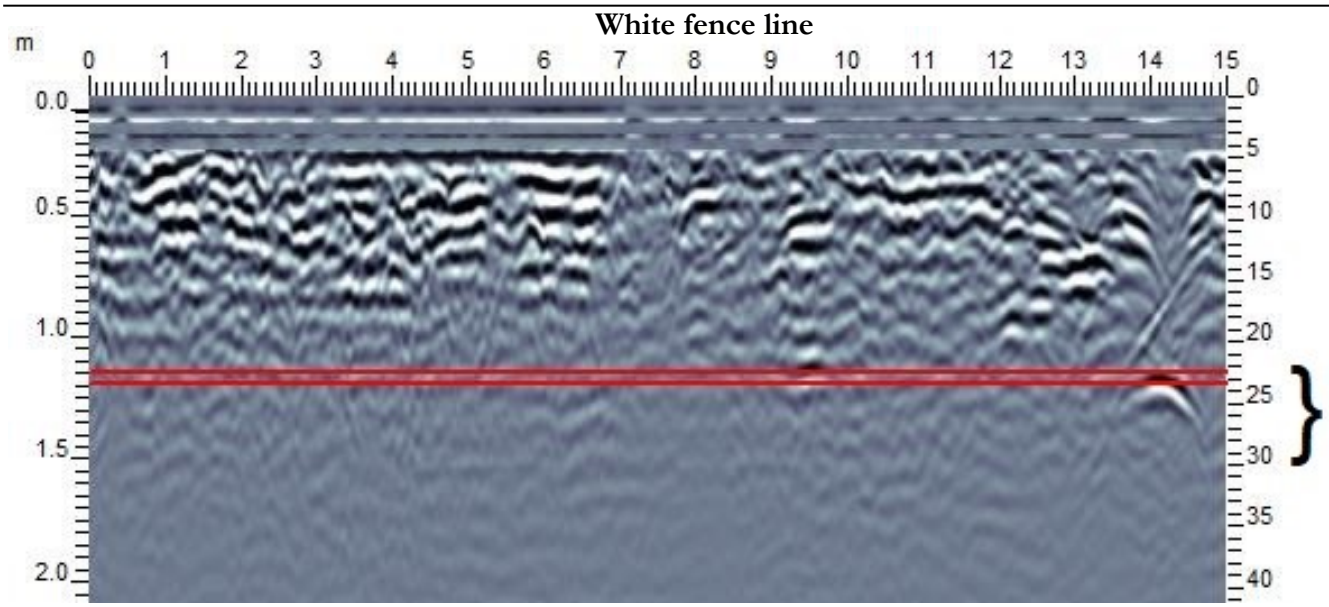


Figure 4: Reflection profile of Grid 1 (XLine 9) at 1.15m-1.20m depth.

that is located in the upper corner of the grid, measuring roughly 1m².

This area is depicted in the section view of the black and white reflection profile (Figure 4) which is the corresponding red transect line (XLine 9) within the color, amplitude slice as the GPR antenna moved along the grid (from left to right.) A clear hyperbola (a typical reflection of objects or targets in GPR survey) can been seen at the 1.20m depth as well as clear/broken ground areas just above the hyperbola which may be indicative of purposeful digging or burying of an object. It is important to remember that the identification of the possible object is unknown without further investigation (namely testing or excavation). Nor can GPR make an interpretation if the possible object is of archaeological significance or not – it can only identify suggested areas that may warrant additional exploration depending on the scope of the research project involved. This example of a reflection profile is also helpful in showing other areas of the transect line that are captured in the corresponding colour amplitude slice (Figure 3) such as areas of homogeneity/or lack of contrasts around the 7-9m mark along the transect length. Within this line, from approximately 7m onwards, a difference in the reflection and subsurface contrasts (broken or interrupted data) can be seen which may be indicative of either natural or purposeful subsoil conditions. This profile image example also shows how in post-processing, a typical

Figure 5: Area of Grid 2 (13m x 8m).

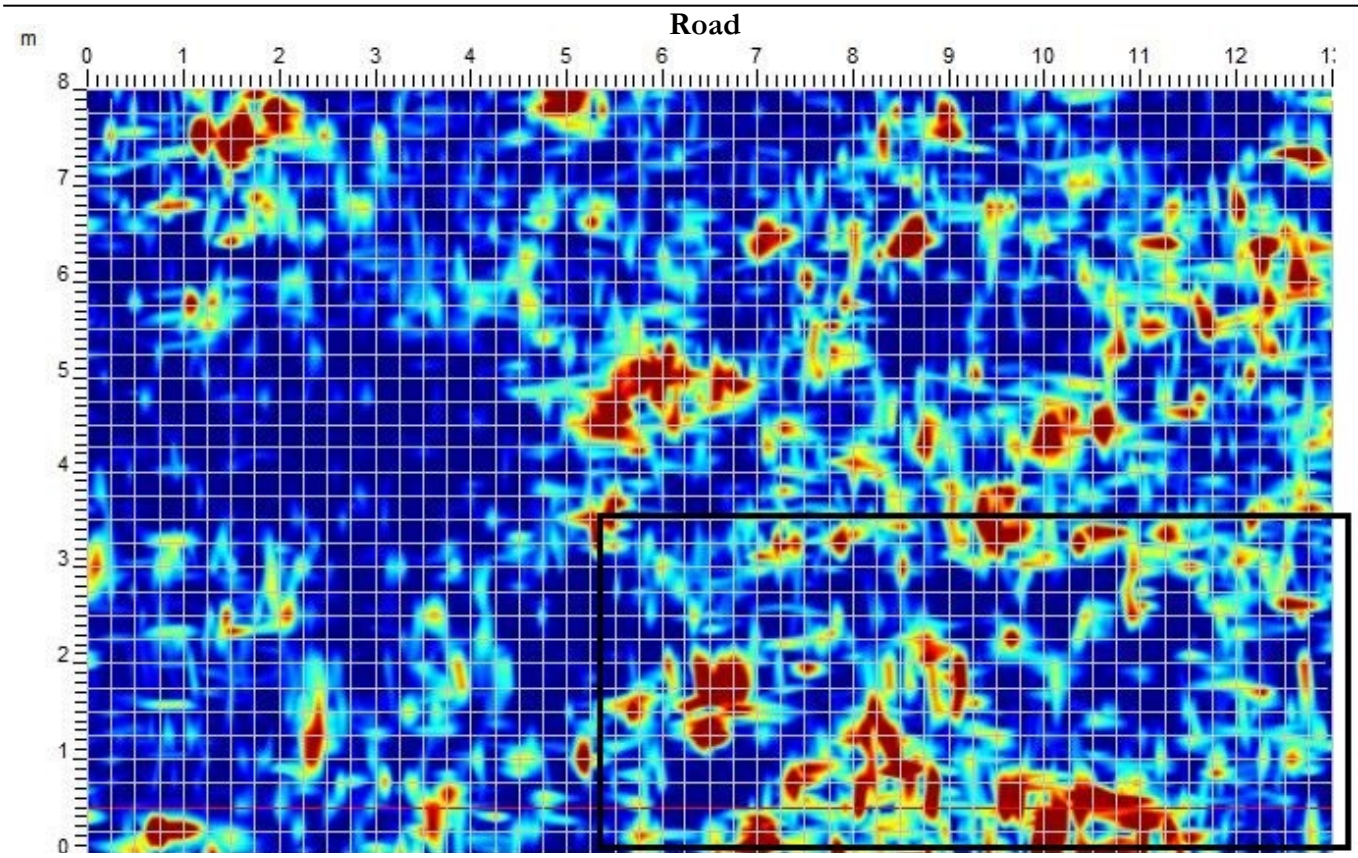
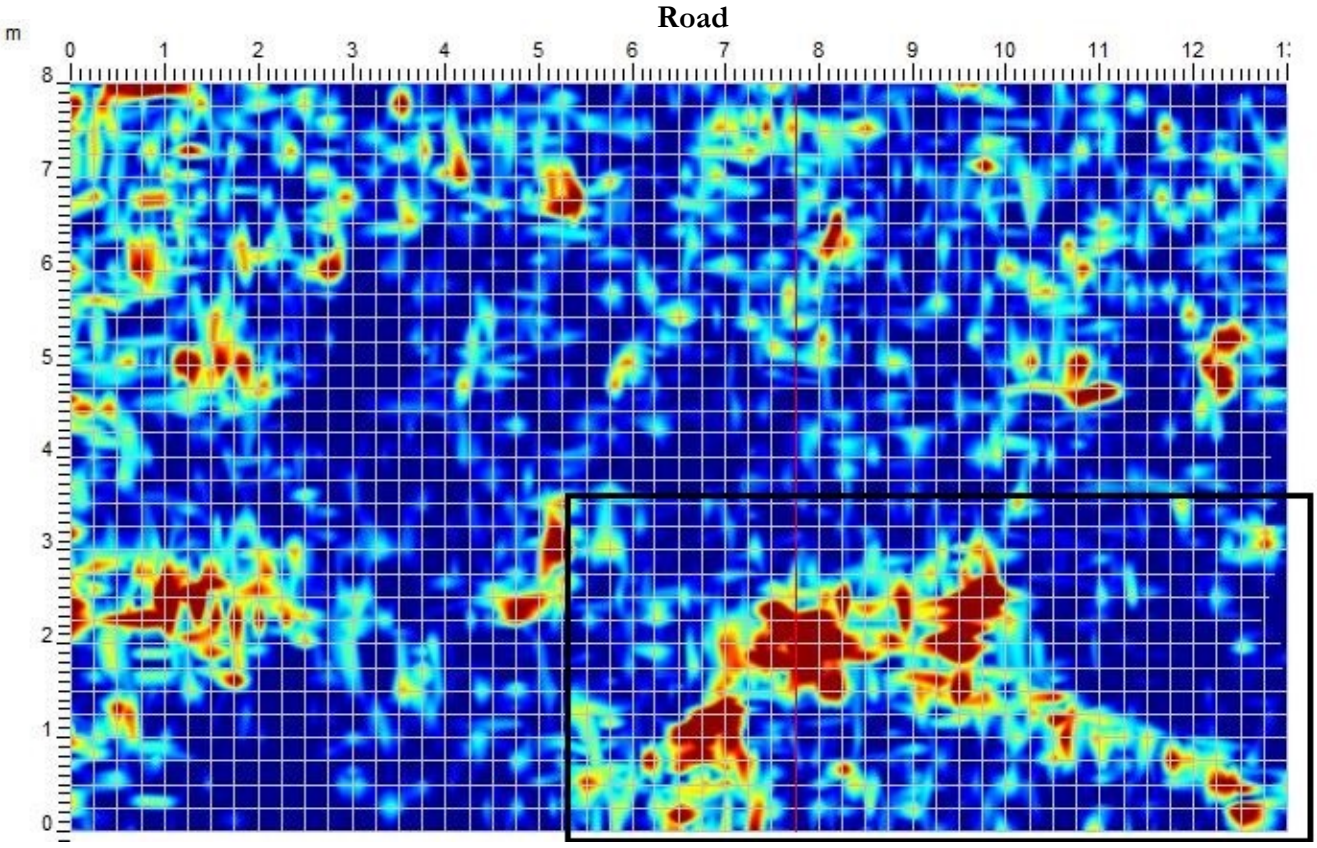


Figure 6: Amplitude slice Grid 2 at a 0.45m-0.50m depth.

Figure 7: Amplitude slice Grid 2 at a 1.05m-1.10m depth.



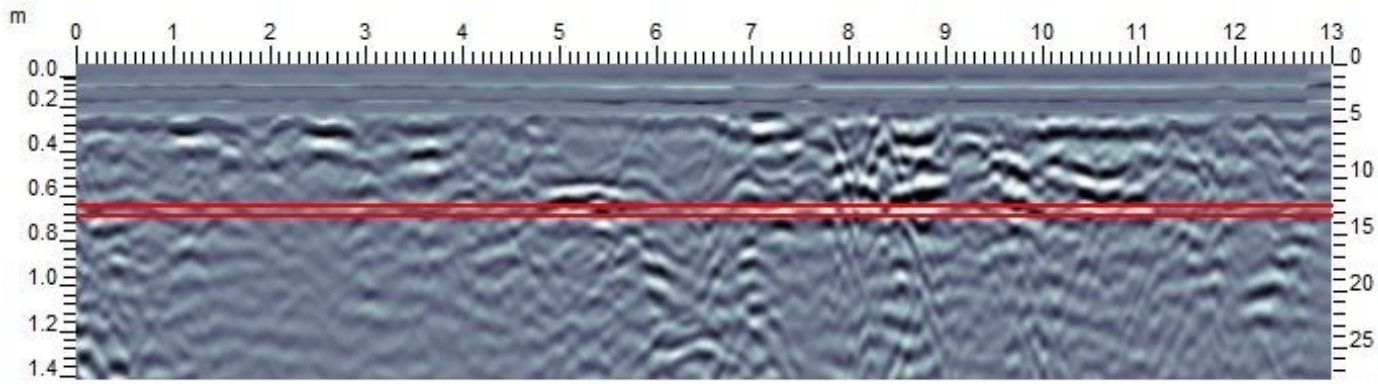
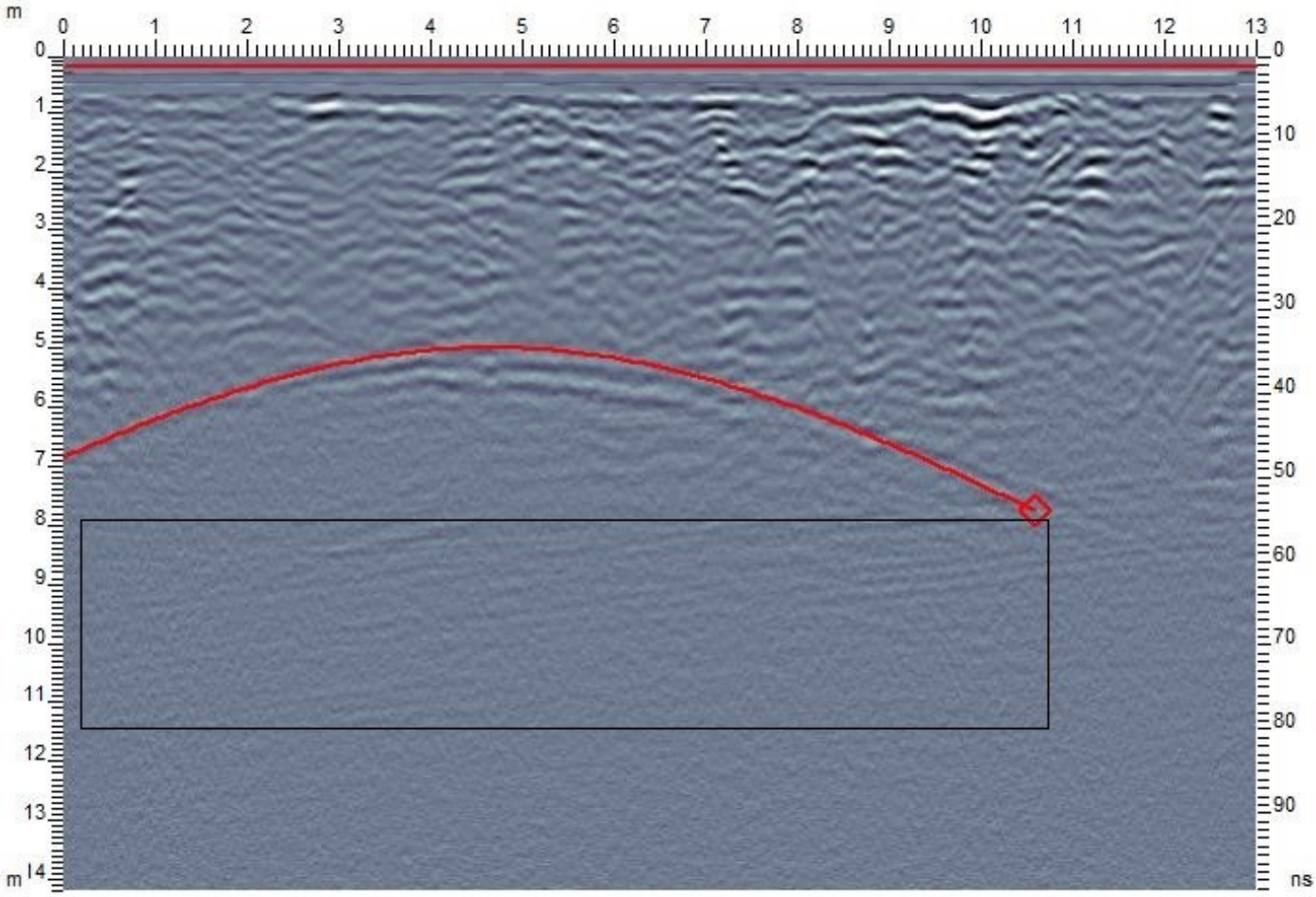


Figure 8: Reflection profile Grid 2 (XLine 2).

method of reducing the background clutter noise is employed within the upper layers of the ground – in this case, the first 0.30m of subsoil.

Grid 2 was located directly in front of the museum and measured 13m x 8m (Figure 5). As with Grid 1, the description of the survey area was grass-covered and generally clear of visible obstruction (with the exception of museum signage). This area also differed somewhat in that there was the presence of a surface pebble-walkway leading from the front fence gate (facing the road) toward the doorway/ porch of the museum. The larger dimension of this grid allowed a more free-flow of the GPR machine and created a greater area of data collection with longer transect lines for both the X and Y axis. Over-head power lines were noted within the general area of Grid 2 and possible data intrusion of such was acknowledged during the post-processing of data.

Image 9: Reflection profile Grid 2 (XLine 17) showing airwaves



Results from Grid 2 produced 116 lines of data that were processed and provided some areas of interest. Most notable is the possible corner foundation/wall remains within the lower portion of the grid (Figure 6). The strong response and linear alignment of the signal suggests that this might be indicative of structural remains. Figure 7 is of the same area but taken at a lower depth (1.05m-1.10m). A corresponding reflection profile image was taken of the red transect line XLine 2 as the survey line moved from left to right (Figure 8). However, it is unknown at the time of writing if this possible wall and location matches with historic maps or other archival sources that show other structures once located on the property. Further investigation into the idea is suggested such as a desktop study or physical determination with testing or excavation to confirm results of any geophysical survey.

The location and site surroundings of a GPR survey area are variables to note when in the field and are invaluable when reviewing the collected data. In this instance, it is the overhead power lines as well as close proximity of tall trees and the museum structure itself to the survey grid – all of which may interact with the GPR antenna and produce airwaves in the dataset. Figure 9 is an example of airwave capture – frequently appearing in the images as either thin linears or over-arching hyperbolas located at a deep depth. The red curved line over the wide hyperbola was analyzed, and from calibration was determined to have a velocity of 0.3m/ns – which is the speed of air. The deep, thin linears in the black bounding box are most likely air wave reflections from the museum building or nearby tall trees. It is important to highlight that for every transect line collected, there is a corresponding reflection profile created in the dataset which can be viewed on its own or as part of the aerial depth-slice images. It is through the interpretation of all of the data line-by-line and then as a collective grid (along with other contributing information and known details of the site such as the physical location as well as any historic elements) that an analysis can be configured and hypotheses formed.

Annual Report of Proceedings, Newfoundland and Labrador Archaeological Society, 2021

Shannon Lewis-Simpson
Newfoundland and Labrador Archaeological Society

The Society successfully navigated a year of pandemic shutdowns and start-ups in 2020/2021 with an emphasis on outreach and education and planning for the future.

The Society continued with research and popular presentations online, resulting in a wider and more geographically inclusive attendance and a range of subjects and presenters:

- Shannon Lewis-Simpson and Toby Simpson: A Discussion on "The Dig":
- Neil Burgess: "What's Up Underwater? Recent Activities of the Shipwreck Preservation Society"
- Blair Temple: Archaeology of the Water Street Infrastructure Improvement Project, St. John's (2018-2021)
- Alison Harris: A Bioarchaeological study of Historical Infant Feeding Practices in Newfoundland Settler Communities
- Mallory Champagne: From Saint-Pierre to Martinique: Connections and Intercolonial Provisioning
- Kirstine Møller: Cultural Encounters in Colonial Greenland

NLAS conducted online and in-person education and outreach during 2021. During International Women's Month in March, NLAS presented a special series on Women in Archaeology in Newfoundland and Labrador, featuring Dr Priscilla Renouf, Dr Selma Barkham, Dr Birgitta Wallace, Dr Anne Stine Ingstad, and Helen Devereux.

In July, the NLAS hosted a field trip to Ferryland, to mark the quatracentenary of the Colony of Avalon's foundation. Dr Barry Gaulton and student volunteers led a tour of lab, site, and outbuildings, capped with a picnic from Lighthouse Picnics.

In August, we participated in New Perlican Heritage Day, with an Edukit booth and a tour of Bloody Point 2 burial ground (C1Ai-12). Between 50-60 community members participated in the day, and there

Figure 1: Visiting the reproduction 17th-century kitchen during our fieldtrip to the Colony of Avalon.

was a great interest in working with NLAS in the future.

During International Archaeology Day on October 16, the NLAS partnered with the Rooms for presentation of the EduKit, an archaeological drawing workshop led by Robyn Lacy and a "seek and find" in the galleries. Approximately 40-50 community members participated, and two archaeology students volunteered.

Dr. Barry Gaulton presented a retrospective "Thirty Years of Archaeology at Ferryland" at the Annual General Meeting in November.

The NLAS also participated in a community fair at Admiralty House Museum, Mount Pearl in December, with 70 community members engaged with EduKit and book sale.

For 2022, we look forward to a Ferryland Speakers' Series. We continue to revise a NLAS Code of Practice and a new logo. Planning continues towards a NLAS Young Archaeology Club (YAC) and we are exploring a suitable project for Community Collections Archaeological Research (CCARP).

We welcome all practitioners or advocates of archaeology in the province to join the society and contribute to our outreach efforts.

Figure 2: Demonstrating the EduKit at the Rooms during International Archaeology Day in October.

Finding the Star of the Sea in Blackhead

Dr. Catherine Losier
Memorial University

Not surprisingly, the pandemic led to the cancellation of Memorial University archaeology field school in 2020. Luckily, in 2021, we had the opportunity to plan a field school in Newfoundland. After discussion with Jamie Brake (PAO), it was decided that the field school would take place in Blackhead and follow the work initiated by the PAO in 2020 at the request of the Blackhead One Room School and Church Museum Board. The board are planning to make improvements to the one room school (now museum), which would involve some ground disturbance (Brake et al. 2021: 31-33). The objective of the project was twofold, first to determine if the Star of the Sea Church was in fact located on the northeast side of the One Room School and Church Museum (CjAd-02) and second, to assess if some sections of the foundation of the church were still present.

Figure 1: Aerial picture of the foundation at the end of the excavation and footprint projection of the Star of the Sea Church (captured by Dr. P. Whitridge and James Williamson, edits C. Losier).

We can already break the suspense by saying that both objectives were achieved, as the footprint of the Star of the Sea Church dedicated in 1861 and destroyed by a storm in 1910 was found. We were able to determine the dimensions of the building as we found three corners of the church (Figure 1). In addition, we now understand the way the walls were built and we most certainly located one of the building's openings (either a door or a window). Moreover, we have a hypothesis on the reasons that led to the collapse of the church.

It was exhilarating to be able to fulfill all of our research objectives and the relationship that developed between the crew and Black-

Figure 2: Memorial University field school crew – (from left to right) Aubrey O'Toole (field assistant), Cassie Drake, Alex Cull, Kayla Low, Meghan Livingston (field assistant), Steven Bradbury, Lisa Neal (in the back), Dr. Catherine Losier (in the front), Melissa Stansbury (in the back), Shannon Earles, Mitchell Edwards.

head community was perhaps the most satisfying aspect of this project. During the six weeks of fieldwork, the crew was giving an update on Friday afternoon at 3pm. Each time, between 20 and 30 people from the community were attending the event. When we announced that we discovered remains of the church wall, people were thrilled and one of the community members said, "It was as if all ancestors of Blackhead were giving them a pat in the back for confirming where the church was and doing such a good job celebrating local history". In a very organic way, community archaeology came to be at the heart of the project. It should be mentioned that field school crew, composed of 8 students and 2 field assistants, was excellent and passionate about the project. They worked so hard that they were able to excavate and record 32 m^2 in a little bit less than six weeks, which is an excellent pace for a field school (Figure 2).

All Roads Lead to the Blackhead Stone Church

In Blackhead, people never questioned the fact that the Star of the Sea church was once located on the ground that is adjacent to the one room school and church museum historic building that still stands at the entrance of the community. Several residents told us that as kids, they would play in the "ruins of the stone church": the rubble located beside the one room school, which was not covered, by sod at the time. Besides the rubble, no wall features nor other indications testifying directly to the presence of the stone building were visible in Blackhead landscape, but the church locale was never disputed in the community.

The absence of stone features and the scarce archival record associated with Blackhead Roman Catholic stone church prompted the PAO staff to think outside the box after the 2020 fieldwork and hypothesize that maybe the building was located close to the shore instead of adjacent to the one room school building. This has been addressed in *All Roads Lead to the Blackhead Stone Church* PAO blog post. Archives mentioning the church underline that the building is "located on an elevated ground" and visible from the sea, which was suggesting that it could have been standing close to the shore (Newfoundlander (St. John's), May 15th, 1861 cited in Clarke and Newhook 1997: 4). This, associated with the fact that almost no construction material (cut stone or mortar) was found in the excavation of the five test pits done on the northeast side of the school building, led the PAO crew to question that the church was adjacent to the school.

After the PAO blog post was released, Dr. Amanda Crompton found several archival documents and a map supporting the fact that the church was effectively standing close to the one room school un-

til its collapse in 1910. After reviewing the archival documents and landscape the PAO crew felt "comfortable in saying that the Star of the Sea Church was likely in the location that was tested" on the northeastern side of the school building (Brake et al. 2021: 33). This was the situation before the Memorial University field school students, faculty and staff began their work on the site in 2021 attempting to provide more information about what remains were still in place at the church site.

Finding the Star of the Sea

To further document the presence (or absence) of the church remains we decided to use the whole suite of remote sensing instruments available at the Department of Archaeology at Memorial University, namely a GPR, a gradiometer and drones, including a drone mounted with a LIDAR. Maria Lear (See Lear this Volume for more GPR work at Blackhead) and Dr. Vaughan Grimes operated the GPR and gradiometer respectively. Dr. Pete Whitridge and PhD. candidate James Williamson flew drones. These remote sensing instruments helped us map and record the site prior to the excavations and to detect anomalies (or contrasts) in the ground and landscape oddities that could possibly attest to the presence of the church foundations.

The first step prior to launching the remote sensing activities was to set up the site grid, on which the initial GPR and gradiometer grids were set up. Four other GPR grids were positioned later during the project to document other sections of the site. The GPR data for the first grid was available before the start of the excavations and allowed to target locales where anomalies were detected. Excavation began on June 28th by opening 8 units (1 m x 1 m) in diverse sections of the site where contrasts showed up on the GPR grid. The topography of the site also guided the positioning of the first units. Indeed, linear ridges were visible as well as a depression located roughly in the middle of the site.

After only a few days on site, we were happy to report that the first evidence of the church foundation was identified in unit 106N107E excavated by Kayla Low (Figure 3). Blackhead people were delighted of this discovery, and it was apparently the beginning of evening communal gatherings at the site to discuss progress and findings after the departure of the field crew! This result allowed us to guide further unit openings. We suspected that the face of the wall exposed was located in the interior of the church; therefore, we needed to find the exterior of that wall section to define its width and better inform the orientation of the feature. In consequence, we opened more units in the sector to answer this question and better document wall 1. The exterior of the wall was found almost systematically in units 108N108E and 107N109E excavated respectively by Meghann Livingston and Aubrey O'Toole.

The topography of the site suggested a corner could be present a couple of meters to the northeast of unit 106N107E. To gather more information, we asked Maria Lear to come back and survey another GPR grid (grid 2) aiming to document the sector of

Figure 3: Interior face of Wall 1 in unit 106N107E.

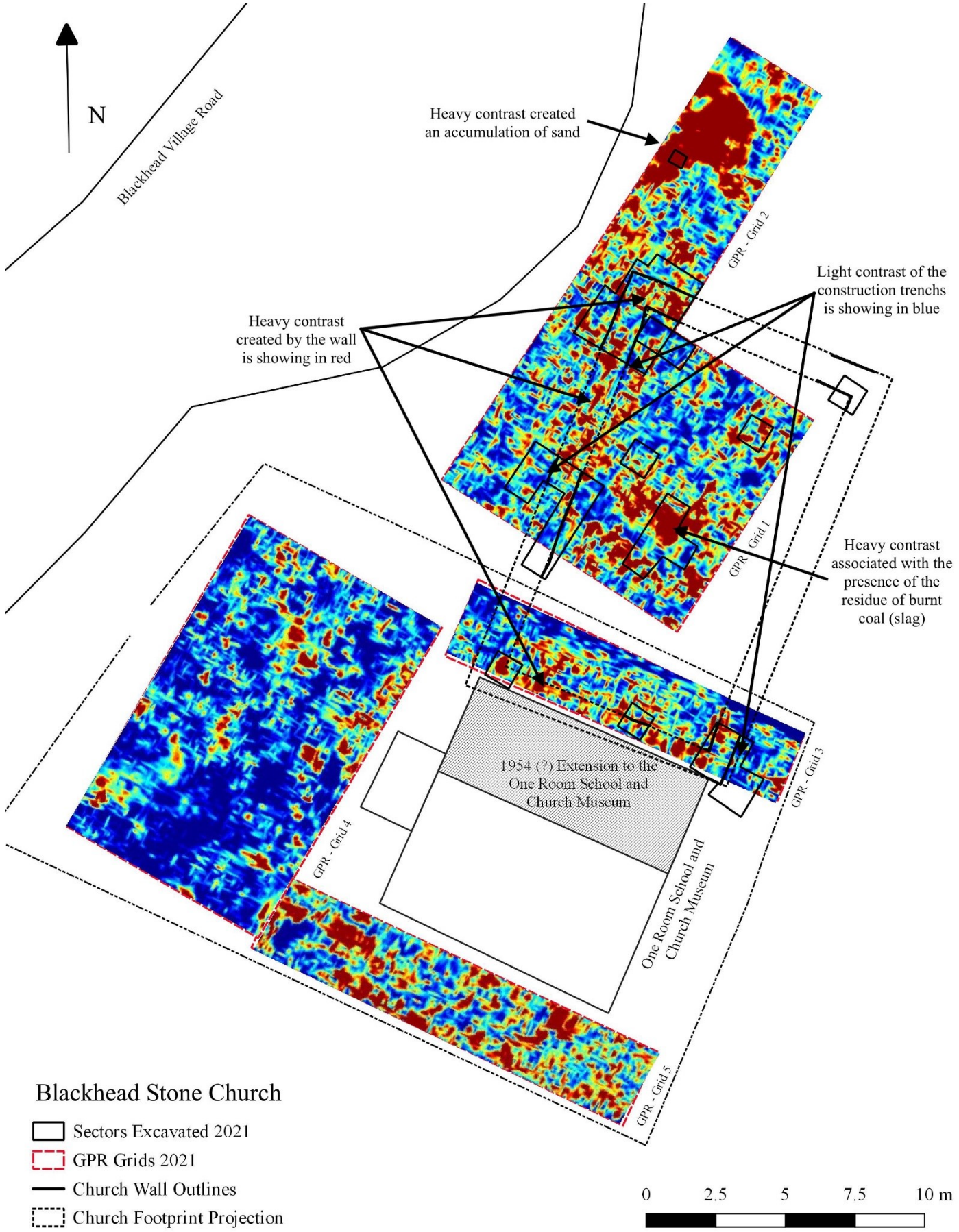


Figure 4: Map of the site featuring GPR slice maps (at 0,40m - 0,45m depth), the sectors excavated, outlines of church walls and projections of the foot print of the church.

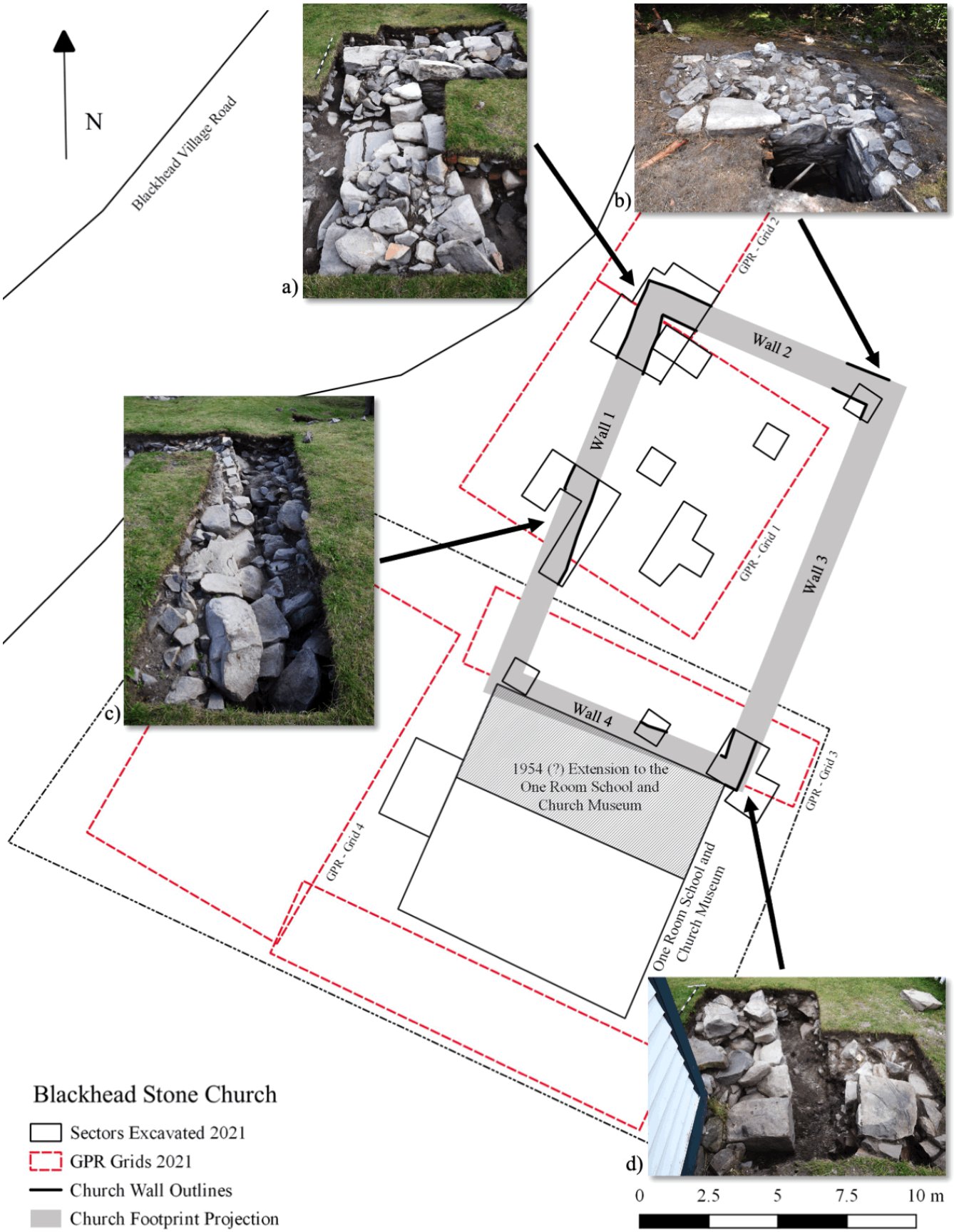


Figure 5: Map of the site featuring the sector excavated, GPR grids, the outlines of church walls and projections of the foot print of the church.

the corner in question (Figure 4). Like the topography, GPR data were suggesting that a corner was present. It was without surprise that excavation of unit 106N109E excavated by Steven Bradbury revealed the presence of a corner at the junction of wall 1 and 2 (Figure 5a).

With the orientation of two walls, it was then possible to search for additional corners in order to work on revealing the outlines of the church. Following the alignment of wall 2 to the southeast in the bushes, a ridge and a slope were identified. The topography of the site and location of this anomaly was making this landscape feature an excellent candidate for being another corner, and this is exactly what the excavation of unit 99N110E by Lisa Neal revealed (Figure 5b). Lisa found the interior junction between walls 2 and 3, which gave us a measurement of 10 meters (33 feet) of total length, and 8 meters (26 feet) between the two interior corners.

After the discovery of the first two corners, we began looking for the southwest section of wall 1 close to the fence in order to identify potentially another corner. If the continuation of wall 1 was found, thanks to the work of Shannon Earles, Alex Cull and Kayla Low, we did not find any trace of a corner close to the fence (Figure 5c). Again, we sought the help of Maria Lear to implement a third GPR grid this time inside the museum fence with the hope of intersecting walls 1 and 3, and maybe the two last corners of the church. The GPR data were suggesting that wall 3, and potentially wall 1, were present inside the fence and close to the museum building. However, this is when things got a little bit less straightforward and kept us on the edge of our seat until almost the last day of fieldwork. We finally discovered the third corner of the church only to understand that the northeast wall of the one room school building has been constructed on the southwest wall (wall 4) of the church (Figure 5d). What led to this intriguing situation is described below.

Construction and Architecture of the Star of the Sea

John Thomas Mullock, a Roman Catholic bishop of St. John 's, initiated the construction of the Star of the Sea Church in 1857. He is also responsible for the completion of the Basilica of St. John the Baptist and four other stone churches in Newfoundland outports: Kilbride, Ferryland, St. Kyran and Torbay. The year (1857) work began at the church site was found recently by Cassie Drake in John Mullock's diaries at the Archdiocese in the Basilica. We know John Mullock attended the one-year anniversary of the church consecration in 1862, therefore, we can assume the church was dedicated August 18th, 1861 (*The Record* 1862). The church stood in Blackhead for only a short time. An article in the *Evening Telegram* June 6th, 1910 states that the church was blown down by a storm the night before. This gives us the precise period during which the stone church was in use, from 1861 to 1910, totalling 49 years, which is quite short for a stone building.

If the archives allow us to situate the church in time, excavations give us technical information with regard to its construction. As three corners were located, we were able to determine the exterior dimensions of the building, which are 10 meters (33 feet) by 15 meters (50 feet). We also concluded that the width of the walls is of 0.90 meter (3 feet) and that they were built in three parts: an inner and an outer face, and a wall core made of a fill of stone rubble. The faces are composed of big stones (30 to 90 cm) positioned in uneven courses, cut flat on the side exposed, either on the exterior or the interior of the church. With the exception of a few stones, the faces that show in the construction have no evidence of modification or cuts. The stones were joined together with mortar. The wall core was composed of

Figure 6: Construction method of the church walls.

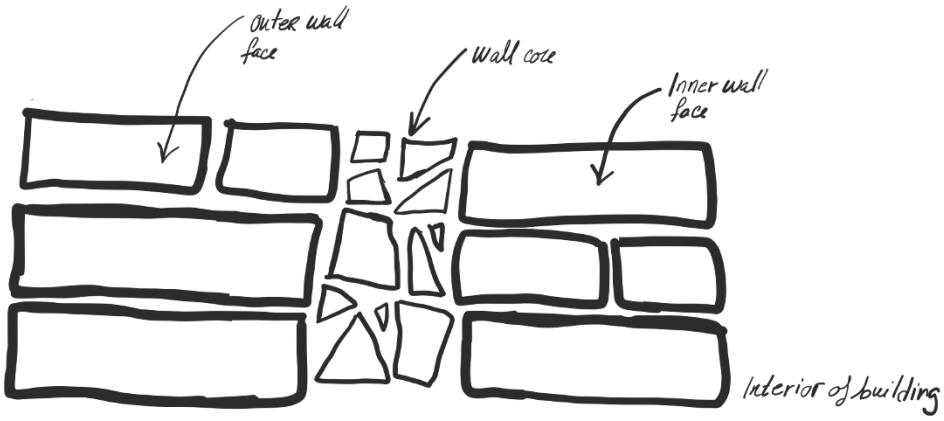


Figure 7: Yellow bricks present in wall 1 in units 105N101E and 105N102E.

rubble stones (10 to 25 cm) not organized in course, which seems to be holding together with a mortar (Figure 6). It is interesting to mention that the walls and construction trenches are captured by the GPR in some sectors of grids 1, 2 and 3 (Figure 4) and it needs to be said that we understood this after the excavation when the GPR grids and wall features were plotted together in QGIS. This informs on how powerful it is to multiply lines of evidence with regard to fieldwork and accumulating more GPR data to better interpret them.

The west wall gave us information regarding the opening of the church. Yellow bricks were part of the interior of the wall in units 105N101E, 105N102E and 106N102E (Figure 7). With the information currently available, it is difficult to state if the opening was a door or a window. However, the overwhelming amount of window glass found in units 107N101E and 107N102E excavated by Mitchell Edwards suggests that a window was present in the area. Conversely, the bricks located low in the wall, close to the foundation, are suggesting that we could be in the presence of a door. Interestingly, we observed yellow bricks lining the window opening leading to Ferryland church attic. This opening seems not to have undergone extensive renovations, as it is the case for the rest of Ferryland church. We are hypothesizing that the attic is still presenting some of the original features of the church, like the yellow bricks lining the opening. This reinforces the idea that we could be in presence of an opening in the Blackhead building.

Another aspect of the aesthetic of the Star of the Sea church is that its exterior was in part or entirely covered by mortar. Indeed, flat pieces of mortar were found in great quantity on the exterior of the wall, an example from unit 106N110E is particularly a telling example (Figure 8). The vision of a white church from the sea *en route* to St. John's harbour will have been remarkable. Indeed, the article in *The Record*

Figure 8: Mortar recovering the exterior of wall 2 in unit 106N110E.

Saturday August 23rd, 1862 compliment the beauty of the church: "The anniversary of the dedication of the beautiful little Church at Black Head took place on Sunday last".

The fact we found wall 4 adjacent and even under the one room school and church museum might be surprising to some, as it is believed that both buildings were standing in Blackhead at the same time. The one room school (and church after 1910) was built in 1879. However, when entering the building, it is evident that it went under major renovation during the course of its life. The aerial picture of 1948 (NFLSP5-065 1948) allows us to hypothesize the timeline of the renovation. Based on the air photo the building is displaying the same shape it has today. An article in the Evening Telegram dating from October 2nd, 1954 is suggesting that the renovations were finished: "Work on the school chapel at Blackhead has now been completed. The chapel built (referring to the one room school and church museum building) on the site of the old stone church the nearest in North America to Ireland has been completely repaired, painted and decorated".

The building went under a complete revamping of its architecture around the middle of the 20th century, changing the orientation of the roof pitch, which is now parallel to the street. This is evident from the interior of the building and with a visit to the attic in which we can still see the original roof pitch oriented perpendicularly to the new one. Perhaps the biggest change is the extension to the building, which is evident when looking at the difference in the ceiling in both sections of the building. It went from a skinny building of 5.14 m (18 feet) by 8.80 m (29 feet) with its shortest side parallel to the street to an almost square building. The measurements of the building with the extension are 9.4 m (30 feet) by 8.80 m (29 feet). Therefore, the building was extended 3.70 m (12 feet).

The configuration of the one room school building suggests that the extension was done toward the northeast. It also seems that the people in charge of the renovations used the foundation of the stone church (wall 4) to support that extension (Figure 9). This is why it was more difficult to identify the wall in this sector as it was most probably more disturbed by the renovation and reuse of the wall feature. This is what units 104N95E and 99N96E excavated by Cassie Drake and Melissa Stansbury were suggesting. In addition, we were not expecting the building of the museum to be sitting on top of the wall of the church. However, we found the southeastern corner of the church, which allows us to give the complete footprint of the building.

The collapse of the church must be addressed. Archival documents state that the church fell in a "bad state of repair" when a storm blew down the tower in 1909, and the building eventually collapsed in the night of June 5th to 6th, 1910. Some people in the community told us that the mortar was a structural problem, but the excavation led us to suggest another hypothesis. We observed that a fair number of large stones were often fractured in half, may be caused by the change in temperature and the presence of salt in the rock. Indeed, a visitor to the site mentioned that the stones were harvested close to the shore on the coastline west from the community. Salt could have made the sandstone prone to fracture and if this was happening while the building was still standing, it could have created the instability that led to the collapse. Speaking of the destruction of the church, we must report a casualty… it seems that a cat was present in the church when it fell down and the poor animal was a victim of the collapse as his skeleton was found in anatomic position close to a big stone in the rubble of unit 102N103E.

According to the archives stating that the tower was blown down in 1909 and a drawing of John Shortall made around 1904, we know the church had a tower. In addition, the cross sitting on the top of the church is likely to be located in the community cemetery; the cross is showing the date of 1861 (Figure 10). However, we did not find the location of the tower during the excavations. This is one of the most important questions that remain unanswered to this day. After the excavations, we are under the impression that the tower could have been located on the two thinner walls. Knowing that the one room school building (in its original form) was contemporaneous to the church between 1879 and 1910, we doubt that the tower was on the southern wall (wall 4), but it is not impossible. Still, no evidence of the presence of the tower was identified on the northern wall of the church.

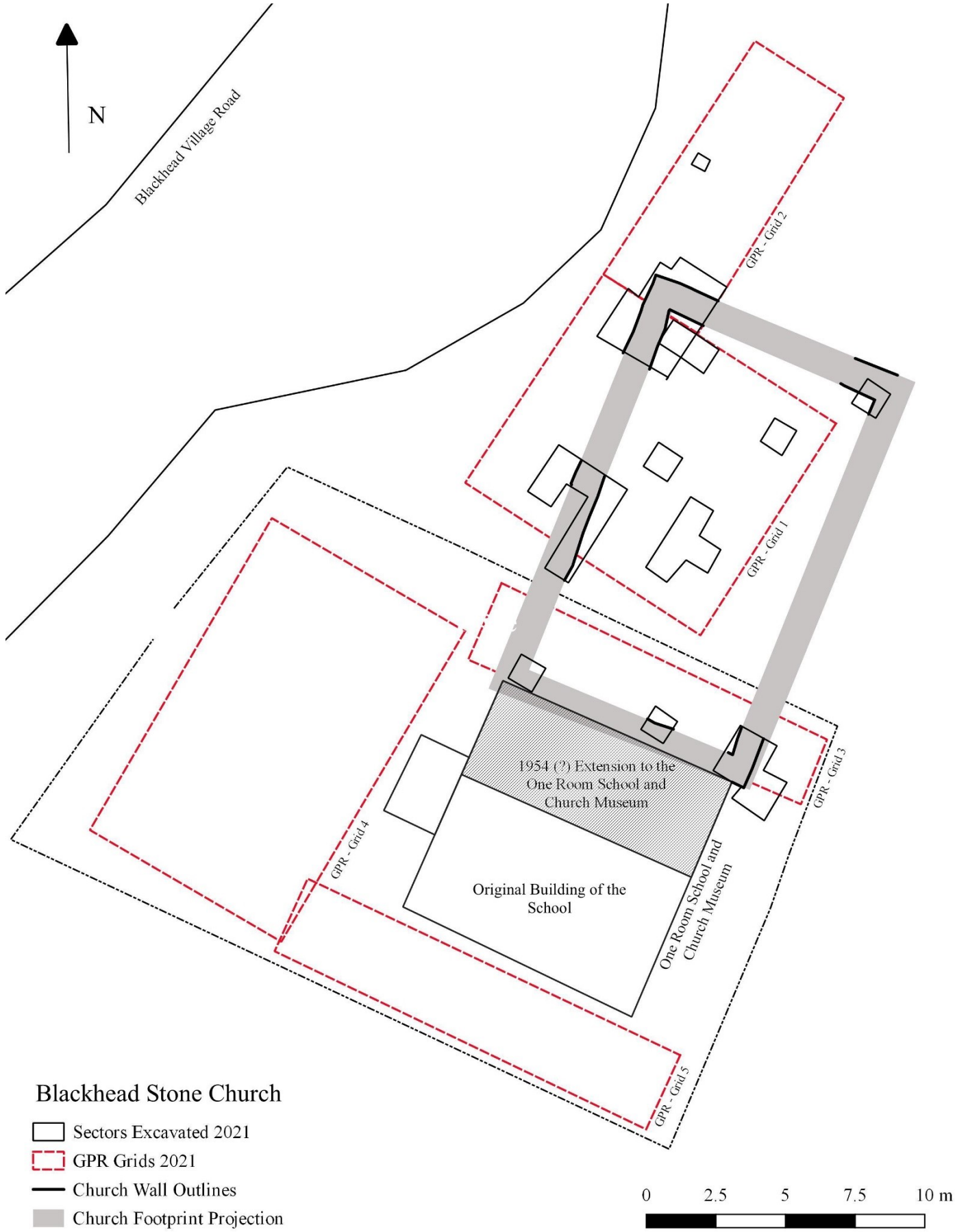


Figure 9: Map of the site showing the overlap of the stone church wall and the one room school building.

Figure 10: Cross located in Blackhead cemetery showing the date of 1861 carved. The date was highlighted in black in order to be visible.

Combustion Zone and Other Areas

Beside the discovery of the wall foundations other zones were explored, most were located inside the church. It is the case for a sector that we named the combustion area due to the fact the matrix was essentially composed of slag (also called clinker). This area created a significant contrast on the GPR grid, which prompted us to investigate (Figure 4, in GPR grid 1). The slag is likely a residue of mineral coal burning used in a stove destined to heat a building. It is worth mentioning that fragments of what might be a stove door were also found in this area. The question that remains right now is from which building was the stove and coal residue coming from?

There is no easy answer to this question. The slag, as well as bricks more recent than construction of the church (one brick is showing the maker's mark of Pelley, likely made in Milton close to Clarenville after 1886, research is on going regarding this brick), were located above and mixed with the rubble associated with the church collapse which could indicate it was deposited after the destruction of the church, therefore, coming from coal burning in the one room school building. However, we identified the presence of a brick feature and a hinge in 102N102E (Figure 11). The feature is composed of six bricks cross-braced and its function remains unknown at this moment, but we can suggest two options. Either we could be in the sector where a furnace was located in the church or the brick feature, hinge and slag are associated with it. The other solution is that the brick feature is a pillar supporting the flooring of the church. For the moment, the answer remains unknown, as this sector was not extensively excavated.

This is a good moment to mention that no evidence of flooring was found and introduce the excavation of units 104N104E and 101N108E located inside the church. Unit 104N1014E excavated by Steven Bradbury was characterized by an important accumulation of rubble, no evidence of stone or wood-

Figure 11: Sector where slag was found in great quantities. The brick feature and hinge are indicated with an arrow.

Figure 12: Sand layer in unit 109N114E.

en flooring was found. In unit 101N108E excavated by Alex Cull almost no rubble was found and the soil was very thin before reaching the natural layer. The most noticeable aspect of this unit was the fact that wood was found. Actually, wood was found in many other units excavated during the course of the summer. We hypothesize that it could be remains of the roof frame or remains of a wood flooring. The reason why we find only a little bit of wood and no evidence of floor found during excavations could come from the fact that most of the church furnishings might have been removed between 1909 and 1910 before the final collapse of the church.

Investigation in another area is worth mentioning. Kayla Low excavated a 50 cm by 50 cm test pit in unit 109N114E outside of the church to examine an important contrast on GPR grid 2. It turned out that an accumulation of fine sand was present in the area (Figure 12). If this explains the contrast picked up by the GPR, it does not help us understand if it was associated or not with the church. However, making mortar involves having access to sand, so it could have been the residue of the sand needed during the church construction, but this is only a hypothesis as some artefacts found in the test pit seems quite recent.

With regard to artefacts, we will be brief in this review. The catalogue is done but the research is still ongoing. It should be mentioned that besides construction material such as nails, few artefacts associated with the church were found, probably for the reasons explained above. The most interesting objects found are associated with the use of the one room school and church (after 1910). We found graphite pencils, sherds of inkbottles, small glass containers that could have contained holy water and others that were probably filled with cod liver oil, thus reflecting the school health program of the mid-20th century during which the government was distributing cod liver oil, among other foodstuff, to school kids.

The Future of the Star of the Sea

It was under the continuous guidance and growing excitement of the Blackhead community that the crew successfully identified the remains of the Star of the Sea Church. Working with a community that cared so much about its history and treasured each discovery was a delight. As such, it would feel wrong to leave without ensuring a long-lasting testimony of the project and interpretative means of increasing community knowledge regarding local history. In coordination with the board of the museum, we already planned a public conference in May 2022 to share our findings and interpretation with Blackhead community and everyone involved or interested in the project. It will also be the occasion to share field anecdotes such as the visit of the painter Jean-Claude Roy who immortalized the excavations in his own fantastic style (Figure 13).

The natural outgrowth of this project and objective of the board of the Blackhead One Room School and Church Museum will be to mobilize the knowledge created during the archaeological excavations and the post-excavation research to produce storyboards to be installed on the land where the church was standing. One of the great advantages of the storyboards is that they will be accessible yearlong even when the Blackhead Museum is closed. We are currently collaborating to secure funding and hope to see this project come to life shortly.

Acknowledgement

In all honesty, this project might be one of the very best I had the chance to participate in, it was an abso-

lute delight to work on finding the Star of the Sea with an excellent crew of students which I thank for their hard work and excellent spirit! I extend my thanks to the community of Blackhead for the support, help, friendship and interest throughout the excavation. I am extremely grateful to Bonita Ryan and Antoinette Ryan (of the Museum Board) for their friendship, laughs, cupcakes, trust, generosity and knowledge regarding the history of the church and the community. Thanks for providing such a great experience to the field crew. Thanks to Maria Lear, Dr. Vaughan Grimes, Dr. Pete Whitridge and James Williamson for their time and excellent skills. We also thank the PAO crew for their interest, guidance and support and the Faculty of HSS at Memorial University for funding.

Figure 13: Painting of the One room school and church museum and the excavation by Jean-Claude Roy.

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Digitizing Innu Ancestor Artifacts: Work at the Labrador Heritage Museum and Sheshatshiu, Labrador

Chase K.A. McLean
Memorial University

Photo 1: Location of where the bulk of the research was completed.

Introduction

The summer of 2021 was challenging for many reasons, especially if you had to travel for archaeological fieldwork or research. Originally planned to arrive in Labrador for research as part of my Master's project in May/early June, I arrived in North West River on August 11th. The logistics for my arrival were delayed due to the Covid-19 pandemic and only became viable with the opening of the Atlantic Bubble in the latter part of the summer. Once I arrived in North West River, from August 11th until September 10th, I completed research that partially involved working in three separate locations: 1) the Laboratory for Applied Archaeological Research and Community Heritage (LARCH), 2) the Labrador Heritage Museum (refer to Photo 1) and 3) FjCa-51 Area 15, an Intermediate period archaeological site located in Sheshatshiu. This report briefly summarizes the research completed while I was in North West River and provides an overview of how it relates to my Master's project. The results of this research will be released in my thesis.

The bulk of this research was primarily done in LARCH and the Labrador Heritage Museum; how-

Photo 2: Screenshot of a digitally produced 3D model of an Innu ancestor cache or combustion feature that was excavated in Area 15 of FjCa-51 in Sheshatshiu, Labrador. The 3D model is viewed in object mode in Trnio 3D Scanner with an iPad 8.

ever, I had the opportunity to conduct 3D scanning and photogrammetry in the field while Dr. Scott Neilsen was completing fieldwork in Sheshatshiu at FjCa-51 Area 15. Part of the goal of this research was to establish a set of criteria of how community museums can use different kinds of 3D technologies, like photogrammetry and 3D scanning. From here, the results would be used to develop a system of best practices and use for community museums to follow when digitizing artifacts in their collection or for presenting 3D models of the artifacts. This work involved a lot of practice with the photogrammetry and 3D scanning equipment to determine what digital technology may work best for non-archaeologists and community museums. These individuals and institutions often do not have access to graduate funding, research grants or equipment and resources that many graduate students do (Polster 2007; Rawlings et al. 2012). Furthermore, this project was also chosen to demonstrate how community museums and their employees or volunteers could learn aspects of archaeological methodology by digitizing artifacts. This would allow community museums to easily share archaeological information with the wider public and promote a shared heritage. Essentially, I believe archaeologists are not the only stewards of the material past who have a role to play in this. Collaborating with responsible non-archaeologists and institutions like community museums could help reinforce interpretations of the archaeological record. By engaging in this, archaeologists may strengthen partnerships with community members who could also become stewards of the past, particularly Indigenous and Northern remote communities who have historically been detached from archaeological practices (Lyons 2013).

This project outlined different sets of criteria that were targeted to be completed. These were: 1) considering the price and expenses of 3D scanning and photogrammetry equipment, 2) accessibility and the overall user-friendliness of these technologies, 3) file formatting, data storage and processing time, 4) copyright issues and 5) wireless bandwidth in the North. Each 3D technology was reviewed with each of the described set of criteria while attempting to digitize artifacts from the Labrador Heritage Museum. Since the development of digital 3D visualizations is a relatively recent archaeological practice (Garstki 2017), it was beneficial to try to aid the Labrador Heritage Museum with digitizing some of the historic and Innu ancestor artifacts in their collection. With permission from the Innu Nation, I decided to recreate 3D digital images of some of the Innu ances-

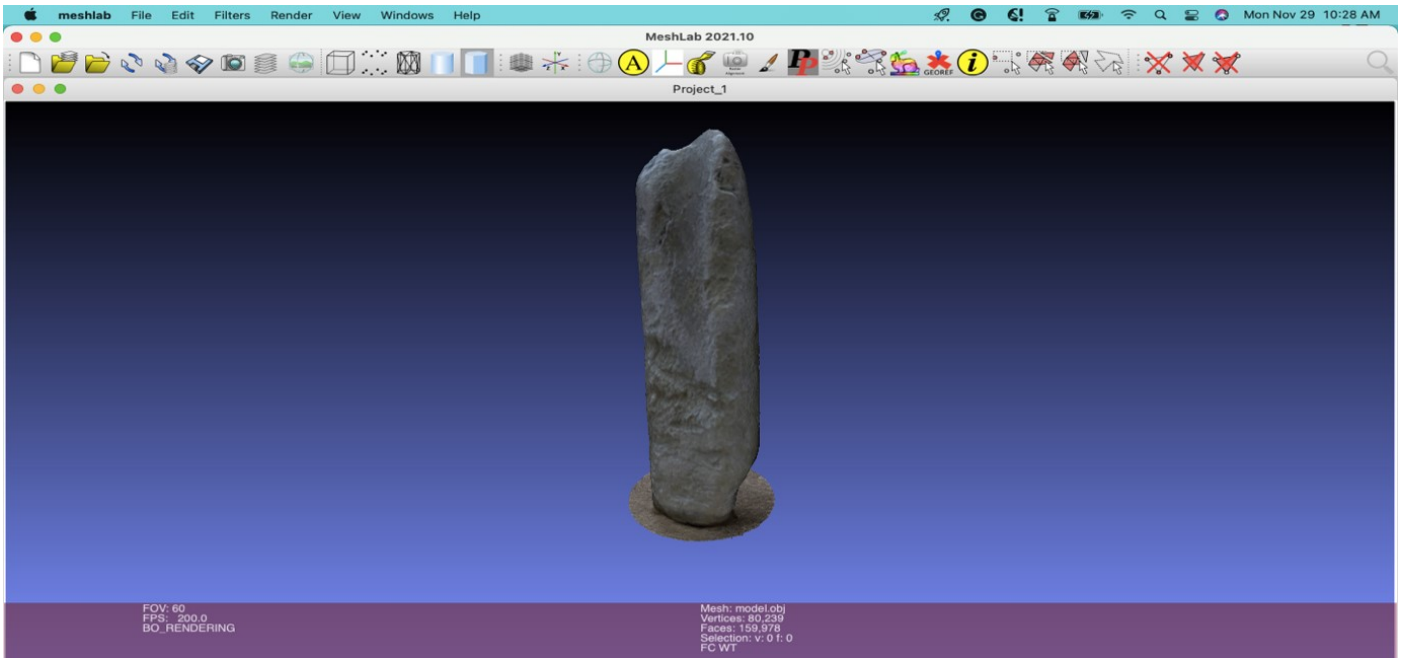

Photo 3: 3D model of an Innu ancestor ground stone gouge that is dated to be approximately 3500-5000 years old. The model was created with the researcher's iPad with Trnio 3D Scanner and is displayed in MeshLab. Credit is owed to the community member who found this diagnostic stone tool in North West River.

Photo 4: The researcher conducting photogrammetry of a combustion feature at FjCa-51 Area 15 with a DSLR Nikon Camera. Photo credit: Dr. Scott Neilsen.

tor stone tools, archaeological features (Photo 2 and 3) and the historic hide scrapers.

The attempt to create the 3D models of these artifacts was done with both my iPad 8 and iPhone XR that had 3D scanning iOS applications downloaded and installed on them. I also attempted to use a NextEngine 3D Scanner and a Structure Sensor Mark ii (used in conjunction with the iPad 8). A DSLR Nikon Camera was later used to photograph the artifacts and features. The images were downloaded onto a desktop computer in LARCH and were then stitched together in Agisoft Metashape. All of these 3D scanning and photogrammetry technologies range in terms of their user-friendly complexities from more basic/beginner style technologies to more advanced technologies. This was an important set of criteria that I made sure to track as the project progressed because many different kinds of 3D scanning can be discouraging to both archaeologists and non-archaeologists due to their high financial costs, technical requirements and long periods of processing time (Barber et al. 2014).

Conclusion and Acknowledgements

As the project neared completion with testing the 3D scanning and photogrammetry equipment to create 3D models of the artifacts and archaeological features, I had enough data to begin writing. This experience certainly provided me with many learning opportunities of what I could have better anticipated, but this was part of the research itself to determine what works best. I have many people and institutions to thank for all the help I received for this part of my research. Generous funding was provided by SITA (Scholarship in the Arts from the Faculty of Humanities and Social Sciences) and research grants from the Provincial Archaeology Office in Newfoundland and Labrador (PAO) and the Northern Scientific Training Program (NSTP). My supervisor, Dr. Scott Neilsen was instrumental with his help in setting me up with the Labrador Heritage Museum and throughout the project in its entirety. His push for continuing to try things even when they didn't work out the way I planned made me appreciate that sometimes that's just how things work out and that you work around it. I would also like to thank Jodie Ashini of the Innu Nation for her support of this project, staff at the Labrador Institute and Ernie and Sharon McLean of the Labrador Heritage Museum for allowing me to work with some of the artifacts in the collections. Finally, I would also like to thank David Finch, Bryn Tapper, Chelsee Arbour, Anthony Jenkinson, Wesley Blake and Doug Michelin for fine conversations and many laughs; it was great to see you all. I look forward to my next return to the Labrador.

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Summary of Archaeological Activity Performed in 2021

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Plate 1: The Beaches (DeAk-01), 2021, showing eroding south bank and fragments of wooden breakwaters erected between 1995 and 2008.

Introduction

The author obtained two research permits from Newfoundland and Labrador's Provincial Archaeology Office (PAO) in 2021. Both projects were contracted to the author by the PAO. Permit 21.48 provided for assessing erosion and the overall status of the Beaches site (DeAk-01) and the Bloody Bay Cove quarry (DeAl-01, 05, 06, 09, 10, 11, 12, 16, 17, 18, and 23) since the last archaeological activity there some five years ago. Permit 21.50 allowed for salvage excavations at Aspen Island-2 (DfAw-05) and Extension 21.50.01 entailed archaeological re-appraisal of South Exploits (DfAw-07), two important sites located within the Nimrod's Pool cluster on the Exploits River.

The Beaches (DeAk-01) and Bloody Bay Cove (DeAl-06, 09, 11, 12, 18) Re-Visits: Permit 21.48

The Beaches (DeAk-01) is a multi-component site located on Bonavista Bay's central coastline. A late-nineteenth century report suggests the site encompassed some 41,500 m² and included 19 Beothuk housepits then, but this area had shrunk to 4000 m², containing eight housepits, by 1989 when the locality was first mapped in detail (Lloyd 1876; McLean 1990). The Beaches 4000 m² does not include the widespread distribution of mostly stone artifacts over the surface of the southern tidal zone and east beach, as these objects are not in situ. Erosion of the site's southern border, attributable to rising sea level, accounts for this lost terrain. Reports of substantial private artifact collections led to the first archaeological excavations there in 1965 and the impact of erosion has factored in all archaeological research, including 17 excavations undertaken at the site since then (Ibid; Carignan 1975; Johnson-Henke 2017; McLean 2007, 2021). In addition, the Burnside Heritage Foundation Inc. (BHF) installed 131 meters of wooden breakwaters at the Beaches between 1995 and 2008, attempting to curtail the damage to in situ archaeological resources.

The author, accompanied by three residents of Dover-Hare Bay, re-visited the Beaches (DeAk-01) and selected sites in the Bloody Bay Cove Quarry (DeAl-06, 09, 11, 12, and 18) on October 11, 2021. The crew first stopped at the Beaches site, which is located 16 kilometers, by boat, south from the town of Dover-Hare Bay. An unusually high tide forbade checking the southern beach surface for artifacts recently unearthed by erosion and also restricted access to much of the southern eroding bank (Plate 1). The latter was also partly hidden by overhanging alders and substantial tree roots loosened from the soil by erosion. Widespread erosional damage is nonetheless evident along the site's 140-meter long southern bank. The majority of the wooden breakwaters, built in eight sections over 14 years, is severely damaged or destroyed by natural attrition. A 2.6 meter-long section of breakwater protecting part of an Ancestral Beothuk hearth, Feature 35, and some of an adjoining Ancestral Beothuk or Dorset, hearth, Feature 36, is an intact portion of these facilities. Unprotected sec-

Plate 2: The Beaches (DeAk-01, 2021, showing surviving section of breakwater and fragments at western end of Area B.

tions of these two features are currently eroding (Plate 2).

Visual inspection of the site's surviving seven Beothuk housepits and the rest of Area A did not reveal any evidence of illegal digging. Most of Housepit 2, however, has been lost to erosion since salvage excavations were conducted along its eroding southern wall in 2006 (McLean 2006). Two wooden breakwaters built in front of Area A in 2004 and 2006 were gradually destroyed by wave action and related impacts, leaving its archaeological resources open to the rising sea level. Comparing measurements taken during the 2021 re-visit to those compiled since 1989 show that the Beaches' southern profile of Area A has moved 7.2 meters northwards over 32 years. This amounts to an average loss of 23 centimeters per year. Housepit 3, which is currently six meters from the eroding edge, was 8.93 meters away in 2004, indicating a loss of 2.93 meters over 17 years. Housepit 6 was 11.90 meters from the eroding edge in 2006, compared to 8.7 meters today, amounting to a loss of 3.2 meters over 15 years. Housepit 6 was radiocarbon dated to 390 $\pm$ 70 BP (CAL 1454-1604 A.D.) (Beta-39900), making it the oldest dated Beothuk housepit (McLean 1991:16; 2020:6-9). The Beaches housepits may be the first ones built by Beothuk, meaning that they warrant close monitoring to facilitate the implementation of salvage excavations in the event of continued erosion there.

Area B, which contains Pre-Inuit and Ancestral Beothuk material, is located west of Area A and portrays similar evidence of erosion although the disappearance of grid pegs in this section prohibited quick quantitative measurements as were possible in Area A where the permanent datum is intact. The gravel base of Area B's 70 centimeter-high bank is horizontally undercut by as much as 80 centimeters that, through continued erosion, will lead to this edge slumping and a large divot, containing in situ cultural deposits, eventually separating from the mainland. Visual examination of Area B's interior revealed widespread trampling of vegetation and disturbed soil. Whether or not this is attributable to artifact hunting is unclear, but the disturbance is most likely a result of the intense recreational use of the Beaches during the summertime. Area C, which occurs west of Area B, has a 90 centimeter-high bank that is horizontally undercut by up to 120 centimeters. Cultural material was absent from the eroding vertical surface of Area D, located west of Area C, during the 2021 re-visit although rhyolite flakes and other stone artifacts were regularly found there as late as 2016. Testing is required to determine if Area D's archaeological resources have been eliminated by erosion. Regular archaeological monitoring throughout the summer and fall seasons, in conjunction with appropriately timed salvage excavations, are advocated for the Beaches

site. Ideally, breakwaters would be installed following completion of the archaeological salvage projects.

Bloody Bay Cove Quarry Re-Visit

Bloody Bay Cove-1 (DeAl-01), a multi-component camp site, was discovered in 1974, but its significance as a satellite reduction station within the Bloody Bay Cove quarry was not known until the latter was identified in 1990 (Carignan 1974; McLean 1991, 2010). The author's research, undertaken for the Burnside Heritage Foundation Inc. (BHF) from 1989-2015 identified another 10 sites within the 18 hectare quarry complex (Plate 3). There were no obvious overland connections between these sites in 1990 although trails subsequently established by BHF research and interpretive tours probably approximate linkages utilized by people obtaining raw material in Bloody Bay Cove.

Plate 3: Bloody Bay Cove Quarry

1 **Bloody Bay Cove-1 (DeAl-01)**
2 **Bloody Bay Cove-3 (DeAl-06)**
3 **Bloody Bay Cove-3 (DeAl-05)**
4 **Bloody Bay Cove Overhang (DeAl-18)**
5 **Howard Site (DeAl-12)**
6 **Leah's Erratic (DeAl-16)**
7 **Reynold's Station (DeAl-17)**
8 **Charlie site (DeAl-11)**
9 **Bloody Bay Cove Summit (DeAl-9)**
10 **Bloody Bay Point (DeAl-10)**

The survey crew re-visited the Bloody Bay Cove Quarry following the visual inspection of the Beaches site. Bloody Bay Cove lies 8 kilometers southwest from the Beaches, directly up Bloody Reach, which is also locally known as the Cow-path. The author last visited the quarry in 2015 during the BHF's last year of operations. A 40 foot-long wharf built in the cove by the BHF in 1995 is now partly destroyed and the remainder is not useable, requiring visitors to land on the bedrock shoreline. Wooden boardwalks and steps installed by the BHF over steep slopes and culturally sensitive areas are now absent or are unsafe to use which, along with vegetation growth since 2015, complicates movement through the facility. The crew nonetheless re-visited the Howard site (DeAl-12), the Charlie site (DeAl-11) and the Bloody Bay Cove Summit (DeAl-09) which occur in sequence along a 600 meter-long hike from Bloody Bay Cove-2

(DeAl-06) which is located on the shoreline of Bloody Bay Cove (Plate 3). The Bloody Bay Cove Overhang (DeAl-18), a lithic reduction station located under a small rockshelter, was also re-visited.

Patinated rhyolite flakes that were present on the surface of black humus covering the bedrock at Bloody Bay Cove-2 (DeAl-06) during the re-visit are attributed to frost heaving. Stone artifacts have regularly appeared in this area since the discovery of the locality in 1989. The seaward edge of Bloody Bay Cove-2 has been eroding during this period and was not closely examined in 2021 due to the high tide. There was no evidence of disturbance at any of the re-visited quarry sites although the near-complete absence of soil at the Charlie site and Summit rhyolite outcrops should be considered in this evaluation. Countless rhyolite flakes, along with bifaces, cores and granite hammerstones are distributed on the surface over 7650 m² throughout the quarry, constituting a ready source of souvenirs for any person possessing knowledge of lithic industries. The absence of garbage through the quarry, along with the difficult landing conditions and the challenging trail, provide some assurance that private visitation is currently minimal although this location had become a point of interest for kayakers, geo-cachers and recreational boaters during BHF activity there. The author was informed that people continue to hike through the quarry.

The crew briefly stopped at the Beaches site on the way back to Dover-Hare Bay from Bloody Bay Cove as the lowering tide permitted closer examination of the Beaches' southern bank and tidal area. A few waterworn cores and bifaces along with a small number of large, sharp-edged flakes, totalling 16 artifacts altogether, were collected from the tidal zone and east beach. This collection was not exhaustive and it would be virtually impossible to collect all of the site's surface assemblage. In excess of 2000 stone artifacts, along with two iron items, were collected from the site's surface since 1989.

Salvage Archaeology and Site Re-Appraisals in Nimrod's Pool, On the Exploits River: Permit 21.50, 21.50.01

Nimrod's Pool is a cluster of eight archaeological sites located four kilometers as the crow flies, or 6.1 kilometers along the Exploits River, west of the Grand Falls, a 24 meter-high waterfall in the river 33 kilometers from the Bay of Exploits. Fifty-one Beothuk housepits and additional Beothuk features have been identified at seven of these sites, but Ancestral Beothuk and Pre-Inuit material have been found at some of the localities as well. The most recently identified archaeological site along the pool shoreline contains historic period artifacts representing European settlers or Mi'kmaq people (McLean 2014:5).

Aspen Island-2 (DfAw-05) is one of five sites distributed over three islands within Nimrod's Pool. This multi-component locality contains evidence of Groswater Pre-Inuit, Dorset Pre-Inuit, Little Passage and Beothuk activity. Aspen Island-2's southern bank has been eroding for some time and recent archaeological re-appraisals of the site brought this problem to the forefront. Three salvage excavations of eroding Groswater and Little Passage features were conducted, as requested by the PAO, at the site in 2014, 2015 and 2016. A resident of Grand Falls-Windsor, who has worked on a number of local archaeological projects, visited Aspen Island during the summer of 2021 and observed a rich array of stone artifacts strewn over the beach surface as well as underwater at Aspen Island-2. The PAO subsequently issued Terms of Reference for further salvage excavations at the site. The author, assisted by Grand Falls-Windsor residents Don Pelley and Penny Wells, conducted the fourth salvage excavation at Aspen Island-2 between October 13 and 19, 2021.

Visual assessment of the site on October 13 revealed widespread fire-cracked rocks and stone artifacts spread over 17 m² of sand and clay between the Exploits River and the island's intact shoreline. The majority of this section was dug to sterile clay in 2015 and 2016, suggesting that the cultural material had been exposed by the erosion of vegetation and cultural soil along the inner perimeter of 2016's excavation. Continued erosion, combined with increased river depth, vegetation growth and other disruptions to site stability complicated easily quantifying the expansion of erosion beyond the area assessed in 2016. A threaded steel rod, set in the ground as a permanent datum 18 meters inland from the eroding bank in 2013, was not present in 2021 although a number of intact grid pegs permitted setting a new datum close to the location of the original one. 2021's preliminary examination identified three new features that were then minimally excavated to salvage endangered archaeological resources and stabilize the extant por-

Plate 4: Aspen Island-2 (DfAw-05): Excavating Feature 24 (upper center); Feature 25 is in the center.

tions. Twenty-seven features, including six Beothuk housepits, along with six storage pits and other deposits, have been identified at Aspen Island-2 (DfAw-05) to date.

One of the new features, Feature 24, consisted of an aggregation of fire-cracked rocks found nine meters north of the 2016 salvage area. Although the feature's fire-cracked rocks were tightly clustered, erosion of the underlying clay and sand had shifted the presumably original horizontal arrangement to a pronounced sloped one within a short drainage trench (Plate 4). This disturbance may account for the recovery of only one tool and three flakes in association with the fire-cracked rocks from a 1 x 2 meter excavated section encompassing the exposed part of the feature. Nonetheless, one of the items is a Pre-Inuit sideblade which links Feature 24 with Groswater material previously found a few meters away (McLean 2016:85). In situ fire-cracked rocks, along with calcined bone and unburned bone, in Feature 24's eastern profile show that this deposit continues in a northeastern direction. The finished excavation was backfilled, but regular monitoring of this feature is recommended to facilitate quick implementation of salvage excavations in the event of continued erosion here.

Feature 25 refers to fire-cracked rocks and stone artifacts found on the surface and in the subsurface of four 1 x 1 meter units (Plate 4). Erosion had removed 2.14 m² of these four squares, leaving 1.86 m² for excavation. The absence of clustered fire-cracked rocks and the recovery of only 33 artifacts, including 19 flakes, one heat spall and one fire-cracked rock fragment, in this sub-section may be a result of the detrimental effects of erosion and/or the significance of this location beyond the sphere of concentrated Groswater activities mapped in 2015 and 2016 (McLean 2016, 2017). A tiny sideblade recovered from near the base of S16 W15 and a microblade fragment from S15 W16 connect Feature 25 with the site's Groswater occupation, however.

Substantial clusters of fire-cracked rocks, with associated stone artifacts, on the sandy surface and extending downwards into the upper three to four centimeters of sand that lay on hard-packed clay were designated Feature 26 (Plate 5). Although some of these objects had spilled into previously excavated areas, the integrity of this feature along the beach's eastern margin suggests that vegetation and soil originally covering the deposits had washed away since 2016, possibly within the last year or two, making this salvage project all the timelier. The feature's fire-

Plate 5: Part of Feature 26, Aspen Isand-2 (DfAw-05).

cracked rocks were collected and are currently being catalogued, but 109 stone artifacts, including 90 flakes, were recovered. The artifacts include three endscrapers, two endscraper fragments and a thumbnail scraper. Feature 26 also produced an unusual slate biface exhibiting chipped as well as ground manufacturing techniques (Plate 6). A similar, although more elaborately finished artifact, was privately recovered during the summer. A total of 15 complete endscrapers and 2 fragments recovered this fall are by far the predominant category of Groswater implement. Similarly, 9 complete endscrapers and 28 fragmentary examples constitute the predominant Groswater artifacts, other than flakes, from the 2015 and 2016 excavations (McLean 2016:85; 2017:84). Groswater endblades have not been found at Aspen Island-2 (DfAw -05) and the high proportion of endscrapers, along with a burin-like tool, three side-blades and a few microblade fragments suggest activities associated with processing animals, presumably mainly caribou, more so than procurement at this site. A previously found tip-fluted endblade preform and an endblade fragment represent a small Dorset component at the site (Locke 1974:8).

Feature 27 is a conspicuous cluster of large spalled rocks, some of which appear to be fire-cracked, in association with a number of smaller fire-cracked rocks. Forest debris and two centimeters of brown humus were removed from the feature to facilitate photography. Artifacts were not present. A test pit dug on the feature's north perimeter and one excavated on its southern border were both sterile.

Feature 15, which consists of caribou bone fragments distributed over the surface and protruding through the sod 15 meters inland from the site's eroding bank, was first identified in 2012 (McLean 2013). This feature does not have an eroding bank, but the sustained visibility of faunal material here is attributable to a shallow deposit possibly combined with a slow accumulation of sediment and the negative impact of seasonal flooding, amounting to slow deterioration of archaeological context. All of the feature's visible faunal elements, some representing nearly complete caribou long bones, were mapped and photographed before loose items were collected. Considering the paucity of information pertaining to the mechanics of caribou hunting and processing in the Exploits Valley, in consideration of Feature 15's threatened status, this deposit should be considered for excavation in the near future.

Plate 6: Chipped and ground slate biface from Feature 26, Aspen Island-2 (DfAw-05).

There was no evidence of disturbance throughout the rest of Aspen Island-2 (DfAw-05), which includes six highly visible Beothuk housepits and six so-called storage pits. Aspen Island-3 (DfAw-06) was briefly re-visited during the survey's final day. Dense vegetation has left this site's single housepit virtually undistinguishable, meaning brush clearing is advisable. Two waterworn cores were found at the juncture of the river and the base of the meter-high bank at the edge of the site. It is unclear if these artifacts eroded from Aspen Island-3 or washed 110 meters downstream from Aspen Island-2 (DfAw-05), although previous research suggests the latter scenario is more likely (McLean 2013:46).

Re-Appraisal of South Exploits (DfAw-07): Permit 21.50.01

South Exploits (DfAw-07) is one of many Exploits Valley archaeological sites that were discovered by an amateur archaeologist from Grand Falls. Ten housepits, one hearth feature and three flint-knapping concentrations were identified there in 1972 (Locke 1974). 264 artifacts were avocationally collected, including 198 of iron, 25 of other European materials, 7 bone and 34 stone (McLean 1990). Housepit 8, which was situated in the centre of the site, held glass trade beads, high quality iron spear heads, pieces of a European locket, a string of marine buttons and a complete furrier's trap. Other high quality spear heads were found near Housepits 9 and 10 at the western end of the site (Locke field notes:np). The design and workmanship exhibited by three of the DfAw-07 spearheads make them the apex of Beothuk iron tool manufacture (McLean 2003:11). A very similar iron projectile point was subsequently found outside a

large Beothuk housepit at Sabbath Point (DeAl-08), on the south shore of Red Indian Lake (Erwin and Hull 2018). The presence of these highly stylized implements links early nineteenth century Beothuk occupations at both sites although older Beothuk material possibly exists at South Exploits. A sixteenth-century Beothuk camp was located 250 meters to the north on Boom Island and given the popularity of Nimrod's Pool, contemporaneous material probably is present at other nearby sites (McLean 2020:23-31). Ancestral Beothuk occupations are documented at South Exploits, Aspen Island-2 (DfAw-05) and Rushy Pond (DfAw-10), indicating repeated use of Nimrod's Pool by the Beothuk and their ancestors.

Dyke construction and resulting high water levels along the Exploits River have possibly destroyed the site, or parts of it (Locke Field Notes). Woods roads built over the site were cited as another agent of destruction (Thomson 1988 field notes: np). DfAw-07 was not found in a 1982 survey, but two large housepits were seen there in 1988 (Ibid; Thomson 1983:171). The site was not found in a 1992 search (Schwarz 1993). Two flakes were recovered from test pits inside a possible housepit, masked by dense alders, and a previously unreported hearth were documented in 2012, but the majority of the site's features could not be found that year. Twenty-eight waterworn stone artifacts and one piece of Beothuk-modified iron were collected from the site surface in 2012, providing evidence of erosion at the locality (McLean 2013:73). A subsequent PAO examination re-identified the hearth and recorded fire-cracked rocks elsewhere on the site's surface (Reynolds, Mercer and Hull 2016:168). The difficulty in re-identifying South Exploits' archaeological features prompted the PAO to request additional visual inspection and limited, judgemental testing following conclusion of the 2021 research at Aspen Island-2 (DfAw-05). The 2021 Aspen Island-2 crew evaluated South Exploits from October 27-31. The hearth found in 2012 was re-identified, a new feature, consisting of fire-cracked rocks, charcoal, and bone mash was discovered.

Feature 1, the hearth from 2012, was re-identified on October 27 (Plate 7). A barely perceivable earthen ridge partly encompassing the eight square meter surface distribution of fire-cracked rocks tentatively suggested a Beothuk housepit, but further excavation is needed to corroborate or refute this hypothesis. Five other shallow depressions were

Plate 7: South Exploits (DfAw-07): distribution of fire-cracked rocks over the surface of Feature 1.

Plate 8: South Exploits (DfAw-07): southeast profile of Feature 3 test pit.

detected along the gently sloping terrace containing Feature 1, suggesting the survey had found part of the cluster of eight former structures originally listed in the 1970s. The crew installed a permanent datum and excavated 10 test pits, using hand trowels, throughout the other five depressions. Substantial black humus was found inside all of the depressions and the presence of dense charcoal deposits within two, including a few associated fire-cracked rocks in one, suggest further testing/excavation may reveal cultural material.

Feature 1's exposed cultural material indicates it is experiencing a slow rate of erosion. A 1 x 0.5 meter unit was dug in the feature, hoping to obtain information pertaining to the cultural group who utilized this hearth. The excavation showed that the extensive fire-cracked rocks on the surface and associated sub-surface material possibly represent two, or more hearths. Fire-cracked rocks and associated material were concentrated in the northern 40 % of the test unit. Brown humus and the underlying yellow-brown clay throughout the rest of the excavated rectangle separate the in situ hearth remains from fire-cracked rocks on the surface to the east. Six sub-surface levels of fire-cracked rocks were recorded. Charcoal, blackened bone, calcined bone and one brown bone fragment were recovered, but tools were not present. The hearth had been built in a pit that may have been rock-lined, judging by the fist-sized round cobbles firmly embedded in clay under the black humus and dis-coloured, possibly oxidized clay.

Six additional test pits were dug, using hand trowels, at judgemental locations east and west of the five hypothesized housepits and Feature 1. The dry, gently sloping topography continued into these fringe areas, assigning them archaeological potential worth checking. Five of these pits were culturally sterile, but one unit contained part of a complex Beothuk deposit that was designated Feature 3. Scattered fire-cracked rocks and thin black humus lenses, containing calcined bone, within a clay substrate were encountered below the sod. The fire-cracked rocks and calcined bone were photographed and removed per level. The amount of calcined bone increased at greater depth and while some pieces were retrievable, the majority occurred as tiny spicules within a wet matrix, which complicated recovery. Samples of bone mash were placed in zip-lock bags for subsequent analysis. Excavation of the pit to sterile showed that the black humus horizontally contracted to a 20 centimeter-thick deposit of bone mash in the unit's southern corner (Plate 8).

Feature 3's only artifact was a lead shot that was recovered near the bottom of the bone mash pit, 18 centimeters below the surface. This object weight, 25 grams, and its diameter of 16.48 millimeters, measured perpendicularly to its mold seams, are consistent with British arms used throughout much of the eighteenth century and first half of the nineteenth century (Borgens 2017; Sivilich 1996:103). This artifact does not appear to have been fired. Although its occurrence in a suggested Beothuk feature is somewhat provocative, considering that Beothuk were adverse to using firearms and there are documented European attacks upon some of their Exploits Valley camps. Lead shot have previously been recovered at other Beothuk sites, including Boyd's Cove (DiAp-03), Inspector Island (DiAq-01), North Angle (DfAw-01) and Beaver Island (DfAw-02) (Locke Field Notes; Pastore 1984:100; 1989:262). Lead fragments have also been found in Beothuk context at Boyd's Cove (DiAp-03), Pope's Point (DfBa-01), Red Indian Falls-2 (DfBb-04), Red Indian Falls-3 (DfBb-02), Noel Paul's Island (DeBb-01), Aspen Island-2 (DfAw-05) and previously at South Exploits (DfAw-07) (Locke Field Notes). A lead hand-line weight was found inside Housepit 5 at the Beaches (DeAk-01) (McLean 1994:13). The Beothuk had a word, goosheben, for lead, indicating they were aware of this material (Hewson 1978:158). Beothuk vocabularies also included terms for gun, hareen, hug-seen, or adamadret, as well as gun powder, beasothunt (Ibid:156). Therefore, Feature 3 is tentatively interpreted as a Beothuk deposit.

These results for South Exploits (DfAw-07) are encouraging and suggest that systematic testing of the level terrace containing Features 1 and 3 could provide additional deposits that have no surface manifestation. Excavation of test pits at three-meter intervals is proposed as a comprehensive evaluation of this locality in terms of its long-recognized importance and untapped potential.

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Nunatsiavut Government Archaeology Fieldwork 2020-2021

Lena Onalik, Corey Hutchings, & Deirdre Elliott
Nunatsiavut Government Archaeology/Heritage

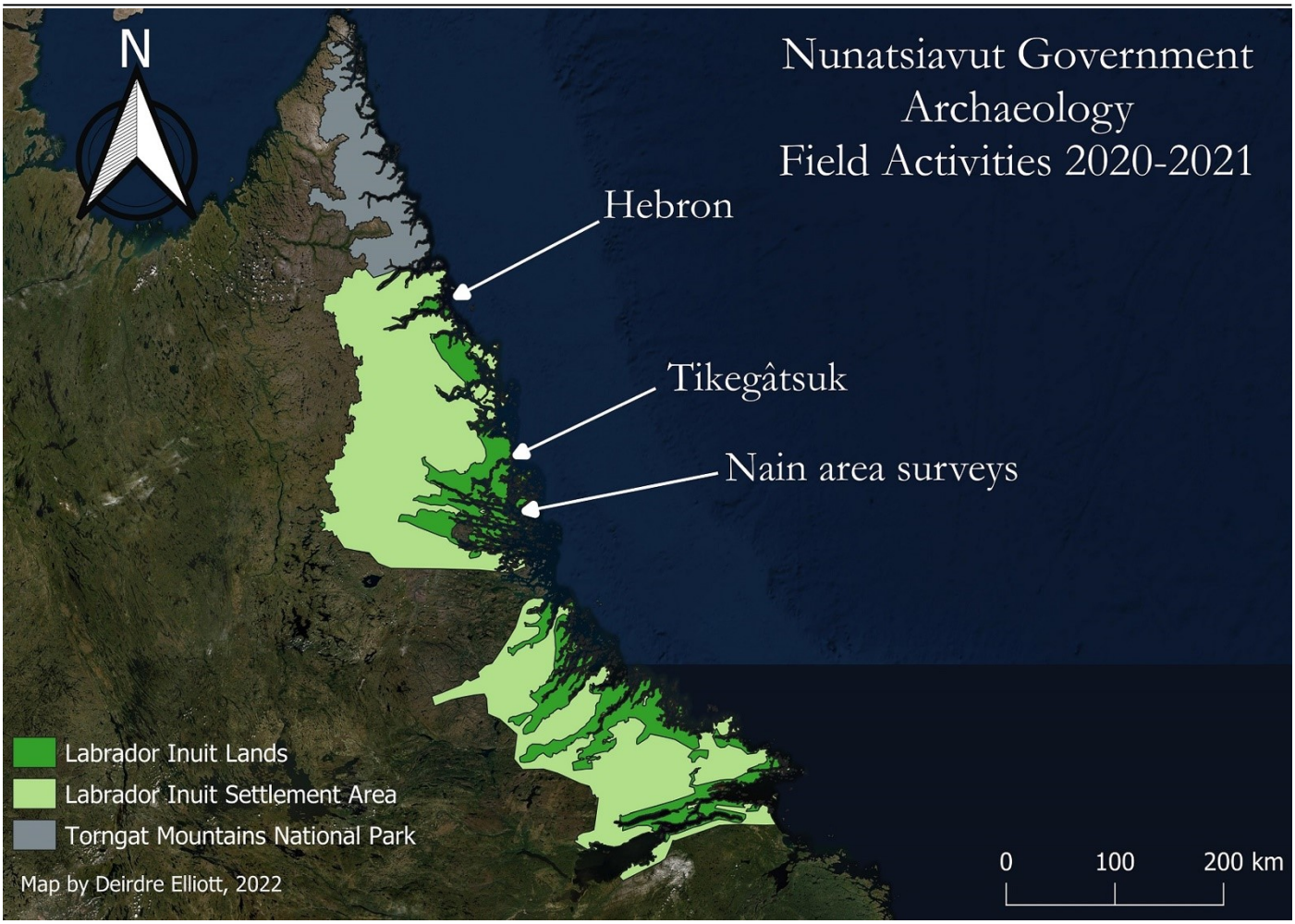

Figure 1: Locations of Nunatsiavut Government Archaeology Activities, 2020-2021.

Introduction

Despite the persistence of the COVID-19 pandemic, Nunatsiavut Government Archaeology has seen a lot of activity since its last PAO Review contribution two years ago. With the departure of Michelle Davies, the NG Archaeology Assistant since 2013 and NG Archaeologist since 2019, and Kyle Crotty, Heritage Program Coordinator since 2016 and Archaeology Assistant since 2019, Lena Onalik, the NG Heritage Program Coordinator since 2019, formally took on the role of NG Archaeologist in early 2021. In August 2021, Corey Hutchings and Deirdre Elliott joined the NG Archaeology team as Archaeology Assistant and Heritage Program Coordinator, respectively. Michelle and Kyle brought years of experience and a wealth of enthusiasm to their roles, and have left their marks in their own unique ways. Along with all her regular job duties, Michelle initiated the Hebron Family Archaeology Project, a beloved project that she will continue to be involved in, and which will continue to operate for the foreseeable future. Kyle, with his involvement in the MATE (Marine Advanced Technology Education) Program wherein junior high students at Jens Haven Memorial School in Nain built an underwater ROV for use in archaeology and competed at the Marine Institute in St. John's, brought a level of tech-savviness to the team that we hope to do justice to in

future NG Archaeology/Heritage operations. They will be dearly missed here in Nain, but we wish them well in their new endeavors, and hope to see them around soon!

Nunatsiavut Government Archaeology Activities

In 2020, Lena Onalik conducted fieldwork at the Hebron mission station, IkKegasâtsuk (Young's Harbour, Dog Island), and Tikegâtsuk (Village Bay). In 2021, Lena undertook the planning and fieldwork for the Hebron Family Archaeology Project, and with the help of the Heritage Committee, held a very successful Heritage Forum at the new Illusuak Cultural Centre. With the addition of two new staff in August 2021, the newly-formed team monitored the reconstruction of the porches at Hebron, conducted archaeological surveys and site revisits around Nain while assisting external researchers in advance of proposed development, and configured and deployed the first of five weather monitoring stations as part of the Climate Change and Archaeology in Nunatsiavut Project – albeit, in our own backyard.

Behind the scenes, we have been hard at work reviewing and continuing to develop archaeology and heritage policy, planning and implementing archaeology and heritage projects, and fostering new and existing partnerships with other researchers and institutions. In 2020 and 2021, the Nunatsiavut Government Archaeology team reviewed 35 and 40 land use applications, and issued 3 (all internal) and 9 archaeology permit applications (each pair of numbers for 2020 and 2021, respectively). These numbers are all understandably down from pre-COVID-19 years.

Heritage Forum

The annual Nunatsiavut Heritage Forum, after a one-year hiatus in 2020 due to COVID-19 restrictions, was held from June 14-17, 2021, at the new Illusuak Cultural Centre in Nain. The small, intimate gathering included keynote talks about Kajait revival by Noah Nochasak and genealogy by Patty Way, as well as updates by NG Language staff about Inuttitut initiatives, updates on community heritage efforts and celebrations, Them Days, the Tradition and Transition Partnership, and the *Northlanders* book project, and discussions on traditional place names and recommendations for future forums. Archaeology was well represented with updates from NG Archaeologist Lena Onalik, an overview of Ground Penetrating Radar (GPR) uses and limitations by Lisa Rankin, and an archaeology and climate change panel with Lena, Lisa, Nicholas Flowers, NG climate change coordinator Caroline Nochasak, and Provincial Archaeologist Jamie Brake.

Field Activities - 2020

Monitoring at Hebron Mission (IbCp-17)

In late September 2020, Lena Onalik travelled to Hebron to monitor the excavation of the footings for the construction of a Nunatsiavut Government cabin, for NG programs in the area. Heavy snow and a hurricane-force storm overnight made for interesting work conditions. All sods and soil removed for the placement of the cabin foundation footings were screened (Figure 2), and contained the expected mix of animal bone, glass, scrap metal, brick fragments, nails, and historical material dating back to the occupation of Hebron. One musket ball was recorded, as well as one fragment of Ramah chert.

Figure 2: Lena Onalik and Tony Howell of Greens Construction screening soil removed for new NG cabin foundation post holes, September 28, 2020.

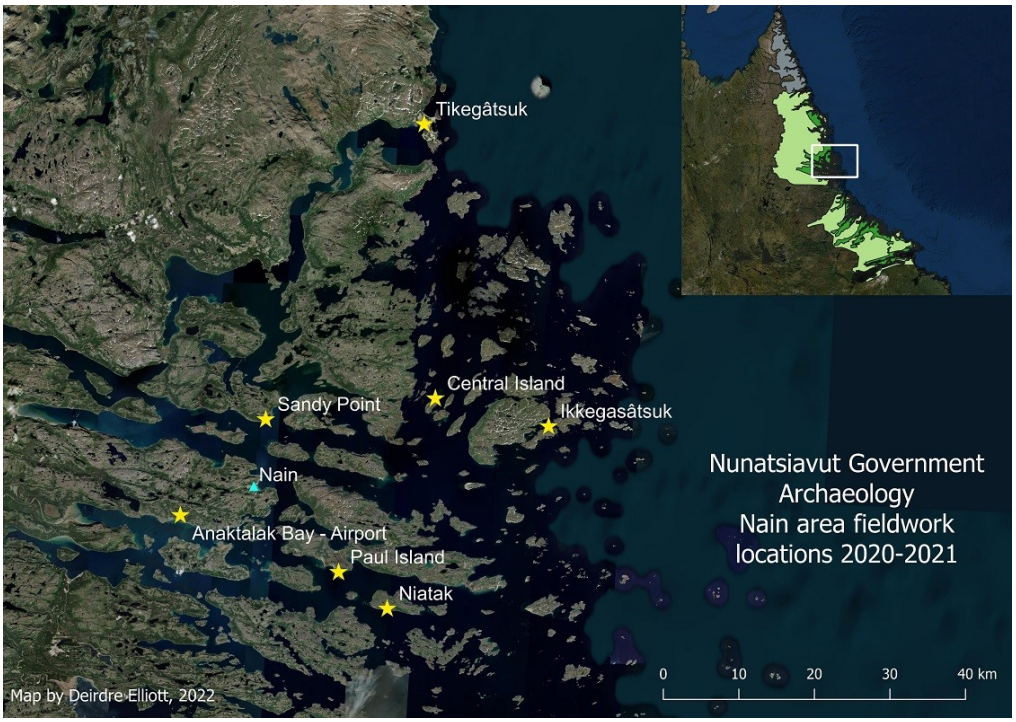

Figure 3: Nain area fieldwork locations of Nunatsiavut Government Archaeology, 2020-2021.

IkKegasâtsuk (Young's Harbour), Dog Island

On October 29th, 2020, Lena Onalik, accompanied by Conservation Officers Simon Kohlmeister and Danika Winters, conducted an archaeological assessment at IkKegasâtsuk/Young's Harbour, on Dog Island outside of Nain (Figure 3), in response to a land use request for a proposed cabin. There are several recorded archaeological sites nearby, including Maritime Archaic sites at higher elevation and more recent tent rings and former cabin foundations nearer to the shore, as well as the remains of a church constructed in the 1940s. Archaeological features, including tent rings, stone foundations, and caches were recorded in the low, flat area near the shoreline at the bottom of the harbor (Figure 4), but the falling tide did not permit investigation of the Maritime Archaic features. Given the family's history of land use in the area, and the presence of other modern cabins in the harbour, the request was approved with instructions to contact the Nunatsiavut archaeologist should archaeological materials be encountered.

Tikegâtsuk / Village Bay / Thalia Point

October 22nd, 2020 Lena Onalik conducted an archaeological risk assessment of an -owned cabin recently erected to support the Kajak Revival Program. The location for the cabin, had previously been chosen by Jamie Brake and Noah Nochasak in 2018, and as there are abundant archaeological remains in the vicinity, Noah was provided with direction on protecting and preserving the archaeology there. However, the contractor had installed the cabin in late September 2020 in the wrong location. Onalik travelled by speed boat with NG Director of Language and Culture Brenda Jararuse and Conservation Officer Simon Kohlmeister to Tikegâtsuk, where they were met by Greens Construction and bear guard Boonie (Benigna) Merkeratsuk. After noting the cabin's prox-

Figure 4: Recent tent ring with stove platform of flat stones, in an area with several tent rings of varying ages, judging by vegetation and lichen regrowth. IkKegasâtsuk/Young's Harbour, October 20, 2020.

Figure 5: Old cabin foundation, Tikegâtsuk, October 22, 2020.

imity to other existing private cabins and former cabin foundations (Figure 5), the decision was made to move the NG cabin to the location previously selected by Brake and Nochasak, once it was practicable to do so – by Kamutet and snowmobile, the following February, 2021.

Field Activities - 2021

Nain Surveys – Paul Island, Niatak, Sandy Point, Central Island, and Anaktalak Bay

On August 25th, 2021, Hutchings and Elliott assisted the crew from Université Laval in relocating previously documented Inuit sod house sites around Nain, and coring and testing these sites to document how different climate change variables are affecting the archaeological sites, and particularly the preservation of organic deposits. We first travelled by speedboat to the south side of Paul Island, in search of a 19th century plank house foundation reported by Kaplan (1983: 473, Bridges 1 site, HcCj-1). After finding and recording only a few tent rings of varying ages, we moved slightly south to the south side of Niatak Island, where we successfully located the remains of four sod houses at Niatak A (HcCi-1), which are thought to date to the 18th century based on late 18th century Moravian records from the mission at Nain. We assisted Héloïse in coring and testing potential midden deposits, and Elliott planned and executed a UAV mapping flight for the crew.

On September 15th, we assisted NG Conservation Officers Simon Kohlmeister and Richard Maggo in deploying wildlife cameras, surveying and recording archaeological sites along the way. We recorded additional features (tent rings) at previously recorded Central Island 1 (HdCh-32) site (Figure 6), and returned to Sandy Point, where Barbel and crew had previously opened shallow test pits to record preservation conditions and stratigraphy. The Sandy Point site (Nain Bay 3, HdCk-19) contains the remains of plank house foundations and a dock, and is the site proposed by Barbel for a local archaeology field school in the summer of 2022.

On October 8th, we undertook an archaeological assessment ahead of the installation of a weather monitoring station at the proposed location for a new airport just outside of Nain. The proposed airport location covers an area approximately 1.5km by 30m, inland from but running parallel to the north side of Anaktalak Bay across from Satosoak Island. Conservation Officer Simon Kohlmeister and Environmental Assessment Manager Frederic Dwyer-Samuel accompanied us in our survey. Although we noted bur-

Figure 6: Corey Hutchings and Deirdre Elliott recording tent rings at Central Island 1, September 15, 2021.

Figure 7: UAV photo of Hebron Mission, September 25, 2021.

ied tent rings along the shore near where we anchored the boats, and evidence of woodcutting practices of some time depth along our hike up to the proposed area, we observed no archaeological features in the proposed area for the weather station. As the challenging terrain rendered foot survey rather difficult, we deployed a UAV to capture videos of the ground surface along the bedrock and gravel ridges. Again, no archaeological features were observed, but future development in the area will require more rigorous survey and testing, as well as documentation of the history of cultural activities in the area.

Monitoring at Hebron Mission

In late September 2021, we monitored the construction of four new porches for the mission building by Green's Construction. This included the removal of the existing porches, and the excavation of new postholes to receive the upgraded porch foundations. As for the NG cabin, all sods and soil removed were screened for archaeological material, which consisted of a mixture of historic building materials (square nails, brick, mortar, and glass), fragments of ceramic tablewares, charcoal, small quantities of animal bone, and a small number of lithic flakes, as well as modern construction materials (fresh wire nails, painted wood) and refuse such as cigarette butts and plastic bowl fragments. Modern refuse was noted but not collected. During this trip, we also flew a drone-mapping course over the site to map features not captured in previous years, and to compare with drone imagery from previous years as a longitudinal risk assessment, particularly with respect to coastal erosion (Figure 7).

Climate Change and Archaeology in Nunatsiavut

In 2019, Nunatsiavut Government Archaeology secured a $138,000 grant from the federal Climate

Figure 8: Corey Hutchings, Sid Pain, and Joe Webb, November 22, 2021, with the weather station.

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. These will be deployed in 2022 following community consultations to select key sites for monitoring, but in the meantime, we have assembled and programmed one station, and installed it in the yard of our project partner Sid Pain of Oceans North as a test case to be monitored through the winter (Figure 8). Thanks, Sid!

Conclusion

It has been a turbulent couple of years for the NG Archaeology team, between the restrictions imposed by the COVID-19 pandemic and all new staff! We are looking forward to a busy 2022 season, continuing the important work of the fabulous team who came before us and kicking off some new initiatives, including preemptive archaeological surveys, and a community-informed climate change monitoring and mitigation program.

The Ekuanitshit Archaeological Research Project, 2012-2021: An Overview

Jean-Christophe Ouellet
Co-director of the Ekuanitshit Archaeological Program

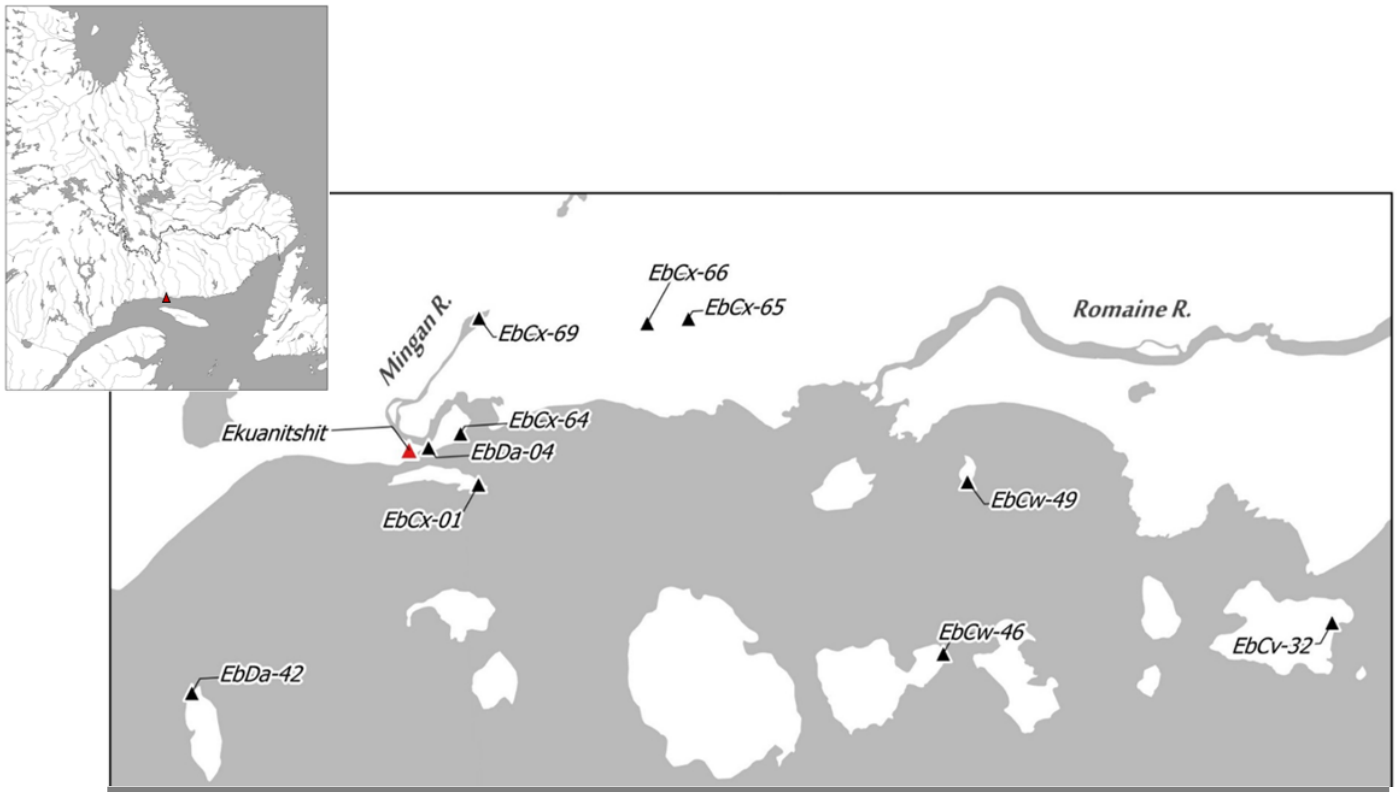

Figure 1: Location of the Ekuanitshit Innu community and archaeological sites mentioned in text.

Introduction

Stepping aside from a traditional yearly review, we propose an overview of a collaborative archaeological research program initiated with the Innu community of Ekuanitshit (Mingan), on the North Shore of the Saint-Lawrence River (Québec). This project has celebrated its 10th anniversary last summer and we feel adequate to promote some of its contribution.

Following a brief presentation of the project, the overview is organised in chronological order and highlights new information pertinent for the wider region. During these years, the team has excavated a fair number of Amerindian sites in the Ekuanitshit region and have gathered information spreading over 8000 years of Amerindian and Innu history. Despite this wide scope, we should concentrate with the more abundant data, mostly related with the last 2000 years somewhat similar to the Late Precontact Amerindian (LPA) period (2000 – 500 BP).

We present this overview in this yearly report of the PAO (Provincial Archaeology Office) as a way to get in touch with archaeologists working predominantly in Newfoundland and Labrador. Our objective is to take advantage of this invitation and favor communication between professionals from our respective provinces. We thank the editor of the publication for having us on-board.

The Ekuanitshit Archaeological Research Project

The Ekuanitshit Archaeological Research Project is a community-based enterprise focusing on the documentation and promotion of the Ekuanitshit region prehistory and ancestral Innu heritage through archaeology. The Ekuanithist community is located on the Middle portion of the North Shore of the Saint-Laurence (Figure 1). Fronted by the Mingan archipelago on its coastal portion, the region is backed by

Figure 2: Team members of the Ekuanitshit Archaeological Research Program at the Maison de la Culture Innu in September 2020.

mountains of the Canadian Shield. The region is associated with the Romaine, St-Jean and Mingan rivers as the main waterways connecting the Lake Plateau.

The project, initiated in 2012, has its roots in the long history of archaeological research in the region but more so in the community's long lasting engagement and recognition of the discipline potential for piecing up the long Innu occupancy history and as a means for empowerment and self determination (see Ouellet 2018a). This engagement is illustrated by archaeological research initiated by the community and dating back to the end of the seventies and a steady collaboration with archaeologists of the Conseil attikamek-montagnais (CAM) in the 80's and 90's.

Despite a research hiatus of over twenty years, the community and its leaders were inclined to develop a new research project, focusing on the community's needs and objectives. Those objectives correspond broadly to many others communities but the resuming of the hydroelectrical work on the Romaine River in the early 2000's and a feeling of invisibility in vast areas of their territory were resonating arguments for the development of a community based archaeological research project. For more details on the consultation process and development of the project's aims and objectives see Ouellet (2018a). If formation and sensibilization are important parts of our mission (Figure 2), the repeated fieldwork campaigns have contributed to a better understanding of various aspects of the region's culture history.

We argue that archaeologists from Quebec and Newfoundland and Labrador sometimes tend to operate too much in isolation. Language barriers and the lack of a structure of shared information quite possibly limits the development of a pan-regional history of Amerindian and Innu occupation. In recent times, this is notable with both Québec and Newfoundland's respective hydroelectric projects, the Romaine and Muskrat Falls developments, and related archaeological research. In relation to this specific concern, we present the principal contributions of our research project relevant to this broader region.

Relic coastlines and Archaic period occupations

Research on the on relic coastlines associated with the Mingan River has allowed a revisit of the EbCx-65 and EbCx-66 sites. These sites had been partially excavated in the 1990s and yielded partial evidence of ancient occupations. In the absence of radiocarbon dating, this antiquity was based on point typology and environmental context.

Those two sites are spread on an ancient marine terrace of 50 m elevation now located over 2 km from the coast. These sites are vast and composed of multiple stations possibly indicating an intensive or repeated occupation of the ancient coastline. Our excavation on EbCx-65 and 66 have been limited to areas of respectively 30 and 12.5 m². The excavation of structures, hearths and fire pits, was a priority and have allowed the collection of a poorly preserved faunal remain assemblage and precise dating of these occupations by radiocarbon (Ouellet 2016, Ouellet et Richard 2017).

Radiocarbon dating of the two sites indicate an antiquity of about 8000 cal BP for EbCx-65 and 8300 cal BP for EbCx-66 (Ouellet et Richard 2017: 26). Those dates indicate a clear association with the recently emerged terrace and are also the oldest available for the Moyenne-Côte-Nord. The relation with an ancient coastline is also indicated by the faunal remains indicating that the occupants had access to a wide range of resources including seals, birds (Laridae) and fish but also terrestrial resources such as caribou.

The assemblages of both sites share common characteristics and are dominated by a collection of

tools composed predominantly of small, obtuse, discoid or rectangular scrapers and wedges. Bifacially flaked tools are rare except for a single contracting stem projectile point from EbCx-65 and similar to types dated to 8000-7200 BP from the Strait of Belle Isle (McGhee et Tuck 1973). Large or polished stone tools, as pestle, gouge or adze are also absent. Raw material use is also identical and composed predominantly of a coarse grey-greenish quartzite and varieties of quartz while chert is virtually absent (Ouellet 2016; Ouellet and Richard 2017).

The dates and assemblages from EbCx-65 and EbCx-66 all tend to indicate some relations with the Gulf of Maine Archaic tradition. To the west, this influence is also perceived in the Baie-Comeau region (Pintal 2000) or the Cap-de-Bon-Désir site (Plourde 2006). While the sites EbCx-65 and 66 are contemporaneous to the Letemplier Complex (8500-6500 rcybp) for the Blanc-Sablon area (Pintal 2006) and share some of their characteristics, as the heavy use of quartz and quartzites (probably of local origin), some distinctions remain. Of note is the paucity of bifaces in the EbCx-65 and 66 sites and a possibly greater, or slightly earlier, influence from the Gulf of Maine Archaic tradition in the western portion of the Gulf.

While the EbCx-66 and 65 sites shed light on the first occupants of the Ekuanitshit region, much is left to be discovered as sites associated with the Maritime Archaic (ending around 3500 BP), or the Archaic period in general, remain rare or poorly documented in the region.

Intermediate First Nation period

In the Ekuanitshit region, only a few sites are known and excavated for the great length of time between the first occupations noted before the period 3000 BP. After this mark, archaeological sites appear to be more numerous and widespread. For the Moyenne-Côte-Nord, it could be argued that the Intermediate First Nation Period from Labrador (Neilsen 2006) is only partly applicable here as the influence from the Saint-Lawrence river valley is also of some importance. Related to our research program, two specific sites shed some light on this tradition for the Ekuanitshit region.

The first is EbCx-69, located on the Mingan River a few kilometres from the coast. Our team excavated 60 m² on the site interpreted as an encampment associated with the first waterfall and salmon pools on the Mingan River. Although the excavation revealed no faunal remains, two large fire structures composed of cobbles were interpreted as probable structures used for smoking salmon. The site, dated to about 1900 rcybp, corresponds with the end of the Intermediate Period in Labrador (Ouellet 2015). Some aspects of the material culture from the site are also in line with this attribution.

Regarding artifact typology, we note the presence of linear flakes or bladelets. More importantly, the lithic raw material from the site share some characteristics with sites from the Intermediate period in Labrador. Of note is the use of a purple chert, a rare occurrence in the Mingan coastal region. This purple chert can be assigned to the Saunders type. A second chert, of a dark grey color, semi-translucent, ferruginous and oolithic in texture is present in the assemblage and is also a rare occurrence on the coast. Upon visual description the similarities with materials from the Labrador trough (McCaffrey 1989: 103) is suggested and partly corroborated by Scott Neilsen familiar with such material from the Ashuanipi and Mehihek region (Neilsen, personal correspondence 2014). The remainder of the lithic raw materials are composed of various coarse quartzites from the neighbouring Shield region and quartz. The EbCx-69 site thus appears as a rare representation of the Intermediate period and indicates links between central Labrador and the North shore, probably by way of the Romaine, Moisie and other major rivers.

The other site associated with the period comprised between 3500 and 2000 BP is the EbCv-32 site from Île du Havre in the Mingan archipelago (Ouellet 2014; 2015). Although dating from the same period we can hardly see clear correspondence with the Intermediate First Nation other than a few purple chert flakes, again similar to the Saunders type. The site, dated around 2300 rcybp, introduces a new and important aspect of the Ekuanitshit region's prehistory: Mingan chert use. This raw material is composed of small to medium size nodules and the source is restricted to the Romaine sedimentary formations of the Mingan archipelago and adjacent coast (Ouellet 2010). EbCv-32, interpreted as a workshop is located close to a known outcrop of Mingan chert. As a raw material, it composes 99% of the weight of the lithic assemblage and its flakes and blocks sum over 5 kilo-

grams corresponding to the introduction on the site of roughly 10 to 12 blank nodules of chert. At EbCv-32, Mingan chert appears to have been mostly worked in preparation of multiple bifacial blade preforms but a variety of tool types, often informal, are also present.

Although widely used in the Ekuanitshit area, studies of this material's distribution indicate the Mingan chert circulation on the coast tends to be mostly limited to the neighboring region with occurrence on sites further than 200 km from the source being rare (Ouellet 2010). This local material travels to greater lengths on the Romaine River sites and this pattern appears related to the traditional annual cycle of transhumance of the Innu of Mingan and the North Shore in general (Ouellet 2010). Although well -dated sites remain too few in the region, Mingan chert use appears to be restricted to the last 2500-3000 years BP, but omnipresent after this mark.

Late precontact Amerindian period and contribution to the recent prehistory

The Ekuantshiu ministukua archaeological research project has been our focus for the last five years. The objective is to excavate multiple archaeological sites located on the coast or the islands of the Mingan archipelago with special attention on the last 2000 years BP. This special project is aimed at a better understanding of the adaptations, interaction network and historic ties with the Innu of the region.

The excavation of different sites all dating roughly between 2000 BP and Contact allows for a few generalisations as to the place of the Ekunanitshit's assemblages in a broader, Quebec-Labrador Peninsula context. The following discussion is organised around the following themes.

Adaptations and settlement patterns

The excavation of archaeological sites on the coast and the Mingan archipelago offer a glimpse into the maritime adaptations, settlement patterns and a better documentation of the importance of coastal resources for the Innu ancestors at the later part of the precontact period.

Until recently, only a handful of sites of the region have rendered faunal assemble and fewer again have been analyzed and published properly. Two specific sites excavated by our team reveal interesting and original information regarding the faunal assemblages of the recent First Nation period. The archaeological sites excavated on the Mingan archipelago seem to have the advantage of a better conservation of bone material with rich faunal assemblages and also the preservation of numerous uncalcined bones.

The EbDa-42 site of the Île Nue de Mingan has been extensively excavated with over 40 m² (Ouellet 2018b, 2017). The site is characterised by a sequence of two superposed occupations well separated by a sterile layer. The two occupations are not too far apart in time and related to the recent First Nation period with level 2 dating to around 1100 rcybp and level 1 to 900 rcybp. Despite such a proximity in time both occupations depict a somewhat different reality preventing any monothetic generalizations.

Level 1 reveals its occupants as proficient seal hunters with the assemblage dominated by different species of Phocidae occupying over 85 % of the representation. The MNI (minimum number of individuals) determination for this category indicates a minimal number of 16 individuals, indicating the occupants were able to capture seals in great numbers. In addition, the skeletal representation for seals indicates that mostly appendicular and cranial portions have been abandoned on the site while the meaty portion, in a large part, were taken elsewhere for ulterior consumption. The remainder of the faunal assemblage from level 1 indicates the capture of marine, migratory and nesting birds with 12% of the assemblage (Ouellet 2018b).

Level 2 is somewhat a variation of the same theme but with important differences in ratios. Here birds are more predominant with close to 40% of the total number and marine mammals are limited to 46 %. The multitude of birds represented in the assemblages of EbCv-32 mirror the abundance and diversity of birds nesting in the archipelago. For a complete list of species see Ouellet (2017; 2018b) and Ostéothèque de Montréal (2018). The EbCx-01 site, also located on the archipelago renders a similar image with the marked importance of seals (Ouellet 2019) for these occupations of the last chapters of the prehistory in the region.

Without surprise, archaeological data indicate that the Mingan archipelago was an important part of the coastal occupations in the early spring and summer periods. The archipelago and adjacent areas offer a concentration of abundant and attractive resources.

Seals, birds, mammals and fish, such as cod and salmon, were efficiently captured during these visits and this list is not too far off from the traditional yearly cycle referred to by Innu oral tradition and history.

The material from the few sites excavated on the archipelago illustrates well the abundance of faunal resources offered by the habitat and reveals parts of the hunting strategies and settlement patterns of the ancestral Innu. For example, the capture of numerous seals, their butchering and transport of meaty parts seems to indicate the island occupations could be the case of mostly specialised or temporary occupations. In this foraging model (sensu Binford 1980), hunters could pinpoint specific resources peak abundance and organise specific forays accordingly. According to this model, basecamps or sites of prolonged occupation that remain to be discovered or excavated would be located on the coast and possibly at the mouth of important rivers of the region.

Figure 3: Projectile points with triangular blade and deep corner notches

Lithic resource procurement and exchange networks

Sites from the recent precontact period excavated by our project team also allow for a few remarks regarding lithic resource use, procurement and exchange networks during the Late Precontact Amerindian period. As a direct comparison with the coast of Labrador, we can indicate promptly that the preferred and almost exclusive use of Ramah chert does not materialise as far as the Moyenne-Côte-Nord. Ramah chert is still present on most sites of the LPA in the Ekuanitshit region, but with a few exceptions; rarely does it exceed about 30% of the representation in debitage.

As is the case with the Basse-Côte-Nord and Blanc-Sablon region (Pintal 1990), the LPA on the Moyenne-Côte-Nord is more characterised by the use of exotic cherts coming from Newfoundland. In an interesting manner, our results from EbCv-32 are in direct relation with patterns observed by Pintal for the Blanc-Sablon region and pointing out a shift from a more pronounced use of Ramah chert to a reorganisation towards Newfoundland cherts at around 1100

BP. The two occupations of EbCv-32 are a clear illustration of this phenomenon in the Ekuanitshit region with the following proportions: for level 2 (at 1100 BP), Ramah chert represents 88% of all debitage and drops under 10% for level 1 (at 900 BP) where a diversity of local material and NL cherts are more abundant. The use of NL cherts is also illustrated on the EbCx-01 site with over 50% of debitage and tools knapped out of a green chert presumably originating from the Island (Ouellet 2021).

Finally, we must also stress that the resource use and procurement of the Ekuanithsit region for the LPA cannot be restricted to exotic proveniences as we can see a great importance of local and regional materials such as Mingan chert. That is the dominant material for this period, and quartzites presumed of a regional vicinity under 250 km (Ouellet 2010).

Figure 4: examples of decorated and worked bones from EbCx-01.

Typology and relations to bordering regions

Concerning typology we wish to illustrate what we feel is a strong similarity for some Ekuanitshit sites projectile point styles with the Point Revenge complex of Labrador and Little Passage complex of NL. Projectile points from the Ekuanitshit region presented here are coming from the EbCx-01 site, on the Île du Havre. This site is quite extended and particularly rich. It hosts the remains of the Maison Joliet, a French period trading post in use between 1680-1710, but was also a repeated campsite facing the Mingan River outlet for over 300 years between 850 and 500 BP (Ouellet 2019; 2020, 2021).

The site's large projectile point collection includes 30 specimens of various, small, triangular bladed, stemmed or notched projectile points. A certain number of these, with a triangular blade, deep and thin corner notches and a straight base (Figure 3) share a striking similarity with the complexes stated earlier but also with points from the Basse-Côte-Nord dated between 1000 and 400 BP (Pintal 1995). This shared trait indicates clear relations between all those regions and can also be extended westward on the Haute-Côte-Nord (Plourde 1995) and up to Chicoutimi (Chapdelaine 1984).

The EbCx-01 site also has a rich faunal assemblage composed of calcined and uncalcined bones. Some of those bones show clear modifications and compose a rare and unique bone tool collection. This worked bone assemblage is composed of projectiles points, harpoons and dagger. Decorated bones are small fragments decorated with thin incisions or dotted lines composing geometric motifs (Ouellet

Figure 5: Late Middle Woodland pottery from EbCv-32.

2020; 2021). One of those objects, with three distinct teeth is interpreted as a comb (Figure 4). The analysis and comparative investigation on those objects will require more research, in part due to their unusual nature in the region. We can already point out that those object types and styles do not share many similarities to the worked bone tools of the Iroquoian group, which influence can be seen in the presence of pottery for example, and we are more tempted to point out resemblances with some production of the Beothuk from NL.

Influences from the Saint-Lawrence valley

As mentioned before, the Ekuanitshit region is somewhat sandwiched between the Saint-Lawrence River estuary and the Lower North Shore and Newfoundland region. Influences and links with the latter region and Labrador have been clearly stressed, but groups coming from the west also have had some influence on the Ekuanitshit occupants near the end of the prehistoric period.

This influence is not quite clear when dealing with lithic artifact typologies or yet exotic raw material provenience. These southern influences, and a probable occasional presence, is better brought to light by the presence of an exotic and rare artifact in the region as a whole: pottery. As of now, a minimum of six sites in the Ekuanitshit region are characterised by the presence of pottery. Our project team has excavated three of those sites and they have yielded a sufficient amount of sherds and vases to give some indication pertinent to indirect dating or identity. As a general picture, the region of Ekuanitshit reveals a few sites with pottery dating to the Late Middle Woodland, through the Late Woodland or from roughly 1500 to 500 BP.

The EbCv-32 site from Île Nue de Mingan allowed the recovery of a relatively complete vase with cord-wrapped tempering, cord-wrapped decoration and punctuations very typical of the Late Middle Woodland (Ouellet 2018b). The EbCx-01 site has yielded the largest collection of pottery for the whole region and this assemblage is composed of over 10 different vases (Ouellet 2019; 2020; 2021, Chapdelaine 1986). This collection of vases is more recent and mostly associated with the early phases of the Late Woodland period. The styles of the vases are more varied and indicate an accumulation through time rather than the effect of a single and major event. The styles are also closely related to the Iroquoian populations established in southern Quebec and the estuary, with a typical Owasco influence or Saint-Maurice tradition (Chapdelaine 1995, Morin 2001).

Of note, the EbDa-04 site, partially excavated by our team in the summer of 2021, has also yielded a small, but informative, pottery assemblage. Analysis

remains to be completed but this small collection is reminiscent of styles, dominated by pseudo-scalloped shell decoration (PSS), dating to the Early Late Woodland. This small collection is composed of a limited number of vases, two or three, and contains a nice example of a juvenile vase (Figure 6), the only one known to us East of Tadoussac.

Despite these interesting discoveries, pottery is still a rare occurrence in the Moyenne-Côte-Nord region. Pottery and the influence from southern cultures are more evident in the Haute-Côte-Nord and Tadoussac region (Plourde 2012). For us, the concentration of multiple pottery sites in the Ekuanitshit vicinity, much higher than neighboring regions, is related to its attractiveness and the concentration of faunal resources that the archipelago must have been known for. Therefore, this attractiveness could have played a role, either as a gathering place or as a focal point, in the exchange networks connecting the whole of the Saint-Lawrence waterway.

Figure 6: Typical Iroquoian pottery from the EbCx-01 site.

Culture history, ancestral Innu and further research objectives

The Ekuanitshit Archaeological Research Program was primarily aimed at the development of a more collaborative way of doing archaeology in the region. During this period of 10 years, the project has become well established in this Innu community, and its cumulative results are slowly making an important contribution to the culture history of the region.

Despite not being a true yearly review, and I admit being quite greedy at it, I feel this overview is of interest for colleagues working in the neighbouring regions of Labrador and Newfoundland. This importance lies in the recognition of similarities, differences but also common concerns relative to the common trajectories of the prehistory of our respective regions of interest. The Late precontact Amerindian period in the Ekuanitshit region appears closely related to what is known for the Blanc-Sablon area, but also further East and North to Labrador and Newfoundland.

We see a common, but still a bit peculiar, history of ancestral Innu occupation and relations run-

Figure 7: Juvenile vase excavated by Roberto Napess at EbDa-04 in summer of 2021

ning through this vast territory known as the Quebec-Labrador Peninsula. A history not concerned about political or language frontiers, we encourage every researcher concerned to work in such union and contribute to a more global understanding of Innu archaeology.

Acknowledgements

Collaborative archaeological research effort is certainly not new in Labrador archaeology and we take inspiration in the enterprises of Labrador archaeologists such as Stephen Loring, Scott Neilsen, Anthony Jenkinsen, Chelsee Arbour and Jamie Brake.

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Photogrammetry and 3D modelling of the Historical Fishing Heritage of Rivière-Saint-Paul, Quebec's Lower North Shore, Canada

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The first stage of an ongoing research project was carried out in Quebec's Lower North Shore in Canada during the late summer of 2021. It focuses on a 19th-20th century *guano* (fertilizer) factory and an industrial fishery that operated from 1855 to 1960 at Rivière-Saint-Paul, a village located near the Strait of Belle Isle. Rivière-Saint-Paul can be understood as an "industrial frontier", an area on the periphery of major industrial centers comprised of industries, mines, factories, lumber camps, fisheries, and other modern infrastructures that target regional labor forces and transform resources wrested from the soil, the forest, and the sea (Hardesty, 1985). This area concentrated on regional labor forces and transformed resources wrested from the sea. The local descendant community strongly bases its identity, sense of place and history on this period of industrial activities. UAV photogrammetry and 3D modelling allowed an efficient, expedited, and (relatively) low-cost strategy for mapping and surveying historical sites associated with the abandoned fisheries and their maritime landscapes. Using digital technologies and 3D modelling facilitates the development of an archaeology of the recent past in the Lower North Shore, and reinforces the interdisciplinary potential of archaeology, ethnography, and history of the recent past.

Fieldwork was conducted in Rivière-Saint-Paul for the Smithsonian Institution's Arctic Studies Center's ongoing postdoctoral project titled "Memory, materiality, and the industrial frontier on Quebec's Lower North Shore (1860–1960)." The aim of this project is to develop an archaeology of the industrial frontier in Quebec's Lower North Shore. It focuses on the period between the nineteenth and twentieth centuries and connects the interests of today's community with the region's deep historical trajectory of human occupation and adaptation in the territory. This project builds upon the regional archaeological research conducted by Dr. William Fitzhugh of the Arctic Studies Center and Dr. Brad Loewen of the Anthropology Department of the Université de Montréal (i.e. Fitzhugh, 2017a, 2017b, 2019; Phaneuf & Loewen, 2020).

The project's general objective is to gain knowledge about the industrial frontier in Rivière-Saint-Paul. Specifically, its purpose is to: (1) understand the origin and historical development of the industrial *guano* plants and fishing establishments in the archipelago between 1860 and 1960, (2) learn from the local community and share knowledge with its members in an inclusive manner at all stages of the research process, and (3) develop a digital archaeology approach by using recording technologies, such as drone surveys and 3D modelling of artifacts and museum objects.

This year's fieldwork consisted of surveying and mapping three important historical sites in Rivière-Saint-Paul's archipelago: the Whiteley Fishery on Bonne-Esperance Island, the *guano* plant at Factory Point on Caribou Island, and the Old Wharf on Esquimaux Island. In-depth interviews were also conducted to collect the oral history related to the past and present of Rivière-Saint-Paul. These personal discussions occurred in different locations with one or more people and were used to compare historical narratives with the interviewees' daily lives. To complete the historical framework, one of the most important documents that guided the research is the diary of Charles Carroll Carpenter (1856–1909), a local missionary who lived in the region (Bilodeau, n.d.). His diary helped reconstruct nineteenth-century paths, houses, and other features of the cultural landscape of the sites. The memoirs of the Whiteley family, who owned the fishing establishment, also served as major sources of local history.

Archaeology of the recent past in Quebec's Lower North Shore

This project seeks to develop an archaeology of the recent past on Quebec's Lower North Shore to deep-

Figure 1: Hypothetical reconstruction of the Whiteley House's architectural plan.

en the role of modern material culture in historical processes such as deindustrialization and the contemporary political role of industrial ruins (Blaising et al., 2017; Buchli & Lucas, 2001; Harrison & Schofield, 2010). In this context, material culture is understood as a fundamental aspect of the relationship between archaeology as a discipline and modern industry (Casella & Symonds, 2005; Cowie, 2011; Daumas, 2006). Taking material culture as an intermediary that constitutes and intersects different social relations allows identifying the various agents that, along a particular historical trajectory, forged the local community's identity and its ongoing relationship with industrial activities.

The archaeology of the contemporary world has renewed our understanding of the archaeological timeline by examining the global modern project and exposing its sombre and abandoned places. It is an archaeology that seeks to understand modernity and capitalism (Johnson, 1996). Ports, maritime routes, and new means of communication are part of a globalized world and allowed capitalism to expand and develop. Maritime links transformed the economies of peripheral regions like Québec's Lower North Shore, and the social organization of the local communities integrated into these new networks. This was the case for Indigenous populations – Innu and Inuit – who lived along this coast. Commercial routes had a double effect: they enabled migration and ended isolation, but they also contributed to deepening social and regional differences caused by the development of commerce and access to regional and international markets. Sea routes generated greater social and spatial mobility. The industrial frontier crystallized along the new routes and networks that opened territories to colonization as new productive and extractive spaces. Characteristic material culture, produced in the great industrial centres, began to circulate in peripheral zones, transforming landscapes and social practices. The economic development of the industrial frontier that is Rivière-Saint-Paul provides an example of the transformative role of global exchange networks and the material effects of maritime industrial expansion. Archaeology can show how people, things and places participated to different degrees and integrated industrial capitalism at different scales (Cowie, 2011).

The Whiteley Fishery, Bonne-Esperance "Boney" Island, 1860–1970

Located on a rocky and steep coastline at the southern end of Bonne-Esperance Island, William Henry "Bossy" Whiteley's (1834–1903) fishery operated between 1860 and 1970 (A. S. Whiteley, 1977; G. Whiteley, 1982). Originally, from Newburyport, Massachusetts, Whiteley traveled to Labrador in 1850. Using an inheritance from England, he founded a fishery in Bonne-Esperance ten years later. The fishery operated mainly in the summer and focused its activities on salmon, cod, and mackerel. It employed up to 150 workers at the end of the nineteenth centu-

ry. In 1869, Whiteley built a house on the island where his wife Louisa Thompson and their twelve children lived. Following his death in 1903, his sons operated the fishery but experienced several economic difficulties (A. S. Whiteley, 1977). With the Great War, the workforce dropped to less than thirty employees and the Whiteley family was struck by debt. In 1945, the Standard Fish Company of Montreal bought the Whiteley family company. As the interviewees explained, the operations ceased around 1970. The buildings fell into disrepair and some, including the Whiteley house and the wharf, were looted and burned. The wood and concrete remains and features of the Whiteley house proved useful for interpreting the architectural plan. An analysis of the house's remains allowed a hypothetical reconstruction of its architectural plan that will be used in the future for a 3D reconstruction of the building (Figure 1).

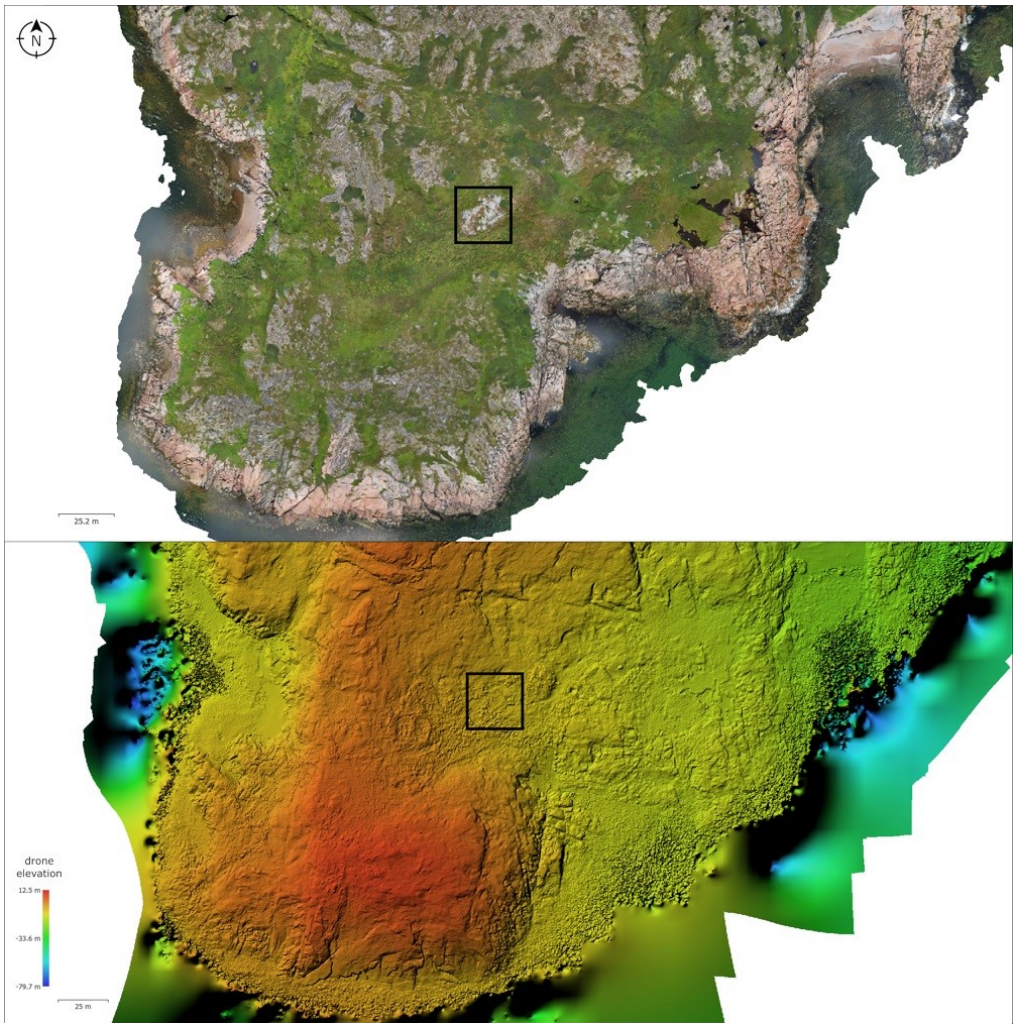

Figure 2: Orthomosaic and digital elevation model of the southern part of Bonne-Esperance Island. The Whiteley House is located in the black square.

In the area around Boney Island where the Whiteley fishery was located, the visible remains of the wharf, the Whiteley house, the well, the drinking water pool, and the lookout at the top of the hill with its inukshuk were surveyed and mapped. A drone (DJI Air 2S model) helped map the island's features and identify the areas described by Albert Whiteley in the sketch of the site published in his book *A Century on Bonne Esperance* (1977). The network of paths and walkways that radiate from the dock and house were also identified. According to historic photographs, the wharf was surrounded by a tight row of a dozen one-story and two-story buildings that served as living quarters for fishermen and workers. The exact locations of these features are included in the digital elevation model (DEM) (Figure 2 and Figure 3).

Factory Point, ca. 1860–1910

As early as the mid-nineteenth century, a *guano* (i.e., seabird excrement) factory was established at Factory Point, at the north end of Caribou Island. According to interviews with Rivière-Saint-Paul residents, the factory was no longer in operation during the early twentieth century and probably ceased operating during the late nineteenth century. Ownership of the plant is uncertain. Several interviewees indicated that the factory might have belonged to the Job Brothers of St. John's, while others suggest that it belonged to other companies based in Newfoundland or Quebec. The ownership issue may be clarified by studying the archives kept at Memorial University in St. John's. This is part of the planned activities for the second

Figure 3: 3D model of the wharf remains of Boney Island.

phase of the project when COVID pandemic restrictions are lifted.

The visible archaeological remains at Factory Point were surveyed and mapped. Upon arrival in this area, one first notices the remains or rock foundations of the old pier, a log structure that projects into the water approximately 150 meters (492 ft) from the coast. Important features of this site were identified, including the wharf, the well, the water canals, the wagon tracks, storage pits, roadways, and what seemed to be the negative imprints of built structures. In addition, there were remains of metal structures that probably dated back to the 1940s or 1950s and a series of channels for water drainage that led to a water storage pool. The east side includes three more recently built cottages. During the nineteenth century, Carpenter described this area in his diary as the place where the school was built for the inhabitants of the region (Bilodeau, n.d.). The drone survey helped build a DEM of the area and identify features for future archaeological fieldwork, such as test pits and excavations (Figure 4).

The Contemporary Past:
The Fish Plant and the Old Wharf

With fishing boats moored at its dock, the fish plant is another major contemporary site in the Salmon Bay and Caribou Island northern area, 7 km away from the village of Rivière-Saint-Paul. The plant opened in the early 1990s after a fish plant located on Esquimaux Island ceased its operations. The plant manager kindly showed us inside the plant where the workers process the halibut that arrives on the morning boats. On the production line, workers behead the large bottom fish, clean, weigh, and pack them in boxes with ice. Each worker is assigned a specific task that does not overlap with other tasks in a simple but effective process. The crew is comprised of approximately twenty men and women who come mainly from the surrounding towns of Old Fort, Rivière-Saint-Paul, and Middle Bay.

The manager's perspectives of the past and the historical fishing sites testify to the coastal lifestyle and the many years and generations associated with fishing industries. He explained the plant's operations, organization, and technologies. His general but informative explanations allowed us to imagine the industrial work at the Whiteley Fishery and to compare contemporaneous and past production scales. He also shared his vision on tourism related to the cultural richness that this region offers in terms of economic potential. Themes surrounding the region's archaeological heritage emerged from this conversation. These included ways to incorporate archaeological projects conducted on the region's contemporary sites to study present-day economic and social dynamics and the continuity of fishing practices.

Finally, beyond the specific objectives of the project, it was also important to document another relevant historical site in Rivière-Saint-Paul's surroundings: the so-called "Old Wharf" located 5.25

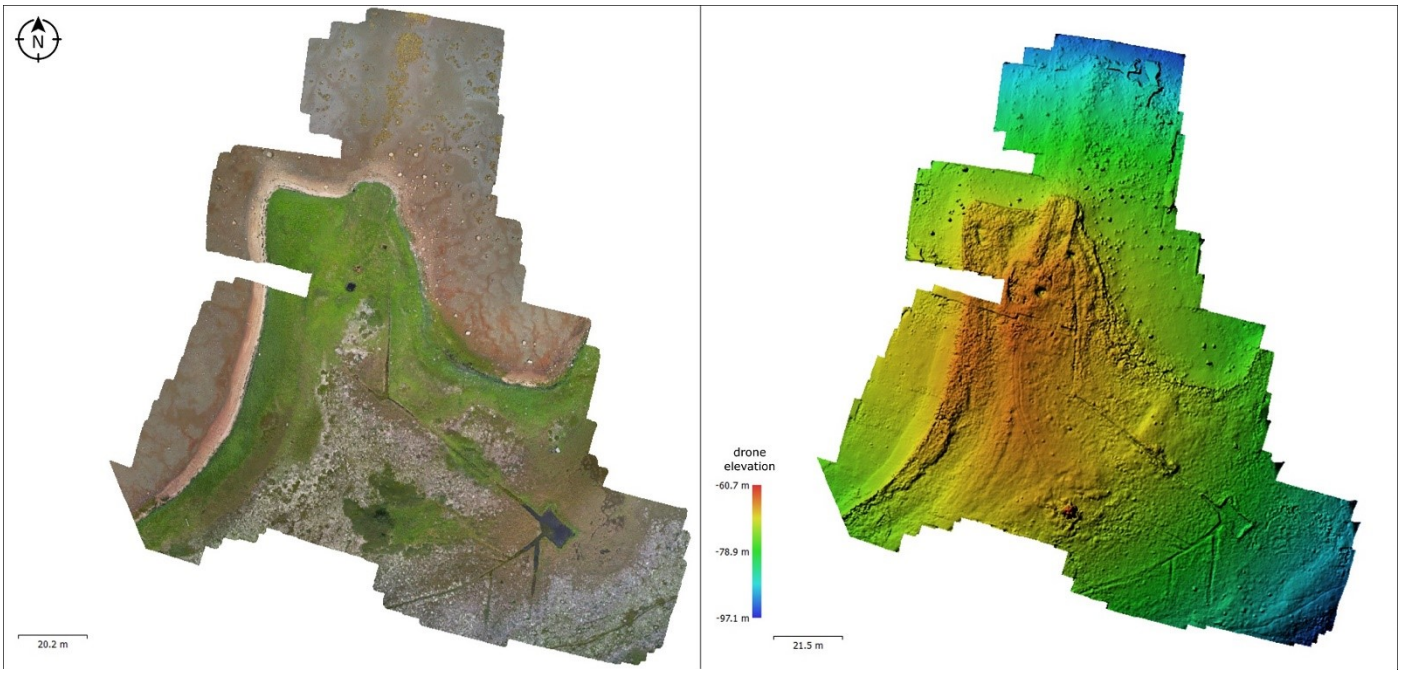

Figure 4: Orthomosaic and digital elevation model of Factory Point on the north side of Caribou Island.

km (3.3 mi) south of the village on the east side of Esquimaux Island. As this site will soon be dismantled to clean up the industrial oil from the coast, a simple drone survey was conducted to map the site and abandoned equipment, such as machinery and power engines (Figure 5). Former residents explained the site and its history, including the ancient maritime island lifestyle, the harsh environment, and the resiliency of the people who ventured to these islands. We also discussed the nostalgia related to a bygone era and lifestyle. Interviewees shared their perspectives regarding the inevitability of change and the importance of heritage places that are often perceived as valueless and neglected. While the Old Wharf is in ruins today, local memory persists about the original location of each building and the functions of the wharf's different parts. This knowledge feeds a living past anchored in the ruins of a once-pivotal place.

Conclusions and Prospects

The archaeological work on Rivière-Saint-Paul's historic sites, such as the Whiteley Fishery and Factory Point, was supplemented by the documentation of contemporary winter habitation sites used by local families. These testify to the local mobility of the residents who live between the islands and the interior of the coast at different times of the year. In his diary, Carpenter described that the Whiteley, Chalker, and Goddard families, among others, had winter homes, trapping, and hunting sites upstream from the village of Rivière-Saint-Paul (Bilodeau, n.d.). Visiting these places helped sketch an initial map for later surveys and excavations. Their localization provided an overview of mobility practices and a better understanding of the occupational history and social construction of the cultural landscape of the Rivière-Saint-Paul area. The information obtained from this year's field activities will facilitate the second stage of analysis (i.e., the material culture approach of *in situ* recordings, including targeted excavations). Research planned for 2022 will incorporate the surveying and mapping of these winter sites to understand how they were related to each other.

Future research on Bonne-Esperance Island will consist of test pits in the main working and living areas, such as the old wharf and the Whiteley house, to document the stratigraphy and target areas for in-depth excavations. Archival research will be conducted in St. John's, Newfoundland, to improve understanding of the lesser-known Factory Point site, including its chronology and ownership. Plans are to create a more robust image of the contemporary archaeological sites by surveying and mapping Salmon Bay, a settlement where cottages, a public wharf, and a private pier are present today.

The digital approach used during this first year of fieldwork raised the interest of the community, who saw potential for the documentation of heritage places and of the archaeological artifacts exhibit-

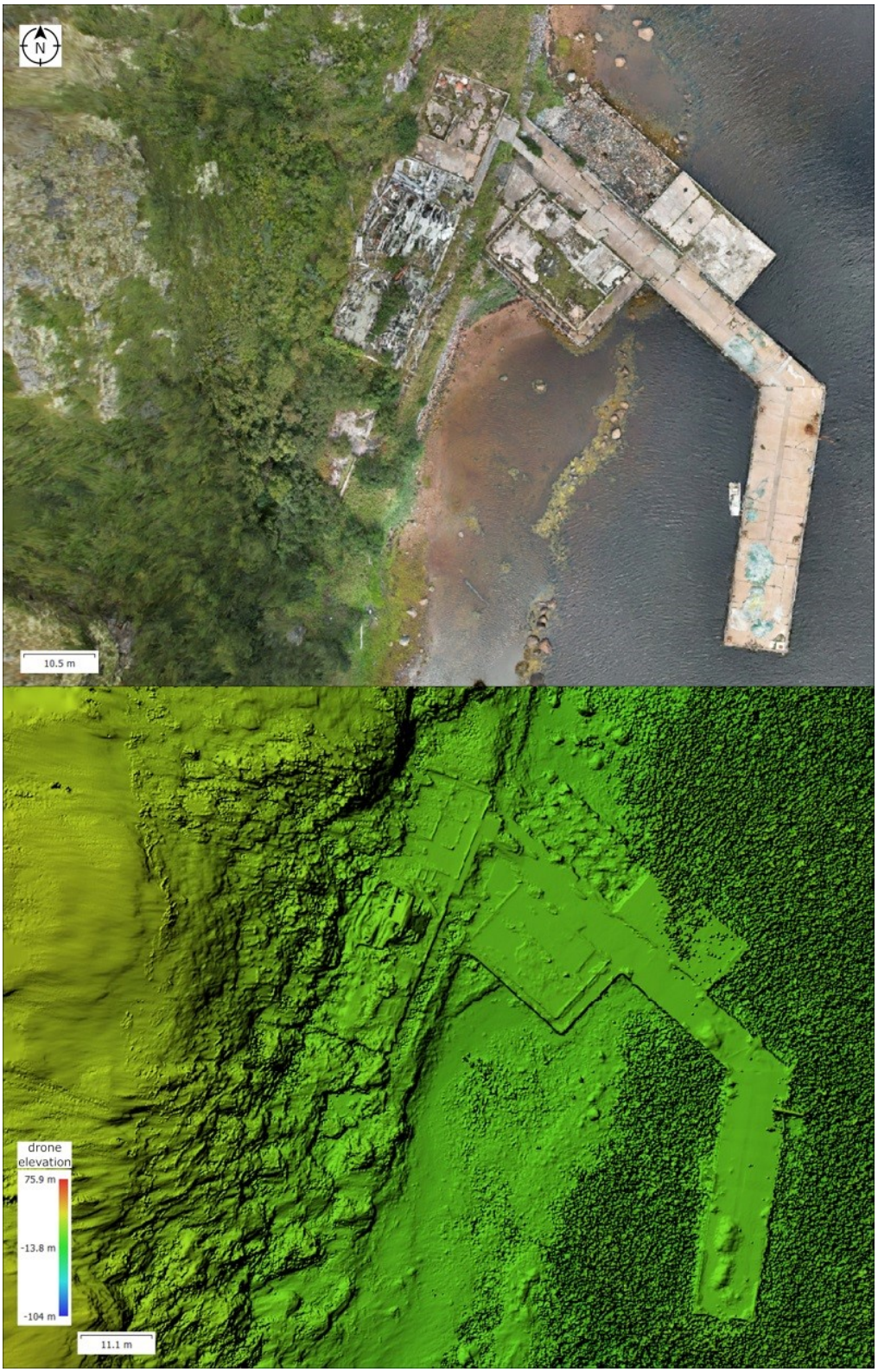

Figure 5: Orthomosaic and digital elevation model of the Old Wharf.

ed at the local Whiteley Museum. The use of computer tools to create 3D models of artifacts may allow the museum to digitally open its collections, which could increase local interest in the archaeology of the region. However, while discussing these possibilities with Rivière-Saint-Paul residents; concerns were voiced related to follow-up activities and the continuity of this long-term project, which requires the commitment of different actors. Despite these challenges, fieldwork that emphasizes digital heritage has been very informative in assessing the interest of stakeholders in heritage, history, and archaeology. Enthusiasm in the archaeology of the recent past is palpable, and the challenge is to advance and consolidate it.

In summary, this initial fieldwork related to Rivière-Saint-Paul's recent past allowed to characterize and contrast the archaeological material and examine oral and documentary sources (e.g., papers from the Public Archives of Canada). Archaeological remains from modern industries can be understood in specific historical and temporal contexts. Their efficacy is also ideological (Leone et al., 1987), and this research relies on an approach that can reveal and integrate material aspects that are absent from the documentary and historical domain. Rivière-Saint-Paul, as part of the industrial frontier of Quebec's Lower North Shore, is an ideal case study to conduct archaeological analysis of the complexities of practices and social relations at work in local industries during the recent past. Furthermore, it pro-

vides the opportunity to study the genealogy of historically active industries that contributed to shape local identities.

Acknowledgments

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Inuit Understandings of Space: An Oral Historical and GIS Approach to Toponyms with Knowledge Holders in Hopedale, Nunatsiavut

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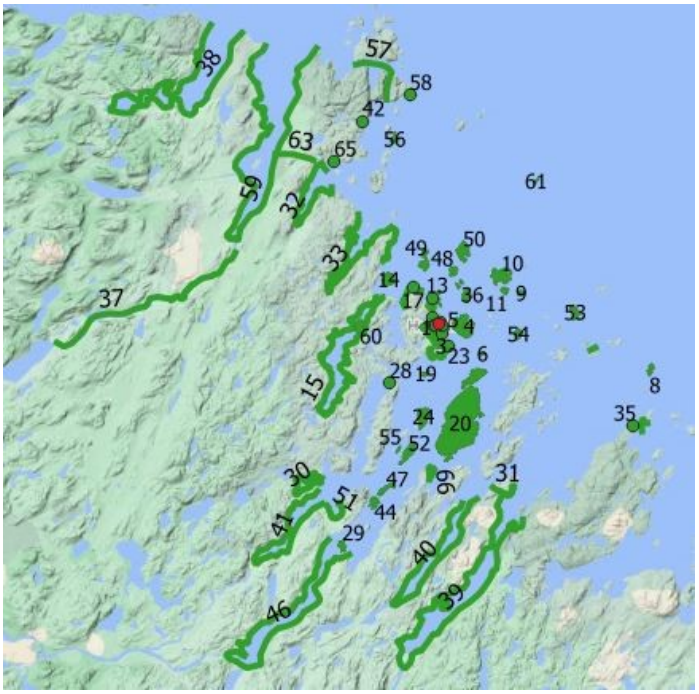
Memorial University

The "field" research for my Master's thesis occurred July 12 – August 20, 2021. The objective of this research is to provide resources for culturally meaningful, landscape-based communication of place names (toponyms) surrounding Hopedale, Nunatsiavut. This includes Traditional Knowledge and Oral History regarding these places and will be presented to the Inuit community in Hopedale. By interviewing Elders and Knowledge Holders in Hopedale and on the land, information and memories about toponyms were shared that will help to contribute to my MA thesis. By looking beyond toponyms as a dot on a map, a thorough and personal exploration of the history behind toponyms honours the validity of Inuit ways of understanding past landscapes and encourages local archaeological learning. These different understandings of place are important for the formation of Inuit identity and community connections in Nunatsiavut, fostering understanding that Inuit identity is intrinsically connected to the idea of being and becoming within a geography. A fundamental part of this research is to step away from Western ontologies of landscape in order to understand Inuit history and place in a culturally relevant way.

Figure 1: Extent of toponyms collected. Red dot is Hopedale.



I chose to conduct research in Hopedale, Nunatsiavut, an Inuit community where there is a desire to record local toponyms. This desire stems from a need to create a sense of home for people in their environment as well as to encourage meaningful connections between Elders/Knowledge Holders and youth (Collignon 2006; Procter 2018). Previous interest in toponyms and Nunatsiavut heritage in general has recently been raised at community-led initiatives such as the Heritage Forums held annually in Nain since 2010. The gathering of toponym data represents the initial processes of recognizing Inuit understandings of their own past and landscape. This in itself can increase youth interest in history and local intergenerational community cohesion.

The first step of this research was to identify local toponyms around Hopedale and their meaning through interviews with Elders in order to gain a more complete grasp of the relational landscape. With research assistants Nicholas Flowers and Jacinda Sinclair, we travelled throughout Hopedale, asking Elders and Knowledge Holders if they would like to participate in the project. This was harder than it seemed, as individuals were often away at their cabins, unavailable, or busy. Hopedale has no cell service and limited Wi-Fi, so this process was made even more difficult.

Nevertheless, we connected with twelve interviewees over nine interviews. Five of these interviews

were conducted on the land at the toponym location, three were conducted in the interviewee's home, and one was conducted at the Nunatsiavut Government Building. The interviews, ranging from approximately fifteen to ninety minutes long, were recorded using a digital recorder and later transcribed. In the indoor interviews, printed maps were used to guide the discussion. During the interviews, the interviewees shared information about the origin and meaning of the Inuttitut toponym(s), passed down histories, personal memories, and information / stories about the surrounding natural landscape.

After the interviews, every location noted was mapped in the GIS program QGIS. This map also stores information on the toponym's alternate spellings, pronunciation, English meaning, associated interviews and interviewees, audio files and times, GPS coordinates (if available), elevation (if available), and other comments. Sixty-six toponyms were collected. (Figure 1) Other resources regarding Hopedale place names include: Carol Brice-Bennet's "Our Footprints are Everywhere", Hans Rollmann's report on Bishop Theodor Reichel's map of Hopedale, and Everett Pepperrell Wheeler 2nd's "List of Labrador Eskimo Place Names" (Brice-Bennet 1977; Morse 1977; Rollmann 2014; Wheeler 1953; Whitridge and Venovcevs 2016). These works provided background knowledge to the personal oral histories collected through the interviews.

During the outdoor interviews, the narratives were most certainly shaped by the surrounding environment. Many of these locations were places where the interviewee had grown up or had childhood memories. The surrounding environment invited discussion on traditional uses of plants and animals.

It is the future goal of this thesis to use the information gathered to create relevant dissemination for the community of Hopedale. This is being done to ensure the history and knowledge associated with these places are readily accessible to everyone. The current plan for dissemination includes a small book of the toponyms.

To the more traditional eye, this project may seem more like anthropology than archaeology. In this research, I hope to challenge traditional Western views of archaeology and expand the definition to include Inuit perspectives of the past. Oral history and traditional knowledge provide critical tools in the uncovering of the archaeological landscape. The combination of Indigenous and Western perspectives in dissemination provides a more complete picture of the Hopedale landscape that can be understood by both the community and archaeologists.

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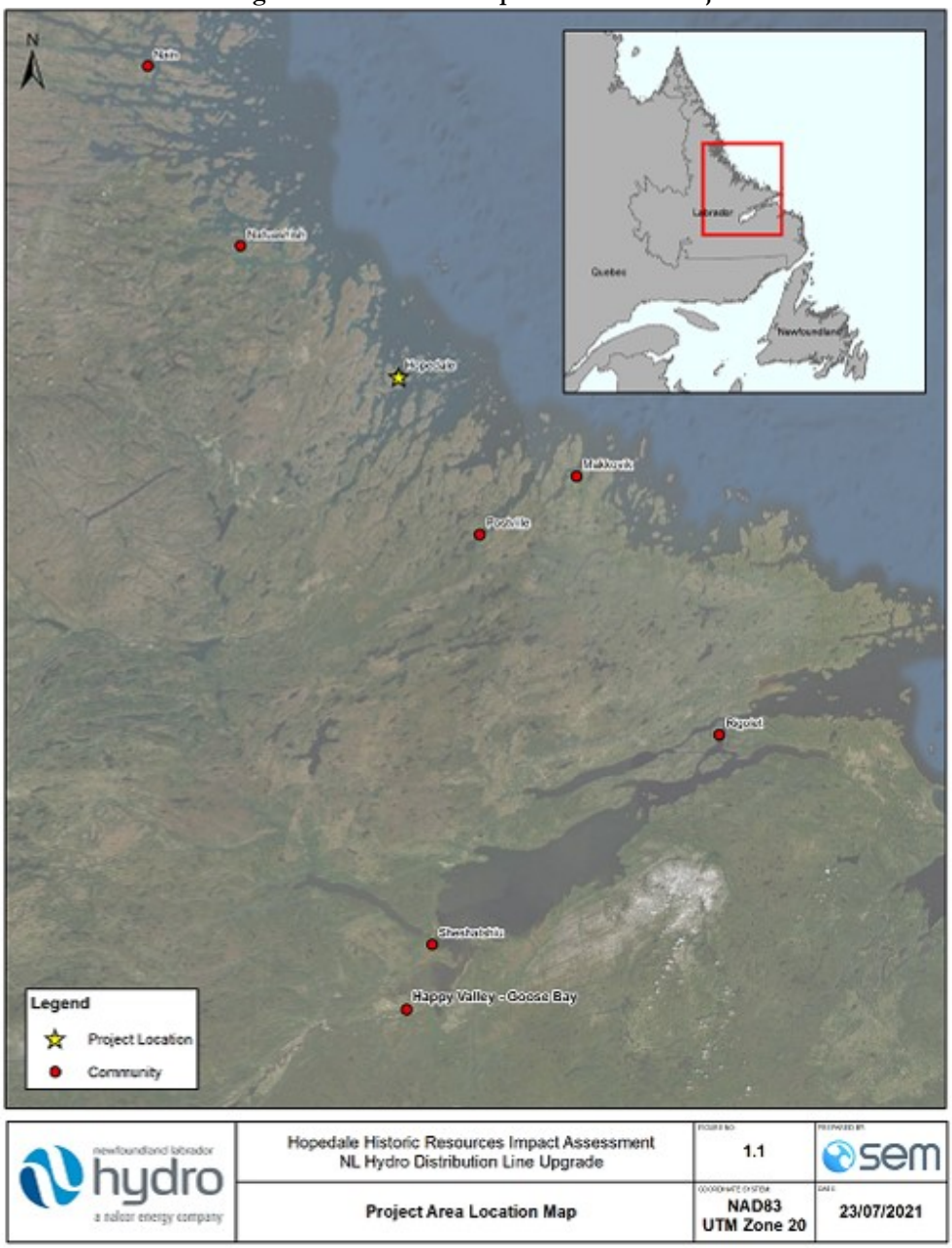
Sikumiut Environmental Management Limited (SEM)
2021 Historic Resources Activities

Roy Skanes
Sikumiut Environmental Management Limited (SEM)

Two Historic Resources Impact Assessments were completed in Labrador in 2021 - one within the community of Hopedale on the north Labrador coast and the other on the Pinware River in Southern Labrador.

Figure 1: Location of Hopedale and the Project Area.



Hopedale

The Town of Hopedale is located on Labrador's north coast, approximately 70 km northwest of Makkovik and 250 km north of Happy Valley-Goose Bay (Figure 1). Hopedale is the legislative capital of Nunatsiavut and currently has a population of approximately 600 people. Electricity is provided by a diesel generation plant, with power transmitted throughout the community by a main distribution line and several smaller feeds.

Beginning in mid-2020, Newfoundland and Labrador Hydro (Hydro) began planning upgrades to the Hopedale electrical distribution line (the Project), with the work eventually scheduled for July 2021. In addition to replacing a range of powerline hardware components, the Project would include installation of six new poles and 24 anchors suspended from 14 existing poles. Groundwork for the Project would involve excavation of rubblestone, gravel, and other surface materials; however, if digging was not possible at certain locations, suitably sized apertures for installing the new poles and anchors would be drilled into the bedrock to ensure infrastructure stability (Figure 2).

Figure 2: Location of six new poles and 24 anchors suspended from 14 existing poles in relation to known archaeology sites.

A review of the proposed work by the Nunatsiavut Government's Archaeology Office indicated a potential for Archaeological Resources in the Project Area and thus the need for a Historic Resources Impact Assessment (HRIA) of locations where ground disturbance for powerline poles and anchor-placement would occur. Following completion of Background Research, the Field Study for the HRIA was completed in early July 2021 by Sikumiut Environmental Management Limited (SEM), under the Investigation Permit NG21.03.

Despite the archaeological testing and monitoring completed as part of the Field Study, no historic / archaeological resources were located at any location investigated within the Project Area, and the potential that any are present at or close to either is low. Even though there are seven archaeological sites situated in the town, those that are intact and have not been disturbed or destroyed by other community infrastructure projects were located so far from Hydro's work areas that impacts were not anticipated, nor did any occur. Virtually all locations investigated were located on either solid rock outcrops or in locations that had been filled with blast-stone and/or gravel for housing or commercial building development, or road construction and upgrading. Because of the complete lack of findings during the HRIA Field Study, no further study for Hydro's Project was recommended.

Pinware River

The Historic Resources Impact Assessment (HRIA) on the Pinware River was completed for a proposed cottage development under the PAO Archaeological Investigation Permit 21.18. The property in question is situated on the west shoreline of the river, approximately 4 km north of the Town of Pinware and slightly downstream of what is referred to as Willow Island.

Prior to the 2021 Field Study, a portion of the roughly 95 m by 45 m building site had undergone

Figure 3: Pinware River Project Area showing the locations where Assessment was completed.

some development involving tree and brush clearing, localized removal of organics and surficial materials, and the deposit of rock and gravel to level the ground in preparation for construction. In addition to the cottage site, the Proponent had also constructed a 630 m-long, rock and gravel access road of approximately 6 m in width from Highway 510 to the east end of the lot that, at roughly the mid-way point, crossed a bog. In early 2021, Government required that the 145 m-long section crossing the bog would have to be removed and the wetland rejuvenated to some extent. In order that the Proponent could continue to use both ends of the road, an option was to construct a new section around the north side of the bog to connect the west portion with the east and thereby reestablish a continuous route from the highway to the cottage area.

A Figure showing the approximate extent of the land where the cottage would be constructed and the portion that has been filled and levelled is included below. Also shown is the existing access road from Highway 510, the section that would be removed, and the proposed corridor of a new road extending around the bog (Figure 3). These three locations were the focus of the 2021 HRIA Field Study and are referred to here as the Project Area.

Background Research completed prior to the Field Study confirmed that two archaeological sites were situated on the shoreline of the Pinware River close to the Project Area. Referred to locally as the Upper Dock and Lower Dock (or simply The Docks), the sites, registered with the PAO as EjBe-93 and EjBe-94, were known to be the locations of "winter houses" used seasonally by the residents of the area from the mid-late 19th century until circa the 1940s.

The Upper Dock had been visited by PAO personnel in 2013, after they were provided with locational data and relatively detailed sketch maps of the site prepared by a local resident. However, the Lower Dock, sometimes referred to as Beals' Dock after the name of one of the three families known to have resided there, was not investigated at that time, and the only indication of where the site might be situated was the inclusion of three small dots, likely representing buildings, on one of the sketches of the Upper Dock. Because of the uncertainty regarding the exact location, number and arrangement of structures comprising the Lower Dock, the 2021 Field Study was initiated to help identify and record physical remains associated with the site and determine if any aspect of the proposed cottage development had or would result in adverse interactions with said historic resources or to any associated with a Pre-contact or early Historic-Period use of the area.

The Field Study confirmed that other than indications of recent land-use, including ATV travel and wood harvesting, no evidence of pre-contact or historic occupation was identified at any location within the Project Area. Regarding the terrain upstream of the cottage construction site, visual investigation and shovel testing did lead to the discovery of

two historic features and one location with historic artifacts but no associated structures. Following direction from the PAO, all three Areas are registered under the Borden Number (EjBe-94 - Lower Dock); the location of each is shown on Figure 4, followed by brief descriptions of the each finding (Figure 4).

Area 1 of EjBe-94 is a large overgrown mound reported to be a deteriorated deposit of sawdust that resulted from a sawmill that operated in that location (primarily in late winter-early spring) sometime following abandonment of the Lower Dock in the 1940s until the 1960s. According to a local informant, it was an open sawmill, with no buildings or housing associated.

Area 2 of EjBe-94 is situated at the base of a hill to the north of the sawmill site, where the remains of two metal buckets and one metal barrel hoop were found entangled in among a pile of boulders and partially overgrown with turf. The artifacts likely date to the 20th century (or earlier) and could be associated with occupation of the Lower Dock. The artifacts were photographed but not collected and, despite a search throughout the immediate area for evidence of historic buildings, none were located.

Area 3 of EjBe-94 is situated to the north of Area 2, on wooded but level terrain approximately 7 m back and 1.5 m above the shoreline of Pinware River. Though overgrown with alder, willow and spruce trees, the vague rectangular-shaped outline of low-standing and broad, turf embankments were discernable. Once some of the brush had been cleared away, it became apparent that the inner edge of the berms likely defined the exterior walls of a former building that appears to have measured in the order of 8 or 9 feet across (2.4-2.7 m) by 14 or 15 feet long (4.26-4.6 m). At the southern end of the apparent building, little or no berm was visible, and it may be that this end of the structure was where the entrance was situated and, for some unknown reason, little or no turf was embanked along this exterior wall (Figure 5).

Though only limited testing was conducted at the site, involving the excavation of three test pits (two in roughly the centre of the structure and one directly up against the inner edge of the turf berm where wooden structural materials might reasonably be expected to be present), no cultural materials such as glass and ceramic fragments or iron nails were recorded, and no ends of wooden structural members were observed.

Despite the lack of findings to confirm that the structure was indeed used as a winter house, or any time-specific artifacts to help date it, it is concluded nonetheless that the turf embankments are "cultural" and they did define the general outline of a roughly rectangular-shaped building. Given the distance downstream of the Upper Dock (approximately 220 m), it is likely, though not conclusive, that the remains recorded at Area 3 during the 2021 Field Study are associated with the Lower Dock. Whether

Figure 4: 1970 aerial image showing the location near the river where the cottage will be constructed (Grant Application Area), the projected locations of buildings associated with the Lower Dock (as extrapolated from informant sketches), and the Areas where Historic Resources were identified.

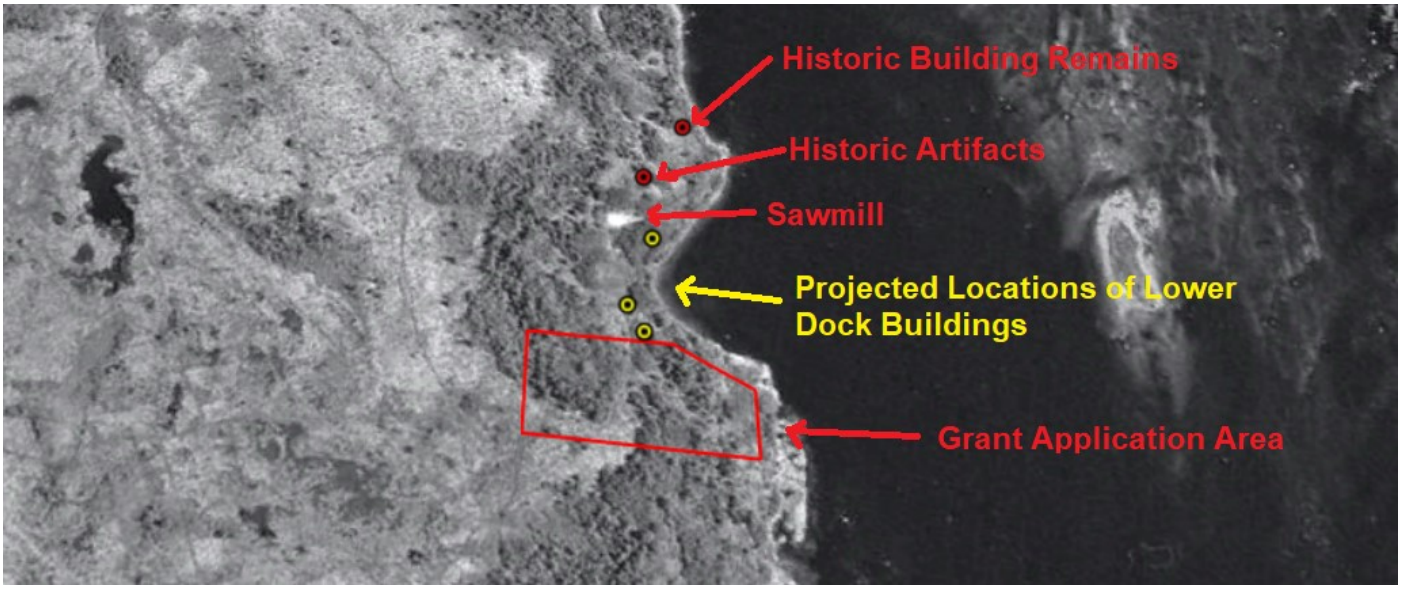


Figure 5: North view of rectangular-shaped turf berms (red flagging indicates the approximate locations of the building's corners).

Area 3 was a "winter house" or some sort of outbuilding is currently unknown.

However, the placement of turf against at least three exterior walls of the structure (likely for heat retention and for stopping the wind), does suggest a dwelling rather than a building used for storage (Figures 4 and 5).

In summary, no historic / archaeological resources related to the Lower Dock - or any other Historic or Pre-contact Period occupation - were found within the parcel of land near the Pinware River proposed for cottage construction, along both sides of the existing access road corridor, or throughout the area to the north of the bog where an alternate road section may be constructed. It was also determined that the structural remains thought to be associated with the archaeological site EjBe-94 Lower Dock are situated upstream of the Project Area and should not be impacted by activities associated with any aspect of the proposed cottage development. A final note on the Assessment results is that the projected locations of buildings comprising the Lower Dock included on the sketch of the Upper Dock may have been positioned downstream (south) of their actual location (Figure 4).

Blair Temple Associates – 2021 Activities

Blair Temple
Blair Temple Associates

Figure 1: View of a substantial mortared stone foundation (CjAe-65), part of the pre-1892 Job Brothers premises west of Hunter Cove.

Water Street Infrastructure Improvement Project – Phase 4

2021 marked the fourth year of the Water Street Infrastructure Improvement Project (WSII). The 2021 portion extended from the Water Street/Clifts-Bairds Cove intersection to just west of the Water Street/Prescott Street intersection. Construction excavations exposed historic resources throughout, resulting in the recording of two new sites (CjAe-186 and 188), and the re-exposure of three existing sites (CjAe-65, 120 and 182).

CjAe-65 – First recorded in 2007, CjAe-65 is located immediately west of the Water Street/ Prescott Street intersection. Finds include structural remnants of the pre-1892 Job Brothers storefront on the corner of Water Street and former Hunters Cove; structural remains of other buildings burnt out during the 1892 fire; a brick and stone sub-surface vault, early 20th century and possibly late 19th century in date; and evidence of post 1817 fire road work (Figure 1).

CjAe-120 – First recorded in 2009, CjAe-120 is located on Water Street, from east of the Court House/ Market House Hill, to just east of Scanlans Lane. The site produced a large collection of historic resources in 2021, most common were finds related in some respect to the fire of 7 November 1817 (either fire related deposits or post-fire roadwork). Also common were structural remains of buildings destroyed in the 1892 fire, and buried during the post-fire rerouting of Water Street. (Figure 1)

CjAe-182 – Recorded in 2020, this site is located in the Water Street/Clifts-Bairds Cove intersection. Finds include the structural remains of pre-1892 #189 Water Street; a large stone sewer, modified with a clay pipe base; and an odd U-shaped brick drain.

CjAe-186 – Located at Clifts-Bairds Cove, the site contained extensive evidence of harbour infill towards Harbour Drive. Closer to Water Street, more evidence of the 1817 fire was recorded in the form of *in situ* fire deposits and post-fire roadwork.

CjAe-188 – Located on Water Street, proximate to the bottom of Solomans Lane. Finds include an early to mid 19th century drainage feature and the structural remains of a possible tavern or similar structure, likely destroyed during the 1846 fire. However, like the adjacent site (CjAe-120) finds focused on debris from the 7 November 1817 and structural remains from the 1892 fire (Figure 2).

As was the case during the previous three phases of the WSII, archaeological evidence of the several 19th century conflagrations were most dominant. The drainage and sewerage of Water Street was relatively sparse compared to previous seasons. Exca-

vations also show a tremendous difference in the early landscape of the Water Street/Clifts-Bairds Cove intersection and broader area, compared to the other public coves. The height of bedrock in places suggests extensive grading in the intersection, explaining why no deeply buried 17th and 18th century deposits were identified. (Figure 2)

Figure 2: One of the several sections of mortared stone foundation exposed during the WSII. This section is from a structure that once stood on the south side of Water Street, but after the straightening of the street, now lies under the outer edge of the sidewalk.

Bay Bulls Data Recovery Excavations

In June, Blair Temple, Bryn Tapper and Ian Petty conducted data-recovery excavations of a late 17th/early 18th century deposit at Riverhead, Bay Bulls (ChAe-15), in advance of a pending wharf construction by Pennecon Limited. The deposit was discovered in 2019 during an assessment of the property.

An area of 4.5 m² was excavated and more of the late 17th/early 18th century deposit exposed. Artifacts were predominantly ceramic, most notable being the high quantity of Totnes-type, along with a mix of other ware types typical of the period. Interestingly, no wine bottle fragments were recovered. Traces of possible fish flake debris were identified as well. (Figure 3)

Riverhead, St. Mary's Bay Quarry and Wharf HRA

In June, Blair Temple and Robert Cuff conducted a historic resources assessment of a proposed quarry and loading wharf, southwest of the community of Riverhead, St. Mary's Bay. Assessment of the quarry and wharf sites did not identify any historic resources, though an abandoned late 19th to mid 20th century habitation site (CfAj-04) was recorded along the access route to the project area.

JAG Hotel Expansion Archaeological Monitoring

Beginning in May, Blair Temple, Bryn Tapper and Ian Petty variously monitored construction excavations at the site of the JAG Hotel expansion (CjAe-169) on Water Street, between Springdale Street and Buchannan Street. The structures formerly on the property had been demolished in 2019, with 2021 excavation focusing on the removal of all remaining fills and soils.

Figure 3: Exterior of a Totnes-type pot, ChAe-15.

Excavations exposed the remnants of structures that existed within the linear blocks between Water Street and George Street West, specifically from Springdale Street to Thomas Street, Thomas Street to Hutchings Lane, and Hutchings Lane to Buchannan Street. As anticipated, construction of the Gaze Seed building (#9 Buchannan Street) and #430-434 Water Street removed all historic resources within their footprints. The former Thomas Street sewer was exposed, as was a stone sewer running along Springdale Street. Evidence of former fish flakes was exposed in several locations along the south end of the property, with evidence of usage during the late 17th /early 18th and early 19th centuries. Finally, traces of a secure mid to late 17th century deposit was identified in the property, near the corner of Water Street and Springdale Street.

Anglican Cathedral Parish Hall

Demolition Archaeological Monitoring

In September, BTA monitored the demolition of the former Anglican Cathedral Parish Hall, as well as post-demolition debris removal and associated site excavations. Blair Temple and Toby Simpson completed a total-station metric survey of the accessible portions of the basement in February. This proved to be a valuable time saver, with much of the recording done when the demolition was complete.

The structure was damaged by fire around 1966 and rebuilt/repaired by c. 1970. Several structural signs of these events were visible in the architecture, most notable being the transformation of the roof from peaked to flat. (A tower once existed on the structure, though research has shown that it was removed decades before the fire). (Figure 4)

During post-demolition debris removal, the sub-surface (basement) structural elements were further recorded, particularly those portions inaccessible during the earlier basement metric survey. This provided further data and insight into the structure's construction. Evidence of possible footprint alterations after the c. 1966 fire was recorded.

While structural evidence of neither the pre-1892 Synod School nor the early 19th century Charity School were identified, associated early to mid 19th century and the post-1892 cleanup deposits were recorded, all part of the property's 19th century educational and ecclesiastical history.

Former Sundance Saloon

Geotechnical Monitoring

In October, BTA monitored the excavation of nine geotechnical test pits at the site of the former Sundance Saloon patio area, between New Gower Street and George Street. Development of the property in the mid 20th century removed most historic resources; traces of a late 19th/ early 20th century destruction (possibly fire-related) deposit identified adjacent to George Street were the only historic resources recorded.

Government House

Test Excavations and Monitoring

In November, Blair Temple, Amanda Crompton, and Bryn Tapper conducted testing and excavations at the western end of the Government House grounds to locate the "old" Garrison Hospital, constructed c. 1805, abandoned in the 1840s, and razed in c. 1852.

Figure 4: Southeast corner of the Anglican Cathedral Parish Hall.

Figure 5: Southwest corner of the "old garrison hospital", Government House grounds.

These excavations were in advance of a pending pathway construction project, weaving throughout the grounds. Portions of the pathway were near the general area where the hospital was recorded, and testing was required to determine the building's location in relation to the trail, and if necessary, suggest mitigative strategies. Amanda Crompton (Crompton 2021) had completed an extensive desk-based assessment of the grounds prior, and geo-referencing of the assembled mapping allowed for an accurate sense of the structure's location within the grounds.

As a result, excavation of a series of test pits and trenches identified the mortared stone foundation of the former hospital, including its SW corner. Artifacts were sparse, with most cultural material coming from infill and landscaping deposits overlying the features. Building rubble was minimal and from the damaged interior face of the foundation. This is consistent with the contemporary documentation suggesting a primarily wooden structure. Traces of a possible fireplace were recorded along the south face, in the form of a charcoal deposit, not observed elsewhere within the structure. (Figure 5)

A ground-penetrating radar survey by Maria Lear (Memorial University) assisted in pinpointing the location of the hospital's eastern end, and a possible privy.

In December, excavations for the pathway began. Fortunately, these excavations seldom exceeded 8" (c. 20 cm), and in nearly all instances encountered mixed strata, similar to the upper strata recorded overlying the old hospital. Near the existing guard house, a patch of pitch was recorded at just c. 10 cm dbs, possibly sealing for an abandoned pathway, such as what occurred in 1938 (Crompton 2021:49). Small quantities of early 19th century material were observed near the RNC stables, though whether out of context or reflective of a possible early deposit nearby, is uncertain.

Forteau (Buckles Point)

In December 2021, BTA completed a historic resources assessment of a parcel of Crown Land at Buckles Point, Forteau, Labrador. While several precontact sites have been recorded near the property – the community of Forteau has numerous precontact sites – testing did not expose any historic resources.

Pipers Hole River Park

Historic Resources Assessment

In December, BTA conducted a historic resources assessment of the former day-use Provincial Park at Pipers Hole River, west of the community of Swift Current. Other than usage of the registered salmon river by anglers, and evidence of the former highway and an attempted railway line, no historic resources were identified. (Figure 6)

Figure 6: Pipers Hole River, looking south from a bridge constructed 1939, former part of the original highway.

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Crompton, Amanda
2021 "'A House that May Last for Centuries': A Historic Resources Overview Assessment and Archaeological Potential Study of the Government House and Adjacent Lands". On file at the Provincial Archaeology Office, St. John's.

2021 Report on The Rooms Provincial Museum Division's Archaeology and Indigenous Peoples Collections

Lori Temple
The Rooms Provincial Museum Division

Covid-19 continued to affect how we operate here at The Rooms, as we once again had to close for ca. 6 weeks in February-April and work from home due to an outbreak in the metro area. As we go forward, we have tried to accommodate researchers who need access to the collections and are unable to travel to the province due to Covid-19 restrictions.

After the second shutdown, The Rooms reopened its galleries and public spaces on April 12th. We continued to operate following Covid-19 protocols as laid out by the province, so on-site lab visits and access to the collections for researchers and other visitors continued on a case-by-case basis.

As Covid-19 restrictions relaxed throughout the year, The Rooms archaeological lab proved to be a popular spot as we were visited by a number of different groups including documentary film crews from the U.S. and Denmark, A Norse Archaeology class from Memorial University led by Shannon Lewis Simpson and various researchers from the province and Maritimes.

The Rooms collections will also be featured in an online video produced by the Department of Tourism, Culture, Arts and Recreation on the *Haootia quadriformis* and other fossils that fall under the Historic Resources Act to promote the importance of the province in the world of paleontology research.

We continued to work on updating data in our collections management software program, EMu, which included entering photos, artifact location information, and importing catalogue databases from past archaeological work. As in previous years, we continue to see how EMu has greatly improved our ability to manage our collections data.

The Rooms continued its integral partnership with Indigenous communities as we worked to change our content for conservation reasons in the exhibits on Level 4.

Statistics for Archaeology & Indigenous Peoples Collection in 2021 include:

- 133 requests received for information, loans, research visits, tours and photograph use.
- 48 researchers used the collections and archaeology lab following Covid-19 protocols.
- Over 20 museums throughout the province displayed archaeology artifacts from our collections through our Community Loans program. As well, our artifacts are on loan to the Canadian Museum of History, the National Gallery of Canada, and several Parks Canada locations. Due to Covid-19 restrictions, a small number of museums did not get their loan artifacts this year.
- Archaeology artifacts were transferred to The Rooms via the Provincial Archaeology Office through 21 submissions from archaeologists representing over 27,729 artifacts and samples from 44 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

A Contemporary Archaeology of Labrador West

Anatolijs Venovcevs
UiT: The Arctic University of Norway

Introduction

Over the last five decades, contemporary archaeology, an archaeology of the recent past and the present, has grown in popularity around the world in general (Buchli and Lucas 2001; Graves-Brown 2000; González-Ruibal 2019; Harrison and Schofield 2010; Olsen and Pétursdóttir 2014; Rathje and Murphy 2001), and within the province of Newfoundland and Labrador in particular (Brake 2014; Brake and Davies 2015; Brake and Brake 2016, 2017; Brenan 2019; Daly 2015; Davies 2020; Deal 2013; Neilsen and Brenan 2018; Whitridge and Williamson 2021). While methodological and theoretical approaches differ greatly in how the recent past is approached, practitioners of these studies have demonstrated that the recent past deserves attention and that archaeologists have something important to say about the past and how it manifests itself in the present.

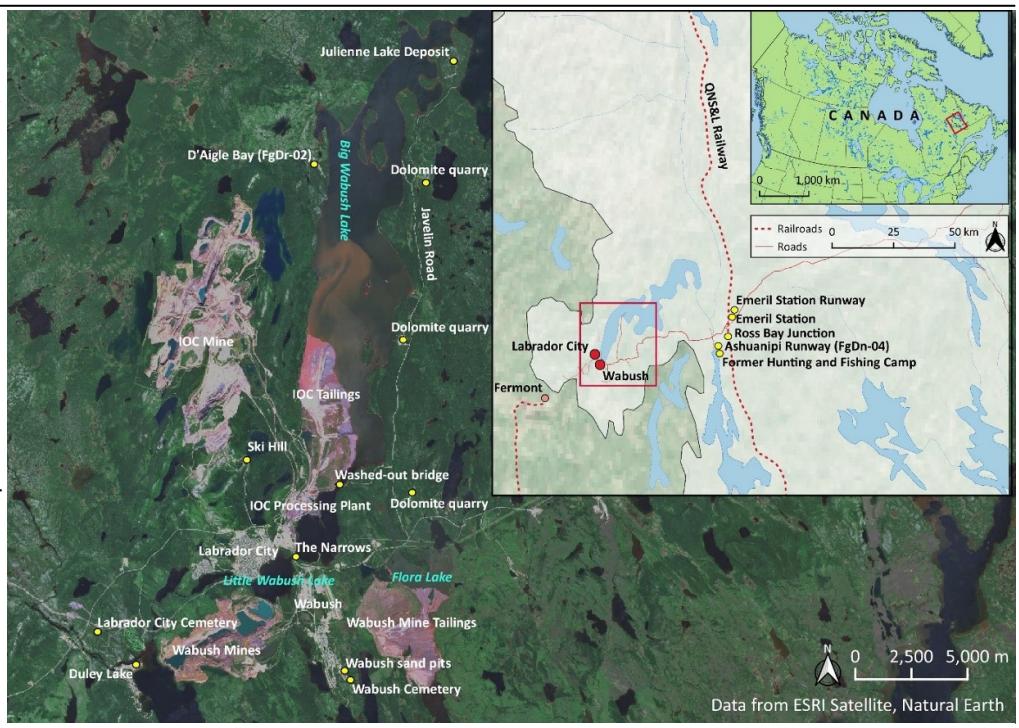

Figure 1: Sites mentioned in this paper (map by Anatolijs Venovcevs).

Drawing inspiration from this growing body of work, this project sought to apply archaeological techniques to the investigation of the contemporary industrial mining landscape of western Labrador. This was done as part of my PhD research into the heritage of single industrial mining towns in Labrador, Russia, and Norway as part of the research project Unruly Heritage: An Archaeology of the Anthropocene out of UiT: The Arctic University of Norway (Olsen and Pétursdóttir 2016).

The industrial landscapes of Labrador West might be one of the most recent, largescale anthropogenic landscapes in the province – stemming from the construction of the Quebec North Shore and Labrador Railway (QNS&L) in 1950-54 and development with the iron mining towns of Labrador City and Wabush in the 1960s and proceeding into the present as mining operations in western Labrador are still ongoing. As such, the area of study is both broad in scope and rich in material culture presenting a challenge for archaeology to create a compelling material-based narrative of the region – especially during the time of a global pandemic when travel and in-person communications have been curtailed.

What follows is the first attempt at such an archaeological narrative based upon two seasons of fieldwork in 2019 and 2021. The narrative is culture historical from the construction of the QNS&L to the present day (though it excludes the 2021 fieldwork at Twin Falls – a side project carried out within the larger framework of the research, see Venovcevs and Williamson, this volume, and Venovcevs 2020). By bringing in material examples, including archaeological sites I registered as part of my fieldwork and other material manifestations that might not be con-

sidered "archaeological" in a traditional sense, I hope to demonstrate how the industrial past transformed a massive region and continues to linger into the present. In so doing, I try to go from more chronologically and geographically distant examples to those in and around Labrador City, Wabush, and their associated mines (Figure 1). As such, I focus on the Quebec North Shore and Labrador Railway, mine survey camps and other ancillary developments, traces of pre-industrial Indigenous occupation within Labrador West, urban heritage, mining waste, and finally concluding with a brief discussion on today's ongoing material legacies. I hope that the subsequent discussion will provide points for future study of industrial heritage that dramatically transformed both western Labrador and the province as a whole.

Quebec North Shore and Labrador Railway

Indigenous peoples occupied western Labrador for millennia before the arrival of the Europeans and, even after contact, European presence in the area was sparse (Brake 2007; Neilsen 2016). Through the work of their Indigenous guides, the first Europeans that documented the presence of iron in the interior of Labrador was Fr. Louis Babel in 1870 and A.P. Low in 1892-1895 (Bradbury 1985:355; Boutet 2012). These deposits are the result of precipitation of colloidal silica that formed an iron-rich chert within a shallow marine environment approximately 2.3 billion years ago creating a 1,100 km crescent-shaped formation from the centre of the Labrador Peninsula from Lake Manicouagan in the south to Ungava Bay in the north. Large quantities of this material with an average content of 25-30% iron is what made it attractive for open pit mining (Rivers and Wardle 1979) – method that relies on rapid excavation of large quantities of rock to make up for lower concentration of mineral within the rock (LeCain 2009).

However, its remoteness to settler industrial centres and low grade made this ore of little interest until the Second World War when iron became a strategic – and seemingly scarce – resource. To secure this source of iron from a neighbouring friendly country, a group of US-based companies started actively investigating the Labrador Trough for large-scale iron mining (Bradbury 1985:355-358; Thistle and Langston 2016:273). The first economically viable deposit that the surveys identified was Knob Lake, near to where the future mining town of Schefferville was established.

To get at this ore, five US-based companies created the Iron Ore Company of Canada (registered in Delaware) in 1949. The idea was to build a 360-mile (579 kilometres) railway from Sept-Iles, Quebec to Schefferville cutting across both Quebec and Labrador sides of the provincial border. It would then be tied via the then-planned St. Lawrence Seaway to connect Labrador iron with the American rustbelt (Durrell 1950).

The construction took place from 1950-54 and was done along multiple sections across the railway's path simultaneously. Thirty-six camps were set up 10 miles (16 kilometres) apart from each other. To supply these camps, the workers built 14 runways to create what, up to that point, would be the largest industrial airlift in world history with an aviation company Hollinger Ungava Transport flying almost every piece of equipment to supply rapid, simultaneous construction (Cinécraft 1953, 1954; Harrison 2003).

During the 2019 and 2021 fieldwork seasons, I had a chance to visit and survey two runways along QNS&L – an overgrown runway near Emeril railway station and the runway by Ashuanipi River. The runway at Emeril is north of present-day Emeril station on the QNS&L and measures 900 metres by 42 metres in size. Slightly shorter spruce trees and recreational trails delineate it. At the time of my visit, a couple of campers were parked within the footprint of the old runway. Older material consisted of an old outhouse and six oil drums though it is not certain if these were from the railroad or the runway operations. Little is known about this runway except that it was the head of operations in 1953 – a node where goods were delivered by train before being loaded on planes and sent to more distant camps (Cinécraft 1953).

The runway in Ashuanipi was more substantial (Figures 2). It was 1950 metres by 65 metres in size and was connected to Ross Bay Junction – the only junction along the main line of QNS&L where the railroad divides into its northern (Schefferville) and western (Labrador City and Wabush) branches. Ross Bay Junction is connected to the Ashuanipi runway by a four-kilometre road. This was the first runway built to service Labrador City and Wabush in 1957 and carried workers and material for the con-

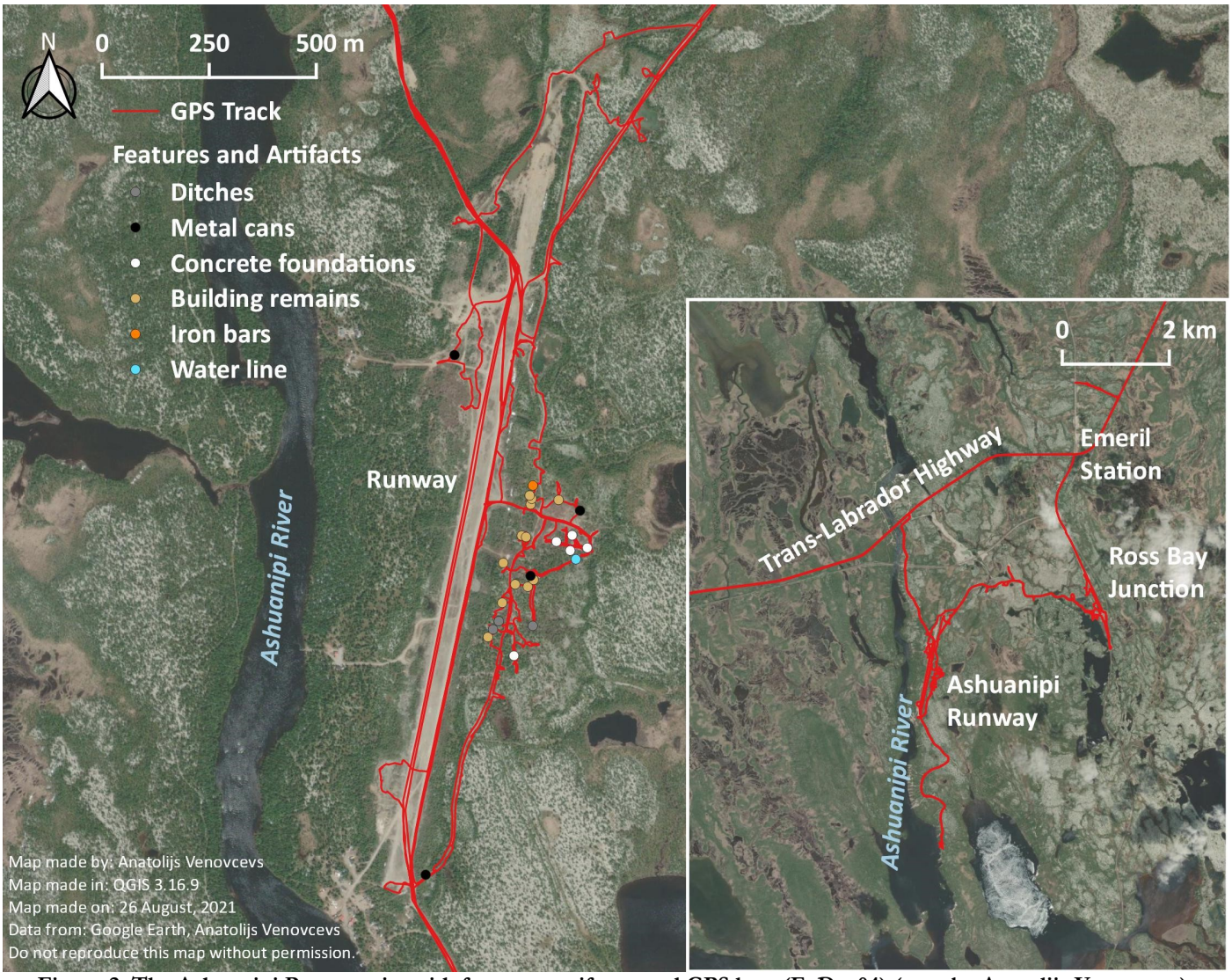

Figure 2: The Ashuanipi Runway site with features, artifacts, and GPS logs (FgDn-04) (map by Anatolijs Venovcevs).

struction of the rail spur into western Labrador. According to historical information, this runway was abandoned in favour of one at Duley Lake in 1959 (Hynes 1990:44, also see below). The runway may have also served a hunting and fishing camp located south of the runway along a three-kilometre road (this is discussed in more detail below).

Despite this key historical significance, nobody I talked to in Labrador West remembered anything being at the Ashuanipi runway besides the remains of "a few old cabins". Fieldwork in the area revealed that while in fact the area was and is still in current active use as a cabin area, especially along the Ashuanipi River west of the runway; the area also contains significant archaeological remains around – and especially east of the runway.

I first visited this runway in 2019, documenting only the existence of the runway and the cabins in the area along with other contemporary uses (Figure 3). I conducted a more comprehensive survey in July 2021. As noted two years previously, the western side of the runway had access roads to cabins but older material was also present like tin cans from the 70s and 80s (Busch 1981; Maxwell 1993). There was also clear evidence of two former overgrown quarries southwest of the runway and one to the northeast where aggregate was harvested for the runway and associated infrastructure (Figure 4). Oil drums were ubiquitous throughout the area.

To the east of the runway was an alder and spruce forest criss-crossed by ATV trails – many of them former roads. While the visibility was difficult due to dense vegetation in the height of summer it was enough to identify the remains of a significant

Figure 3: The runway at the Ashuanipi Runway site (FgDn-04) (photo by Anatolijs Venovcevs).

Figure 4: One of several former gravel quarries at the Ashuanipi Runway site (FgDn-04) (photo by Anatolijs Venovcevs).

Figure 5: Material remains from the Ashuanipi River site (FgDn-04). Top left, Esso Aviation Oil; top right, 1944 bottle cache; bottom left, 1959 Consumer Glass company bottle; bottom right, one of the concrete footings (photos by Anatolijs Venovcevs).

camp including five concrete foundations, a buried water line, and a series of earthen berms – possibly foundations for airplane fuel (Figure 5). The artifacts around these structures consisted of electrical components (light sockets, switches, etc.) pointing to the presence of generators, sherds of hotel ware (Myers 2016), Dominion Glass and Consumer Glass Company bottles from the late 1950s (Miller and Jorgensen 1986; Lockhart 2014; Lockhart, Schriever, and Lindsey 2015), and metal cans – including a few for Esso Aviation Oil. The most interesting find during the visit was a cache of tin cans and small glass bottles with cubic centimetre-measurement units – based on the maker's mark, the bottles are from the Dominion Glass Company manufactured in November-December 1944 (Lockhart, Schriever, and Lindsey 2015). The early date for these bottles and the potential pharmaceutical composition of their contents suggests that they were military surplus drawn into service for building the QNS&L – much like many of the pilots and planes for the operation.

Material of later or uncertain chronology east of the runway consisted of wooden floors for buildings, wooden and metal barrels, boats, oil furnaces, and old cars – some of it from the "old cabins" people in Labrador West remember.

I also visited Ross Bay Junction to investigate what remained there. The four-kilometre road between the Ashuanipi runway and Ross Bay was difficult to transgress on foot as the original culverts for the road have been filled up with water and many parts of the road were flooded. Along the road were also small overgrown gravel pits for aggregate extraction for the road – small ancillary impacts of resource development (Venovcevs in press).

Although the railway and the mining companies maintained a regular crew of men to operate the junction (Spracklin 1993; Labrador City Library n.d.), very little evidence of the historical work camp was present there. While QNS&L maintains facilities there, nobody was present during my first visit and the structures consisted of temporary work structures and shipping containers. In the location where the

Figure 6: Foundation for a fuel platform at Ross Bay Junction (photo by Anatolijs Venovcevs).

Figure 7: Lightning-split glacial erratic at Ross Bay Junction – a local landmark (photo by Anatolijs Venovcevs).

former work camp used to be were footings for oil and fuel tanks, water hook ups, and foundations for possible temporary structures (Figure 6). Speckled alders overgrow much of the area. Most material culture consisted of cans from the 1970s and 80s.

One significant feature at Ross Bay Junction was a glacial erratic split in half by lightning (Figure 6). The reason for its significance is its notable appearance in the recent exhibition "Workhorse" by the Labrador City artist, Tanea Hynes (Hynes 2021; Prieto 2021:5). The art draws attention to the erratic as a place of local popularity and association. Its sides, covered with graffiti, also speak to associative attachments to the place and link to the work on the archaeology of contemporary graffiti done elsewhere (Frederick 2009; Clarke, Frederick, and Hobbins 2017; Whitridge and Williamson 2021). While missed in heritage legislation, objects like this clearly have local associative significance in line with other – traditional – forms of heritage.

As a whole, QNS&L and the things left behind it presents a provocation and an opportunity for archaeology in the province. It is a vital piece of infrastructure that radically transformed and continues to transform the landscape of the province. It has also left a legacy of work camps, runways, and other material abandoned on the side of the road (Figure 8). As early as 1974, the legacies of contamination, forest fires, and polluted rivers were noted as the railroad construction's unsavoury side effects (Snowden 1974). This material also predates 1960 and is, therefore, archaeological (Hull 2020). Future work should investigate the remains of other construction camps along QNS&L as these sites carry the material memories of the rapid industrialization of Labrador.

During the scope of this project, only the Ashuanipi Runway, which has shown to contain significant pre-1960s remains, was registered as an archaeological site with the Provincial Archaeology Office – FgDn-04.

Mine Survey Camps in Labrador West

Extensive mine surveying in Labrador West began in the 1930s and 40s by the predecessors of the Iron Ore Company of Canada. The initial surveys documented presence of large concentrations of iron around what is known today as Big Wabush Lake (Hilton 1968:23-30; Geren and McCullough 1990). However, in the early 1950s, resources focused northward on constructing Schefferville on the Quebec side of the border. Schefferville's high iron content in the ore (approximately 50%) meant that it could be directly shipped to market. Iron ores in western Labra-

Figure 8: A collection of old railway ties at the side of QNS&L railway just north of Emeril Station (photo by Anatolijs Venovcevs).

dor, while more extensive, had lower iron content (approximately 38%) meaning that more infrastructure and investment was needed to enrich the ores before export.

After the construction of Schefferville and the QNS&L (for more on this see Bradbury 1979, 1985, 1983, 1984; Boutet 2012), attentions of the Iron Ore Company of Canada shifted back to western Labrador. Surveying and mineral mapping began in earnest in 1956 with the construction of a survey camp at Duley Lake (Geren and McCullough 1990:251-252). This was expanded in 1957 where Hollinger Ungava Transport (H.U.T.) using DC-3 aircraft flew over 800 tons of supplies from Oreway on the QNS&L to an ice landing strip on Duley Lake. While the size of the camp is unknown, the survey camp was supplied with a cookhouse and recreation in the form of movies, pool tables, and table tennis (Arsenault 1997). In 1959, a formal airstrip was established in this area – it briefly served as the main runway before a new one was established in 1960 at the site of the current Wabush airport (Hynes 1990:44).

The camp at Duley Lake was moved to D'Aigle Bay on the northern end of Wabush Lake in the spring of 1958. Here too a runway and a camp were established for that summer. Other camps existed in The Narrows in what is today the area between Wabush and Labrador City as well as on Shabogamo Lake – making 1958 the most active survey season in western Labrador, creating 573 drill holes as part of the survey. At the end of 1958, the camp in D'Aigle Bay was merged with the one in the Narrows (Geren and McCullough 1990:252-253; Perlin 1964:40). The survey work mapped out the main ore deposits for the IOC mine east of Big Wabush Lake. In 1960, the construction of the Labrador City townsite and the IOC mine began in earnest.

Figure 9: Old mining cut line, now a recreational trail, on the outskirts of Wabush (photo by Anatolijs Venovcevs).

Meanwhile, two other mine survey operations were ongoing – a low-grade deposit south of little Wabush Lake and a deposit west of Big Wabush Lake, both in the hands of a holding company Canadian Javelin Ltd., with plans to develop two more mines (Hynes 1990:6). The former was leased to Pickards Mather Company, which became a managing agent for a conglomerate venture of seven Canadian, American, and European steel companies to build the Wabush Mines (Hynes 1990:9). Surveys of this deposit took place in 1956-1959 until a small pilot plan was set up in 1960-61 that showed that the low-grade ore could be turned into 68% concentrate.

Canadian Javelin Ltd. investigated the later area, known as the Julienne Lake deposit, as part of a drilling program in 1957-58 identifying deposits closer to 34.2% iron. This was followed by mechanical topsoil stripping of a trench in 1962 and Canadian Javelin Ltd. considered building a separate facility to exploit these deposits. However, a warehouse fire in 1966 in Wabush destroyed all drill core samples and no further exploration was undertaken. When Canadian Javelin Ltd. failed to meet the Mining and Mineral Rights Tax Act in 1975, the provincial government seized the property. Additional drilling surveys were done in 2010 and 2012 better refining information about the size of the deposit (Conliffe 2013, 86; Engineering and Mining Journal 1977; Geren and McCullough 1990:249). However, despite the desires of the provincial government to see it developed, no mining activity has taken place at this deposit since these surveys.

It would be an understatement to say that extensive surveying of the late 1950s and 1960s has transformed the landscape of western Labrador. Aside from giving rise to the towns of Labrador City and Wabush the area is saturated with traces from the early days of mining exploration. Cut lines for drilling extensively cover the area and can still be seen as either places of shorter vegetation or have been wholly reused as recreational trails. These observations speak to the long afterlives that even ephemeral actions like the creation of a survey cut line can have unintended afterlives within a landscape (Figure 9). Work elsewhere has demonstrated reuse of cutlines by Indige-

Figure 10: Grubbed-off area at the Julienne Lake deposit (photo by Anatolijs Venovcevs).

nous trappers (LeClerc and Keeling 2015), or for ATV use and off road driving by settlers – which can contribute to habitat fragmentation and loss (Lee and Boutin 2006).

The remains of the attempted mine at the Julienne Lake deposit also bears the marks of an unfulfilled future and persistent human presence (Figure 10). The grubbed off areas and both older and more recent cut lines seem to attract more waste in their abandoned form. Cars, shotgun shells, pieces of wood, and an old oil furnace are all present in the area. While this can one day be turned into a full-fledged mine, as is in fact hoped for (Stantec 2015:63), at present it is the heritage of an aborted mining operation and its unruly afterlife.

Likewise, material remains of survey camps are direct evidence of industrial development in the region. After its role as a mine survey camp, Duley Lake became a provincial park, home to Labrador West's first regatta, and a popular outing spot for families in the region (Daigle 1993:11; Hynes 1990:69) – at times too popular, creating congestion (Various 1979:110, 209). Since losing that status, it has become a private RV park and cabin area, creating an informal exurb of Labrador City and Wabush.

I surveyed the location of the former Duley Lake camp on two occasions in August 2019 and in July 2021. The most conspicuous feature of the former camp is the vestige of the 4,000-foot (1,219-metre) runway, which has been paved to the point where it terminates into Duley Lake (Figure 11). The long straight road is today lined with RVs. Survey of the surrounded area yielded little evidence of former mine survey operations indicating the clean-up that took place when the site became a provincial park – preventing mine exploration material to become heritage. Instead, the area was marked with recreational trails and partially-overgrown clearings – possibly from the mine exploration period. While the campground is kept clean, a few things remain from when the area was a provincial park. These include the remains of a washed-out bridge on the road to the park and a few pull-tabs that date from 1962 to the mid-1970s (Busch 1981:101-102).

Figure 11: Duley Lake. Top left, Duley Lake campground from a distance, note Wabush Mine on the horizon on the right; top right, open pits and trails around Duley Lake; bottom left, pulltab at Duley Lake; bottom right, paved road through the centre of the former runway (photos by Anatolijs Venovcevs).

The absence of mining material at Duley Lake stands in stark contrast to D'Aigle Bay. Located at the distant end of Big Wabush Lake and accessible only by boat. I surveyed this site in July 2021 (Figure 12). Another runway, a series of large and small clearings that delineate locations within the mining camp, and two roads that connected the clearings and the runway characterize the site. Many of the clearings were overgrown with alders and the height of summer

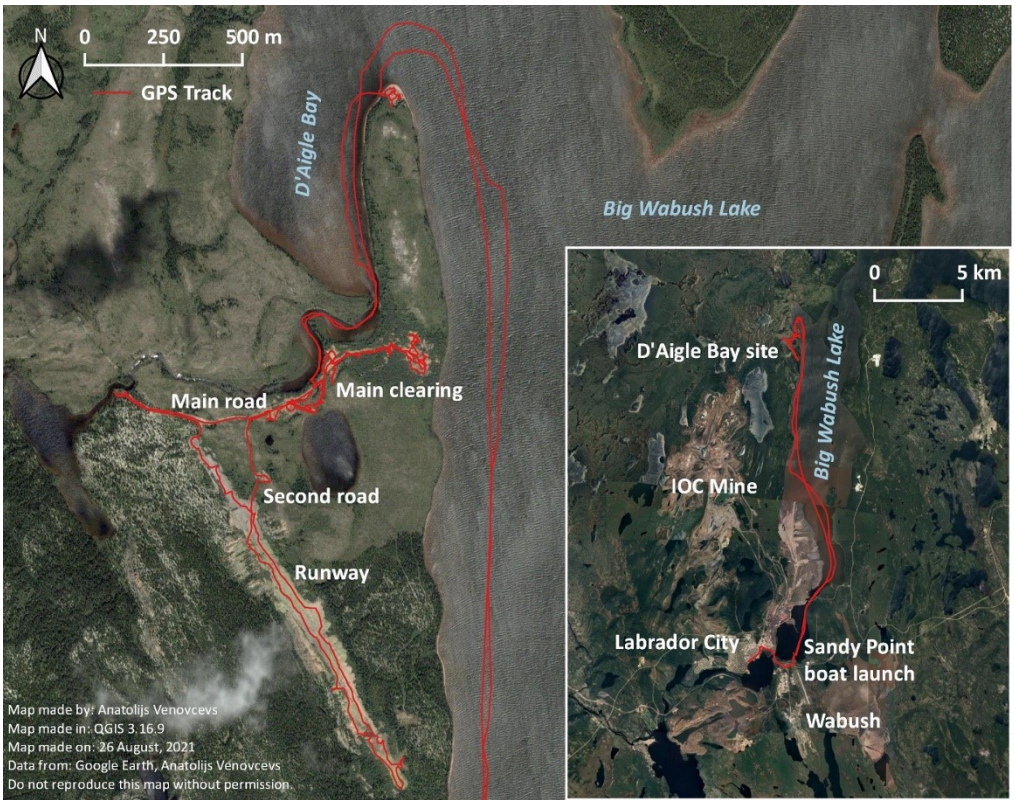

Figure 12: The D'Aigle Bay site with GPS log (FgDr-02).

limited visibility. However, some objects could be identified including food tins, a bottle of MIX-O bleach from the Consumer Glass Company (Lockhart 2014), an electrical fuse box, oil barrels, fragments of wood, canvas tent fragments, and an Esso Marvelube can. These materials provide snapshots of life at the survey camp including the presence of electricity and the close connections between rapid industrialization of Labrador and cheap energy from petrochemicals (Figure 13). The presence of this material also speaks to possible environmental legacies of mineral exploration – a relatively under-explored topic despite the potentially heavy environmental legacies (Duhaime, Bernard, and Comtois 2005; Sarkar et al. 2019).

D'Aigle Bay also contained a few more recent objects that would have post-dated the camp. These include pull-tabs and pull tab containers, a muffler, and shotgun shell indicating more recent human presence. Despite these items, it is clear that D'Aigle Bay is largely intact and represents a tightly dated mine survey site from spring to fall 1958. Given that all mine survey material was cleared from the Duley Lake camp and the camp at The Narrows has been destroyed, D'Aigle Bay remains as the best-preserved site from the early days of industrial development of Labrador West and should be protected and studied as such. Given its importance, the site was registered with the Provincial Archaeology Office as an archaeological site – FgDr-02.

Other Ancillary Impacts of Development

Beyond the railroad and traces of mineral exploration,

Figure 13: Objects from D'Aigle Bay site (FgDr-02). Top left, runway; top right, remains of a canvas tent; bottom left, Esso Marvelube container; bottom right, socket and light switch (photos by Anatolijs Venovcevs).

Figure 14: Original land trail into Labrador West, now part of the snowmobile network, at Grand Hermione Lake (photo by Anatolijs Venovcevs).

the landscape is marked with what has been referred to as the ancillary impacts of resource extraction (Keeling 2010:235-236; for more indepth discussion see Venovcevs in press). These capture a broad variety of effects of mining operations and creation of support industries like logging, hydroelectric development, agricultural enterprises, quarrying, overhunting and overfishing, mineral survey work, and road and railroad construction that all create distinct material traces tens and hundreds of kilometres away from the extractive site. Together they create a broader extractive landscape.

In Labrador West, whose contemporary human landscape is defined by mining, almost everything can be considered an ancillary impact. Some of these – like the heritage of the railroad, mine survey work, and hydroelectric power (Venovcevs 2020b; Venovcevs and Williamson, this volume) have been covered previously. There are many more examples of this – for example the original path of a 1958-59 winter tractor freight train from Ross Bay Junction to The Narrows (Hilton 1968:48-49; Geren and McCullough 1990:255), the first "road" into Labrador West that brought thousands of tons of supplies and equipment. This method of transportation was no longer needed after May 1960 when the rail spur into Labrador West was finished though it remained the only road between the two points before the construction of the Trans-Labrador Highway in the 1990s (which itself is an ancillary impact) (Geren and McCullough 1990:255; Hynes 1990, 8). Parts of the original road can still be seen and are now part of the regional snowmobile network (Figure 14).

Cabins and other recreational buildings are another form of ancillary impact that leaves archaeological footprints. Cabins proliferate along roads and trails, which themselves are often products of mine exploration, development, and transportation, showing how human activity invites and accumulates other human activity. Drawing from Bjørnar Olsen's conception of thing from the Old Norse/Old English *þing* as that which gathers, brings together, and lasts (Olsen 2003:98) – in ancillary impacts one can see how certain things (trails) attract other things (cabins) which with them carry other material impacts such us household items, recreational vehicles, more cabins, and etc. – perpetuating anthropogenic impacts ever outward.

Cabins are also accumulations of other things – other pasts. For example, trailers from the trailer parks in Labrador City and Wabush (discussed below) appear as cabins around Labrador West. Trailers regularly get pulled off their housing lots to live a second life as a recreational home in the forest (Figure 15). Equally, parts of homes can also be shifted and moved – as for example with the abandoned commu-

Figure 15: Trailer home re-established as a cabin in the forests of western Labrador (photo by Anatolijs Venovcevs).

Figure 16: Ruins of the main building at the abandoned hunting and fishing/Boy Scout camp (photo by Anatolijs Venovcevs).

nity of Gagnon, Quebec. While the closure and demolition of the iron mining community in 1985 remains a traumatic event in the collective consciousness of Labrador West – a feared fate of the communities if their mines were to ever shut down (Ponte and Kowal 2015, 85), the only passage in *The Aurora*, Labrador West's local newspaper, from 1985 was a short piece urging people to stop driving down to Gagnon and salvaging pieces off of houses (The Aurora 1985). Those salvaged pieces ended up in the cabins around Labrador West.

Another ancillary impact and one well on its way to becoming a "proper" archaeological site is the former hunting and fishing/boy scouts camp on Ashuanipi Lake. The camp is connected to the Ashuanipi Runway mentioned earlier and from local sources I found out that this was originally built for hunting and fishing by the IOC executives. It later served as a Boy Scout camp and was only abandoned a couple of decades ago. Today, the site consists of the remains of three former residential structures, a main lodge with a stone fireplace, and remains of ancillary structures like the floor for a separate kitchen (Figure 16). Debris from the camp and more recent material is also present in the area. As a ruin, the site invites a sense of curiosity and contemplation of the decay of a place devoid of usefulness (Pétursdóttir 2016; see also https://youtu.be/BEYwoLGXcB4), as a vestige of a former IOC camp it is yet another dispersed trace of how the mining industry transformed western Labrador.

Attention to ancillary impacts, their vestiges (Olivier 2011:4-8), and what they have become was a significant topic of attention for my research in Labrador West (Venovcevs in press). One of the biggest case studies was a collection of sand quarries behind Wabush – locally referred to as the sand pits. The sand pits are in an area approximately 2,800 metres long by 125 metres wide at their furthest extent and were used to harvest material for sand, gravel, and lawn base for the buildings and rounds in the town of Wabush as it was being built in the 1960s and 70s (Figure 17). These were also the location of a ski hill, ball field, and cemetery. No written information exists about this place making the site essentially "prehistoric" – written out of history – as if the aggregate on which the town sits was not important enough to mention in both the contemporary advertisements

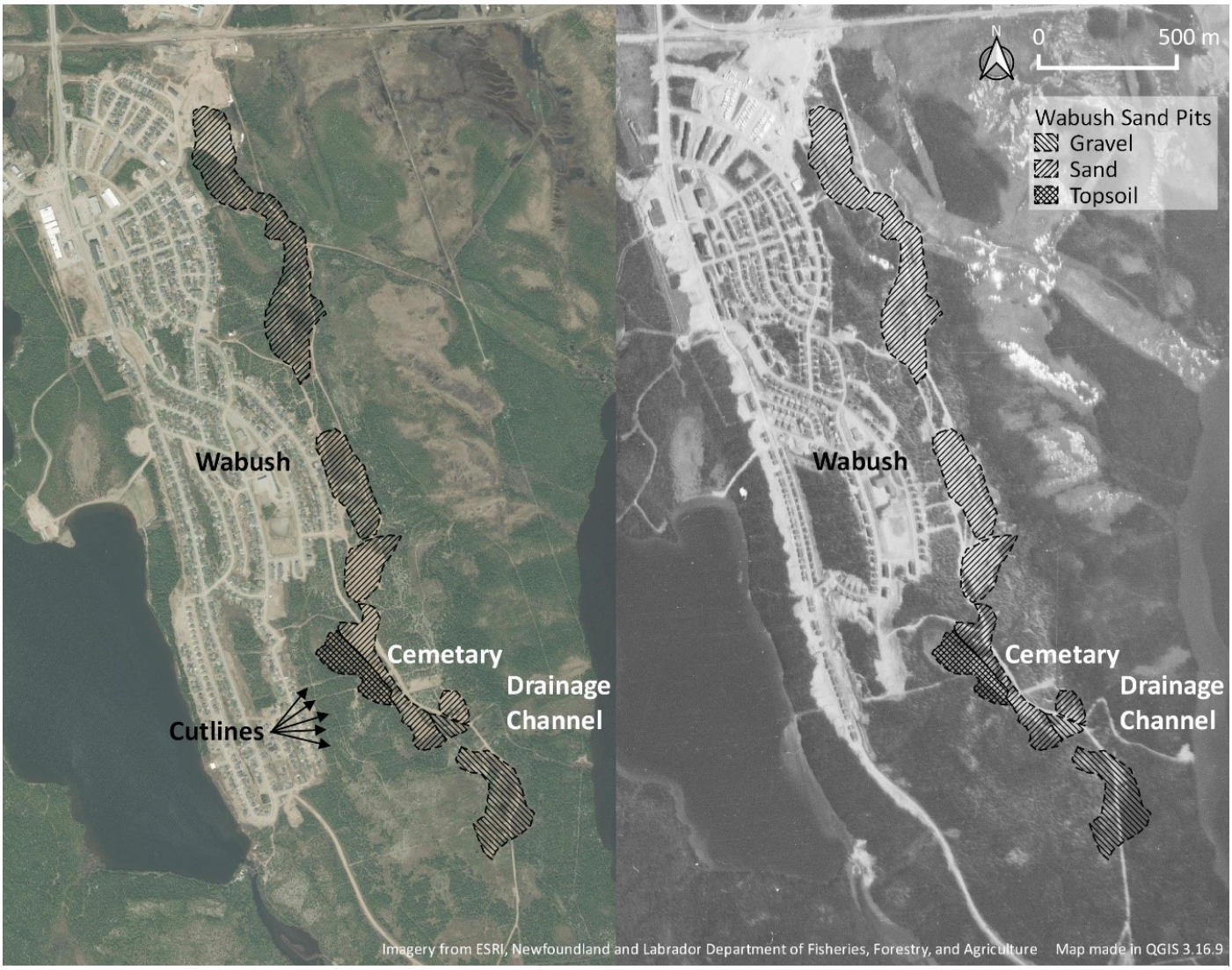

Figure 17: Results of the survey of the Wabush sand pits (reused from Venovcevs, in press).

and the subsequent histories.

Surveys of this area in 2019 and 2021 focused on documenting the sand pits' post-industrial use, taking note of revegetation, often in the form of *Alnus incana rugosa* (the speckled alder) that reoccupied some of the pits, as well as the location, number, and distribution of post abandonment material culture such as fire pits, jumping ramps, and car wrecks (Figure 18). The work revealed how the landscape remains in motion being constantly made and remade in a dynamic informal and popular recreational space (see Venovcevs in press).

It is likely that the sand pits will continue to be a dynamic field of making and remaking as they have been zoned into the 2019 Town of Wabush zoning regulations as part of an expanded watershed protection zone (Stantec 2019). Nothing can be built there making the pits "a space left over" (Andersson 2014) – existing beyond the concerns of historicity and municipal planning but within physical space and the local imagination.

Western Labrador in particular and the province in general is filled with similar left-over spaces that are not captured in heritage or planning discourse but rather in vernacular recreational practices – Buddy Wasisname & the Other Fellers' song "The Gravel Pits" comes to mind (listen to it if you haven't). I surveyed other gravel pits around Labrador West to capture the material traces of these patterns like beer cans, bullet shells and targets, pieces of wood, wrecks, and other detritus – all material that points to the sociability of these landscape ruins.

A particularly intriguing set of features emerged along Javelin Road – an access road to the

Figure 18: Wabush sand pits. Top left, car wrecks; top right, jumping ramp made from reused industrial equipment; bottom left, old road reused as a snowmobile trial; bottom right, fire pit (reused from Venovcevs, in press).

Figure 19: Legacies of dolomite quarrying along Javelin Road. Top left and top right, abandoned and remediated dolomite quarries; bottom left, mothballed dolomite quarry; bottom right, washed-out bridge to the IOC installation (photos by Anatolijs Venovcevs).

Julienne Lake deposit discussed in the previous section. While Canadian Javelin Ltd. lost their mining claim in 1975, the road continued to be used and maintained by IOC to access dolomite quarries. Dolomite is a flux that is sometimes added into iron pellets and other products. Javelin Road contains the traces of three such quarries as well as a bridge built as a shortcut for the transport of dolomite to the IOC mine (Figure 19).

At the time of surveys, none of the dolomite quarries were active – two were remediated and one was not being used. Of the two remediated quarries, the smallest and southernmost one, measuring 725 m by 250 m, was covered with turf from the nearby swamp. Scars of de-turfing were clearly visible on the northeast side of the former quarry. A pond marked the location of where the dolomite was harvested. Since abandonment, the site became an informal RV campground with five RVs and associated equipment and material scattered throughout at the time of survey. The larger of the two quarries, measuring 700 m by 365 m in size, on the northern end of Javelin Road, lacked such reuse. It too was remediated with grass and sod, leaving behind a large turquoise lake in place of where the quarry had been. Signs warned of open pit mining, but the gates were open and it was clear that this site was no longer active. Bullet holes in some signs indicated target practice. Both remediated quarries had dolomite boulders of former extraction.

The final quarry still maintains potential to be active. It is a collection of four large grubbed-off areas – two for dolomite quarrying 470 m by 200 m and 210 m by 110 m in size and two areas for parking and storage 215 m by 120 m and 70 m by 65 m in size. From my visits in 2019 and 2021 the site did not change, implying little industrial activity. Despite this latent nature, I observed several fire pits while surveying the site indicating human activity within this period of waiting for reuse.

The bridge from the dolomite quarries along Javelin Road to IOC was built as part of a shortcut connecting the two. However, it was washed away creating a hyperart object (Farstadvoll 2019) that stands without meaning or purpose, pointing to IOC's mine tailings but leading to nowhere. The bridge consists of two train cars as support bases with a wood and metal bridge on top. Unpowered traffic lights stand on both sides of the bridge. The bridge is covered with graffiti and writing, recording the passing of others who have been there – some graffiti like "#Sept-Iles" ties traces of people from places further afield – like other IOC-dominated communities. Beer cans, fire pits, and fishing lines also mark this place of sociability.

Other examples of ancillary impacts could be brought forth like Elephant Head Park, the location of a former park maintained by the Town of Wabush approximately 3.5 km southwest of the town, and now defined by a series of overgrowing camping spots. Or the network of cell phone towers and radio towers – both used and abandoned – that mark the transitions within the communication history of the region that could be interpreted as features in the constant battle to overcome distance and a feeling of isolation (Decks Awash 1976:10; Hammond 2010; Royal Commission on Labrador 1974a:1138-1146). Or even the network of recreational trails that extend outward from the town and sometimes contain vehicle wrecks, abandoned cabins, sawmills, and other accumulating material. Ancillary impacts could also consist of less visible parts of resource development like the reduction of caribou and fish from the nearby land and waters through a reduction of habitat, pollution from the mines, and the presence of more people engaging in hunting and fishing (Payne et al. 2001; Royal Commission on Labrador 1974b:612-613).

All these things pose a challenge for archaeology and heritage management – they are an irreparable part of the local landscape, one that is made and defined by and for mining and the people who work within it. They are physical spaces that play a part in the local life-worlds and industrial processes, but they are overlooked by heritage discourse and considerations for being too recent or too ordinary. This "(in) significance" (Olsen and Vinogradova 2019) highlights how mainstream heritage considerations fail to account for such ordinary things which carry a legacy into the future and play a part in people's day-to-day lives. Attention to ancillary impacts and, in fact, other common-place material things can help to further reorient the archaeological discipline to the small material realities that matter to people but might be overlooked by archaeology due to age or ascribed significance.

Indigenous Traces

In discussing the industrial landscapes of Labrador

Figure 20: Indian Point during Innu occupation in the early 1960s (left), after Innu occupation in 1969 (centre), and today (right) (map by Anatolijs Venovcevs).

West, one topic that has yet to be covered in this submission and that is the Indigenous landscapes that existed before and alongside industrial operations. Much research on the original inhabitants of western Labrador and their interactions with industrial colonization has previously been done elsewhere (see Boutet 2012, 2013; Brake 2007; Neilsen 2016; see also parts of Venovcevs and Williamson, this volume).

In Labrador West, the presence of Innu in the early day of industrial development has been documented in both personal memories and written accounts (Hynes 1990:17; Maher 1992:6; Marcil and Greene 1992:9-11; McLean 1995:56; Spracklin 1993). The records suggest that an Innu family originally camped on the southern side of Little Wabush Lake where the Wabush Mines are today, splitting their time camping on Duley Lake. Mine management told them to leave and they relocated to the other side of the lake to the location known today as Indian Point (Hynes 1990:17).

The sources about the composition and size of Indian Point vary with some accounts stating there were 4-5 buildings and one family (Hynes 1990:17) to 20-25 buildings with four to five families (Maher 1992:6; Marcil and Greene 1992:9). They were still there as late as 1963 (Spracklin 1993) and it is not clear when Indian Point was abandoned. An undated orthophotograph within Labrador City town office displays the remains of at least four buildings and two ancillary structures at Indian Point along the eastern edge of the peninsula – suggesting that this was the Innu settlement. They disappeared in a 1969 orthophoto obtained from the Department of Fisheries, Forestry, and Agriculture. That photo reveals a cleared area with no structures and a series of paths running through the woods (Figure 20). However, for many years later, residents would recall seeing the remains of the Innu structures at the site (McLean 1995:56).

In the 1970s, a garage was built on the property. Three ballfields were also built on Indian Point in the late 1980s. The presence of the garage resulted in soil contamination that lead to limited remediation (Stantec 2010, 2011). The remediation focused around the building itself that stood to the northeast of the southernmost ballfield (Stantec 2011, Appendix A). While soil remediation might have impacted one of the former Innu structures, the destruction would not have been complete.

To explore if anything could remain, I visited this site several times over 2019 and 2021 and surveyed undisturbed forest areas both east and west of the ballfields. The forest contained an assorted assemblage of modern detritus – plastic bottles, metal cans, Styrofoam, oil drums, concrete fragments, and even a hunting post. No conspicuous 1960s artifacts were identified. However, it was clear that fill was added to the area for the ballfields and it is therefore possible that the remains of Innu structures remain buried, relatively undisturbed, underneath the fill.

As such, Indian Point presents an important opportunity for further research. Both oral and material histories of Indian Point can be uncovered through tracing Innu family histories through inter-

views and mechanical trenching excavations through fill layers following urban archaeology methods. This way, archaeology can bring Indigenous stories back into the history of Labrador West and live up to one of its most powerful potentials – denying the past its radical absence and resurrecting stories that were meant to be forgotten (González-Ruibal 2019:78).

Urban Legacies

In place of western Labrador's Indigenous peoples, a new built environment emerged – one planned and designed with inspiration of Garden City and "new town" ideas and meant to appeal to aesthetic tastes of those coming from more southern regions of North America. The thought was that following suburban design with wide curvilinear streets, large open space, ample amenities, and separate zones for housing, commerce, and industry would mitigate the chaos, squalor, and transience of shanty boomtowns of earlier mining periods (Bradbury 1983; Keeling 2010; Schoenauer 1976; White 2004). At the same time, Labrador City and Wabush were built at the height of Newfoundland's interest in modernist architecture with institutional buildings taking on many of the design elements and styles that came to embody the early post-Confederation period (Mellin 2011). Labrador City and Wabush were essentially built as modernist suburbs without an older urban core and in a climate where temperatures can reach minus 50 C.

In Labrador City, the construction of the townsite began in late 1959 with the construction of bunkhouses and cafeteria, the latter of which still stands today as a shopping centre and represents the oldest publicly accessible building in the communities (Figure 21). The construction accelerated in the first few years of the 1960s with IOC building hundreds of homes every year. Similarly, the company built all municipal services, sidewalks, water supply systems, sewage systems, schools, hospital, shopping centre, church, and social club (Geren and McCullough 1990:271-278). Contemporary newspaper accounts marvelled at "Labrador's instant city" where everything and everyone was new and yet containing conveniences of contemporary life like stores, schools, hospital, and recreation (Le Bastion 1965; Perlin 1964; The Daily News 1963; The Northern Miner 1962). It was incorporated as a town in 1961 – with the name given by Joey Smallwood (as opposed to "Carol" used earlier in the project). To avoid the stigma of running a company town, IOC transferred all municipal services to the town in 1964 (Geren and McCullough 1990:271).

Similar developments were taking place in Wabush. Unlike Labrador City, Wabush began in 1960 around a preliminary enrichment plant with a campsite of tents constructed out of plywood floors, canvas roofs, and wood stoves for heat. Trailers were brought in 1961 for families (Hynes 1990:12-19). The remains of this camp, including a preserved chimney from the manager's log cabin now lies within the property of the Wabush Mines and is not accessible to the public. The construction of the townsite began in 1962 following a similar style of Labrador City (Hynes 1990:20). Though it was only four miles away, Wabush was a separate – and closed (Hynes 1990:22) – community. As such, it had many of the same amenities like schools, churches, shopping plaza, ski hill, and the Wilfred Grenfell Hotel – designed like a chalet-style building. Like in Labrador City, newspaper accounts marvelled at the instant newness of the community, the wide variety of amenities supplied, and the modern landscaped look (Hynes 1990:20-24; Pickards Mather & Co. 1964; Staebler 1965; The Newfoundland Journal of Commerce 1963, 1965). Interestingly, the same engineering company responsible for designing the now-abandoned town of Gagnon, Quebec, Beauchamp, Baton, Lapointe (B.B.L.), was responsible for designing Wabush (Hynes 1990:9). The towns were designed identically with a divided highway acting as the main thoroughfare, with a mall on the east side and recreation, hotel, and

Figure 21: Old cafeteria, Labrador City (photo by Anatolijs Venovcevs).

housing on the west. People driving through Gagnon, Quebec today would be able to see the eerie similarities to Wabush in the vestiges of the former community.

The rapid construction of Labrador City and Wabush as company projects to house workers has given the towns today a distinct uniform look through a proliferation of standard housing forms. Almost all houses from this early period were either duplexes (called CC-types in Labrador City), bungalows, and row houses (Figures 22 and 23). This limited variety and tight urban design gives the older parts of Labrador City and Wabush a uniform appearance that is in line with many company towns of this period and yet at the same time markedly different from many municipalities around the province that were developed more organically.

There is also marked horizontal stratigraphy within the communities. Whereas the 1960s houses in both Labrador City and Wabush were built on site, technological shifts allowed for prefabricated homes to be brought in the late 1960s and early 1970s (Hynes 1990:20-21). This creates aesthetical differences between various sections of the communities that can be clearly seen in the present. However, a uniform housing stock also creates liabilities as houses age and degrade and require maintenance and upkeep at the same time.

Institutional structures break up this multiplicity of common forms – churches were and remain local landmarks, though several in Wabush are now homes (Figure 24). Schools and malls all follow a modernist style that is representative of the 1960s and 70s Newfoundland architecture around the province (Mellin 2011). Formal monuments in both communities are limited to mining and the Second World War. The latter is interesting since both communities were founded 15 years after the conflict. Military monuments in these communities can thus be seen as a way to fuse community spirit together through an imagined, recent history – though, given the large amount of young men from large variety of countries in the early days of mining, it is dubious if many of them fought in the war or even on the same side.

Deviations from the single-family residential dwellings were rare in the early days, mostly limited to the Embassy Apartments in Labrador City and apartments in Wabush that were for women, teachers, orderlies, and workers waiting on housing. However, a crack in the garden city design came early when the demand for housing could not compete with the supply and thus trailer courts were established as a temporary solution (Hynes 1990:21). The trailer court in Wabush was established in 1963. Trailers were also extensively used to house workers in Labrador City through the 1960s – though this early trailer court, located south of Bartlett Drive, disappeared by the 1970s. The need for accommodations did not diminish and in 1975, the Harrie Lake Subdivision with 511 mobile homes was built 1.5 km east of Labrador City (Gallant 1992:24-25; Geren and McCullough 1990:321; Maher 1992:11-12). These temporary solutions proved permanent as the construction of better houses never materialized creating a constant state of postponement (for similar reflections see discussions on Soviet housing in Olsen and Vinogradova 2019:9-10). Today the trailer park subdivisions present a completely different spatial layout from their earlier counterparts. They demonstrate a diverse mix of newer and older trailers, homes built on double lots, and a variety of forms and modifications to make the temporary and mobile permanent and fixed adapting trailers to the harsh climate and a limited amount of space for personal possessions (see also Caraher et al. 2017) (Figure 25).

The construction of the Labrador Mall on the north side of Labrador City in the early 1970s further deviated from the pattern. Rather than having a garden city community around a central hub with commercial and institutional facilities, shopping was moved to the outskirts of town – more akin to a modern suburb than a compact, urban-style community.

The fortunes of Labrador West shifted dramatically in the early 1980s with a crash in the iron ore market. Mining in Schefferville closed in October 1982 while operations in Labrador City and Wabush were greatly curtailed (Bradbury 1979, 1983, 1984, 1985; Geren and McCullough 1990:326-328; Mulroney 1983). Thousands of employees were laid off and half of the trailer homes in Harrie Lake were removed (Brown 1984). While both Labrador City and Wabush survived as mining communities, the downtown in the 1980s could be seen as a turn in the communities stemming from the corporate restructuring that followed. The population of Labrador West de-

Figure 22: Streetscape of Labrador City. Top, early 1960s housing, CC-type duplexes on the left and rowhouses on the right. Bottom left, late-1960s/early-1970s prefabricated homes; bottom right, Embassy Apartments (photos by Anatolijs Venovcevs).

Figure 23: Streetscape of Wabush. Top, 1960s housing, duplexes on the left and rowhouses on the right. Bottom left, late-1960s/early-1970s prefabricated homes; bottom right, apartments (photos by Anatolijs Venovcevs).

Figure 24: A sample of iconic buildings. Top left, McManus School (now given the Francophone school board), the first purpose-built school in Labrador City in iconic modernist style; top right, detail of JR Smallwood school in Wabush, now the regional Middle School, also in a modernist style; bottom left, Catholic Basilica of Our Lady of Perpetual Help in Labrador City built out of local stone; bottom right, Grenfell Hotel in Wabush, now used for contractor housing (photos by Anatolijs Venovcevs).

Figure 25: Trailer park subdivisions. Top left and top right – Harrie Lake. Bottom left and bottom right – Wabush trailer court. Note the utilidors utility hook-ups in the bottom left and the exposed wheels in the bottom right (photos by Anatolijs Venovcevs).

Figure 26: Fly-in, fly-out worker housing, Labrador City (photo by Anatolijs Venovcevs).

Figure 27: Partially abandoned Wabush Mall (photo by Anatolijs Venovcevs).

clined from 15,000 in 1976 to 9,000 in 2006 while at the same time there has been much less interest in corporate paternalism and garden city principles and more into labour-saving technologies and flexible mass production by massive international corporations that minimize their involvement in local communities (Thistle 2016:109-110).

This has had significant material implications for Labrador West. Essentially two things happened. One – the urban materiality of an earlier political and economic system that sought to establish a colonized northern frontier had to adapt to a new reality favouring flexible technologically centred labour (for similar developments and its implications see Venovcevs 2020a). Two – new urban forms emerged, namely the development of housing for fly-in, fly-out labour (Figure 26).

Some of these transitions were done more seamlessly than others – abandoned buildings, like the Wabush Mall that was partially shuttered in the closure of Wabush Mines from 2014-2018, are reminders of ongoing precarity of living in a single industrial town (Figure 27). Harrie Lake subdivision and other parts of town host outside contractors as well as families. Recently the iconic Wilfred Grenfell Hotel in Wabush was sold as contractor housing.

Other new and unique urban forms emerged as the communities transitioned from planned company towns to communities "riding the resource roller-coaster" (Wilson 2004; Rodon, Keeling, and Boutet 2021), namely unfinished subdivisions. Wabush had one with the Jean Lake subdivision on the south end of town – while planned in the 1970s with all municipal services installed, houses were not built there until the mid-2000s during a period of high iron prices (Genge 2006), creating a new street with aged infrastructure. A similar development took place on the southeast corner of Labrador City where the same boom period planned and established a subdivision, but which saw the construction stop almost overnight with the crash in prices, leaving behind a levelled and partially serviced area in wait for an unfulfilled future (Figure 28).

Changes over the last six decades also left waste and ruins on the peripheries of the communities. I already touched on this above when discussing the ancillary impacts of resource extraction, but these can be seen within the communities themselves. For example, this can be seen in the abandoned Captain William Jackman Memorial Hospital built in 1964 – while not a product of changes in industry itself, the construction of a new hospital and the heavy, toxic material legacy of the old, made the old redundant and difficult to demolish or repurpose (Figure 29).

Shifting modes of transportation over the same period have also left their marks of the urban landscape. Within Labrador City, on the shore of Little Wabush Lake, there remains the vestiges of two

Figure 28: Subdivision prepared and planned for construction but never started (photo by Anatolijs Venovcevs).

Figure 29: The abandoned Captain William Jackman Memorial Hospital – the sign for the hospital is missing (photo by Anatolijs Venovcevs).

Figure 30: Remains of a float plane dock in Labrador City – area SS2 during the pedestrian surveys (photos by Anatolijs Venovcevs).

Figure 31: Remains of the railroad in the Wabush Industrial Area, locomotive engine and remains of the railway crossing (photos by Anatolijs Venovcevs).

floatplane docks that act as peripheral, liminal spaces. Remains of concrete foundations, barrels, and corroded woodwork represent the archaeological remnants of when these places were useful pieces of local infrastructure (Figure 30). Today they act as informal nodes that attract visitation by locals that leave behind material culture in the forms of cans, coffee cups, straws, cigarette butts, and food containers (see the material culture of mining section below). In Wabush, shifts in transformation from rail to highway can be found within the industrial area. When commissioned, the main method of getting in and out of town was through the railroad and thus the industrial area was designed with the railroad in its centre. Through the construction of the highway and more flexible methods for the delivery of goods, the railway spur in the industrial area became defunct – even stranding a 1962 locomotive engine that stands as an informal monument to Labrador's industrialization (Figure 31).

In place of the railway, the car became dominant. While the communities of Labrador West were car-centric by design and as early as the mid-1970s testimonials noted that there was nothing to spend mining's high-paying salaries on than on goods like motorized vehicles (Decks Awash 1976:16-17), the proliferation of modern material culture highlights how the past does not always fit well in the present. For one, the early neighbourhoods in both Labrador City and Wabush were designed with centralized garages with one carport for two families. These quickly disappeared in Labrador City in favour of expanded driveway parking and garages now only visible in faint wooden footings. Garages remain in Wabush and over the years have been a source of headache for the Town as the garages are not tied to home ownership creating an administrative nightmare as houses get sold but garages stay behind. At the same time, the proliferation of personal possessions over the last fifty years, while a common condition around the world is conspicuous in Labrador City and Wabush as makeshift and temporary garages, sheds, and haphazard parking jobs clutter the back alleys and front yards in both communities drawing attention to how the proliferation of personal possessions has surpassed the best city planning from half a century ago (Figure 32).

The final big material shift has been the growth of cemeteries in both Labrador City and Wabush. While I did not do a formal tally – something that I invite others to do in the future – from observation I noted that very few graves in both cemeteries are from the 1960s, 70s, and 80s. Those that are present tend to be new-borns or miners that died

Figure 32: Garage heritage. Top left, footprint of a demolished garage in Labrador City behind a set of row houses; top right, contemporary sheds in Wabush; bottom left and right, historic garages in Wabush (photos by Anatolijs Venovcevs).

on the job. The number of graves starts to pick up in the 90s and accelerates from the 2000s into the present. Interestingly, the neighbouring community of Fermont, Quebec was built without a cemetery – nobody intended to grow old and die there (Sheppard 2011), and this holds true for the early days of Labrador City and Wabush. Thus, what can be seen is the solidification of a community identity and a sense of belonging to a place (for a similar argument and a brilliant local environmental history see Hammond 2010). More people are seeing Labrador West as home and choosing to retire there – a situation that exacerbates the region's lack of retirement housing. Ironically and tragically, this is in contrast to the growth in the casualization of mine labour. While Labrador City and Wabush are finally fulfilling their original goals of creating a settled extractive frontier, the economic rationale for their existence is being undermined. How these communities will continue to adapt to these changing circumstances are for other social scientists, including other archaeologists, to analyse and interpret.

Mining Legacies

The changing material circumstances of Labrador West can also be seen in the mines and mine wastes themselves. Despite the mines underpinning the reason for colonial settlement in the region, my investigation of the mines themselves was limited as they were both active industrial areas and thus in a constant state of motion (Figure 33). As such, future archaeologists and – more importantly – all members of future generations will have to contend with mining legacies long after the mines shut down. By definition, resource extraction industry is a finite economic activity. What remains is mine waste, defined as "solid, liquid, or gaseous by-products of mining, mineral processing, and metallurgical extraction. They are unwanted, have no current economic value and accumulate at mine sites" (Lottermoser 2010:3) which consists of "heterogeneous materials consisting of ore, gangue, industrial minerals, metals, coal or mineral fuel, rock, loose sediment, mill tailings, metallurgical slag and wastes, roasted ore, flue dust, ash, processing chemicals, and fluids" (Hudson-Edwards, Jamieson, and Lottermoser 2011:376).

While archaeology along with associated fields like history and geography have been adept at studying the social and material legacies of mining heritage (Bartolini and DeSilvey 2020; Goin and Raymond 2001; Keeling and Sandlos 2017; Palmer and Neaverson 1998; Robertson 2006; Rhatigan 2020; Quivik 2007; Storm 2014), the scale of contemporary open pit mining operations challenges us with scale. How does one sublate a mine that produces 55,000,000 tons of ore each year? And, given how most of the rock is not iron, how do we account for landscapes made out of mountains of waste rock and lakes filled with mine tailings as archaeological objects on a scale that dwarfs all embodied human understanding?

One way that I approached this question was by documenting how the mines make themselves known throughout the region. This can be in viewsheds where the mines can be seen from most parts of Labrador City and Wabush or this can be in the soundscapes where the sound of heavy machinery can be heard in many parts of town as a form of auditory spill – sound, after all, is material (Primeau and Witt 2018). The indirect presence of the mines could be seen in the Smokey Mountain Ski Club where the encroachment of the mines made it so that blast gates have been installed on the trails (Figure 34).

Figure 33: IOC mine. For scale, trucks in the bottom left hand corner are five meters tall (photo by Anatolijs Venovcevs).

Figure 34: Knowing mines in Labrador West. Top left, Wabush mines across from Little Wabush Lake; top right, safety gates on the Labrador City ski hill; bottom left, red water downstream from Wabush Mines tailings field; bottom right, dust blowing through Labrador City (photos by Anatolijs Venovcevs).

"Red water" is another form in which mines make themselves felt through their material effects. It is a symptom of concentrations of iron oxides floating in water mostly emanating from mine tailings. Since the start of mining, tailings – a slurry of quartz, silica, asbestos, iron, other trace minerals, and fluxes and flocculants used in processing and disposal that all come as a result of crushing, sieving, and concentrating low-grade ore into commercially viable materials (LeCain 2009) – were dumped into Big Wabush Lake and Flora Lake by IOC and Wabush Mines, respectively. The acceleration of mining over time has also accelerated waste and local environmental awareness of the issues (Hammond 2010:55-62) – as for example in the tailings field in Flora Lake that has now spilled out of the lake boundaries. While the construction of berms and dykes and the addition of flocculants helps mitigate the effects of red water and other adverse effects, it is never absolute. Ecological alternations in the pH levels from red water, for example, impacts fish and other wildlife down to the cellular level (Payne et al. 2001). Its presence downstream from tailings fields is a constant material reminder of the mining industry.

Another issue that has remained a source of local environmental concern is the issue of silica- and asbestos-bearing dust blowing off the mines and the tailings (Hammond 2010:41-55; Various 1979:149). Dust from the tailings have grown especially bad when the tailings fields raised above the water levels of their associated lakes into which they were dumped. While efforts have been made to reduce the dust by revegetating the inorganic tailings (Hammond 2010:61; Pickett 2005; Rio Tinto 2007), the dust continues to be a tangible lived reality for the people in Labrador West (Careen 2021; Genge and Genge 2005a; Genge and Genge 2005b; Genge 2009b).

Dust covers every surface, abrades the skin on a windy day, absorbs into trees that dull chainsaws, glistens in the snow and the spring runoff, and ultimately creates a thin archaeological stratum over the entire region giving it a distinct aesthetic quality. Thus, it can be postulated that the towns, cabins, plants, people, and ground all become a part of a low-level tailings zone that blur the boundaries between the mines and the regions the sustain them. As such, the archaeological implication of this observation is that ultimately the mine and the mining region become one and in the same (Figure 35).

Material Culture of Mining Today

While material culture has been the cornerstone of my research into the archaeology of mining in Labrador West – seen in the railway, survey camps, and urban legacies discussed above – I wanted to also see

Figure 35: Iron dust on the snow in early May (photo by Anatolijs Venovcevs).

what types of material culture legacies are generated in the communities today in the form of everyday garbage.

Garbage disposal in Labrador West has a long and complicated history as is common in all contemporary northern communities that had to balance necessities of modern legislation, proliferation of a single-use society, and the realities of geographical isolation (for example see Keske et al. 2018). Originally, municipal garbage was either buried with waste rock or burned and then buried under sand (Royal Commission on Labrador 1974b:691-692). Later a regional incinerator was built that proved to be a major source of carcinogenic dioxins before it, ironically, burnt down itself (Genge 2009a, c). Now, municipal waste is disposed at a landfill in Labrador City. Other things like refundable bottles, metal scrap, and tires have their own waste streams though these are complicated by distance and isolation as well.

Figure 36: Labrador City and Wabush in detail (map by Anatolijs Venovcevs).

Given these complexities, I wanted to investigate what material is overlooked and left behind in such circumstances. As everything in Labrador City exists as a direct or indirect result of the mining industry, objects that are left behind are artifacts of the mining industry in the same way glass bottles and oil drums are in the case studies mentioned above. To study this, I picked five peripheral spaces around Labrador City that were regularly trafficked but not officially maintained. These were the two former float plane docks – labelled Surface Survey (SS) 1 and 2 (SS2 is also the location of a current boat launch), sections of the unfinished subdivision SS3 and SS4, and the former location of five construction trailers near the unfinished subdivision SS5 – given that the location of the construction trailers were clearly delineated, this was further subdivided into Loc 1 through Loc 5 going north to south (Figure 36). I then field walked these areas at 1 metre intervals photographing every single object with a scale and documenting any large significant features. In total, the area surveyed was 12,940 square metres.

In total, the work produced 1,556 photographs which were analysed by Maria Winther Sørensen, an alumnus of the archaeology program at UiT: The Arctic University of Norway. These were then organized following a modified version "Classification System for Historical Collections" (Canadian Parks Services 1992; for an example of application in other contexts see Venovcevs 2017). The results of the analysis are presented in Tables 1 through 7 below.

In total, Maria and I documented 3,003 artifacts over the five surface surveys. As the tables above demonstrate, most of the artifacts was typical of contemporary material culture. Cigarette/joint butts were the most common objects in the surveys especially in places that received heavy pedestrian traffic – SS2 as a boat launch and SS4 that had a pedestrian path running through it. Drink cans – often, but not always, domestic brands – were also common, as well as Tim Hortons coffee. Cans and coffee cups were more common in places where people would linger, SS1 and SS2, as opposed to transitory spaces like SS3 and SS4. The distinct physical remains of former trailer locations in SS5 highlights the fact that even ephemeral occupations leave behind lasting

Table 1: Surface Survey 1 Results – June 24, 2021

Artifact Class	Total		Percentage of Total
Architectural		16	16%
Concrete	1		
Nail	1		
Wood	14		
Food-related		29	29%
Bottle cap	4		
Bottle (glass)	1		
Can (beer)	2		
Can (soda)	4		
Can (energy drink)	2		
Cup (coffee)	3		
Cup (other)	3		
Drinking straw (plastic)	3		
Food container (paper)	1		
Food container (plastic)	6		
Personal		28	28%
Cards	3		
Cigarette/joint butts	20		
Coin	1		
Glove	3		
Medical facemask	1		
Tools and Equipment		13	13%
Bolt	1		
Bubble wrap	1		
Car cupholder	1		
Container (paper)	1		
Flagpole (plastic)	1		
Machinery component	1		
Rubber band	1		
Styrofoam	1		
Towel (cloth)	1		
Tube (plastic)	1		
Washer	1		
Wiper blame	1		
Wire	1		
Unknown		14	14%
Unknown glass	1		
Unknown paper	11		
Unknown plastic	2		
Total	100		100%

Table 2: Surface Survey 1 Revisit Results – July 23, 2021

Artifact Class	Total		Percentage of Total
Architectural		8	25%
Nail	1		
Wood	7		
Food-related		1	3%
Food container (plastic)	1		
Personal		3	9%
Cigarette/joint butts	2		
Glove	1		
Tools and Equipment		8	25%
Metal box	1		
Cardboard fragment	6		
Wire	1		
Unknown		12	38%
Unknown plastic	11		
Unknown rubber	1		
Total	32		100%

Table 3: Surface Survey 2 Results – June 24 – 25, 2021

Artifact Class	Total		Percentage of Total
Architectural		195	12%
Asphalt	1		
Concrete	8		
Nail	1		
Wood	185		
Furnishings		2	<1%
Carpet	1		
Metal plate	1		
Food-related		178	11%
Banana	1		
Bone	1		
Bottle cap	35		
Bottle (glass)	4		
Bottle (plastic)	17		
Can (beer)	8		
Can (soda)	3		
Can (energy drink)	1		
Can (spritzer)	1		
Cans (unknown)	4		
Can openers	6		
Cup (coffee)	14		
Cutlery (plastic)	3		
Lid	21		
Drinking straw (paper)	3		
Drinking straw (plastic)	31		
Food wrapper	8		
Food container (paper)	1		
Food container (plastic)	7		
Gum	3		
Receipt	1		
Tea	1		
Tin foil	1		
Toothpick (plastic)	2		
Twist tie	1		
Personal		405	24%
Ball	1		
Bracelet	1		
Cannabis container	4		
Cigarette/joint butts	369		
Cigarette package	8		
Coin	1		
Dog toy	1		
Eyeglasses	1		
Glove	4		
Hair elastic	1		
Lighter	1		
Lottery ticket	3		
Medical facemask	1		
S-hook (plastic)	1		
Shoelaces	1		
Sock	4		
Sunglasses	1		
Tampon applicator	1		
Tools and Equipment		349	21%
Air freshener	1		
Bag (plastic)	1		
Bolt	2		
Container (paper)	29		
Electric wire	8		
Iron pellet	1		
Pen	12		
Pipe (metal)	1		
Reflectors	17		
Rod	1		
Strap band (plastic)	10		
Styrofoam	209		
Tag (plastic)	1		
Thread (fabric)	18		
Thread (plastic)	3		
Towel (paper)	15		
Tube (plastic)	1		
Washer	2		
Wire	5		

Table 3 continued on next page

Table 3 (Continued): Surface Survey 2 Results – June 24 – 25, 2021

Unknown		534	32%
Unknown fabric	10		
Unknown foam	1		
Unknown foil	3		
Unknown glass	44		
Unknown leather	3		
Unknown material	12		
Unknown metal	17		
Unknown rubber	4		
Unknown paper	92		
Unknown plastic	332		
Unknown plastic packaging	16		
Total	1663		100%

Table 4: Surface Survey 2 Revisit Results – July 23, 2021

Artifact Class	Total		Percentage of Total
Architectural		22	12%
Asphalt	2		
Nail	1		
Wood	19		
Food-related		91	48%
Bottle cap	2		
Bottle (glass)	74		
Bottle (plastic)	1		
Can (soda)	4		
Can (energy drink)	2		
Cup (coffee)	1		
Cutlery (plastic)	1		
Drinking straw (plastic)	4		
Food container (paper)	1		
Food container (plastic)	1		
Food wrapper	1		
Gum	1		
Lids	1		
Receipt	1		
Personal		13	7%
Balloon	1		
Cigarette/joint butts	9		
Lighter	1		
Medical facemask	1		
Medicine package	1		
Tools and Equipment		28	15%
Air freshener	1		
Bag (plastic)	1		
Band (nylon)	1		
Bicycle	1		
Car tire	2		
Pipe (metal)	2		
Reflectors	1		
Rod	1		
Styrofoam	13		
Towel (paper)	2		
Tube (plastic)	1		
Wire	2		
Unknown		36	19%
Unknown material	1		
Unknown metal	2		
Unknown paper	7		
Unknown plastic	26		
Total	190		100%

Table 5: Surface Survey 3 Results – June 29 – 30, 2021

Artifact Class	Total		Percentage of Total
Architectural		34	21%
Asphalt	6		
Brick	2		
Wood	26		
Food-related		32	20%
Bottle cap	1		
Bottle (glass)	15		
Bottle (plastic)	3		
Can (energy drink)	1		
Can (unknown)	2		
Cutlery (plastic)	1		
Food container (plastic)	5		
Lid	1		
Receipt	1		
Tin foil	1		
Personal		9	5%
BB gun ball	1		
Child's drawing	1		
Fireworks	2		
Glove	1		
Lighter	1		
Screwdriver	1		
Snowmobile part	2		
Tools and Equipment		23	14%
Bag (plastic)	2		
Car tire	3		
Pipe (metal)	3		
Strap (plastic)	4		
Styrofoam	7		
Tape	1		
Tube (plastic)	3		
Unknown		65	40%
Unknown metal	1		
Unknown paper	10		
Unknown plastic	53		
Unknown rubber	1		
Total	163		100%

Table 6: Surface Survey 4 Results – June 30, 2021

Artifact Class	Total		Percentage of Total
Architectural		88	24%
Nail	2		
Wood	86		
Food-related		83	22%
Bottle cap	3		
Bottle (glass)	57		
Can (beer)	3		
Can (energy drink)	2		
Can opener	1		
Cup (coffee)	2		
Drinking straw (plastic)	4		
Food container (paper)	2		
Food container (plastic)	3		
Lid	2		
Product label	2		
Tin foil	2		
Personal		78	21%
Cigarette/joint butts	76		
Cigarette package	1		
Lighter	1		
Tools and Equipment		53	14%
Band (fabric)	3		
Bolt	1		
Duct tape	4		
Electric wire	1		
Land survey marker	1		
Rod	16		
Strap (rubber)	1		
Strap (plastic)	15		
Thread (plastic)	4		
Towel (paper)	1		
Tube (plastic)	1		
Wire	5		
Unknown		73	19%
Unknown fabric	4		
Unknown glass	37		
Unknown metal	2		
Unknown paper	3		
Unknown plastic packaging	24		
Unknown rubber	3		
Total	375		100%

Table 7: Surface Survey 5 Results – June 30, 2021

Artifact Class	Loc 1 Total (and Percentage)	Loc 2 Total (and Percentage)	Loc 3 Total (and Percentage)	Loc 4 Total (and Percentage)	Loc 5 Total (and Percentage)
Architectural	41 (31%)	25 (29%)	34 (35%)	9 (20%)	44 (37%)
Asphalt		1	1		
Brick					1
Concrete	1				
Nail	2	13	3	3	12
Tile		1	4		
Wood	38	10	26	6	31
Furnishing	4 (3%)				
Fabric	4				
Food-related	35 (27%)	26 (31%)	9 (9%)	2 (4%)	5 (4%)
Bottle cap	4	5	4	1	2
Bottle (glass)	29	20			
Can (energy drink)	1				
Can opener			1		
Cooking spoon (wood)					1
Cutlery (plastic)	1		1	1	
Drinking straw (plastic)					1
Lid					1
Plastic (packaging)			2		
Tin foil		1	1		
Personal	4 (3%)	7 (8%)	15 (15%)	6 (13%)	4 (3%)
Cigarette/joint butt	4	5	13		4
Pen		1	1		
Pen cap		1			
Product label			1		
Tools and Equipment	20 (15%)	4 (5%)	16 (16%)	11 (25%)	19 (16%)
Barbed wire		2			
Bolt					1
Cord (metal)				1	
Cord (plastic)			6	3	
Cord (rubber)			1		7
Electric wire			2	2	
Iron pellet				1	
Pipe (metal)	1				
Pipe (plastic)	3	1			
Reflectors					1
Ring (metal)	1	1			
Ring (plastic)	1		1		
Ring (rubber)			1		
Rods	4		1		1
Saw blade			1		
Strap band (plastic)	5		1	2	4
Styrofoam					3
Tape (rubber)			2		
Tube (plastic)	5			2	2
Unknown	28 (21%)	23 (27%)	25 (25%)	17 (38%)	47 (40%)
Unknown fabric					1
Unknown metal	2		3	2	5
Unknown paper		1	1	1	3
Unknown plastic	24	22	20	13	35
Unknown rubber	2		1	1	3
Total	132 (100%)	85 (100%)	99 (100%)	45 (100%)	119 (100%)

Figure 37: Child's drawing from the surface surveys (photo by Anatolijs Venovcevs).

archaeological signatures. The variable artifact assemblages between the five locations in SS5 also has implications to household archaeology where identical work trailers have divergent artifact collections.

Artifacts from some surveys bring us tantalizingly close to the users who have passed through the space as, for example, four socks found in SS2. Perhaps from former wet feet? Or a child's drawing in SS3 that likely blew away from one of the near-by houses and its ephemeral trace documented by my chance encounter with it during the survey (Figure 37). The survey marker in SS4 is the only object still in use – a land delineator for a subdivision that has been infinitely postponed. Other objects serve as chronological indicators – medical masks and legal cannabis containers are markers of a very recent and knowable present. Though, the presence of pull tabs highlights that despite many recent objects, open surfaces can possess incredible time depth (Figure 38).

Overall, the artifacts from the survey reflect the material from the modern world with a combination of ephemeral paper objects, more durable aluminium cans, and nearly eternal plastic objects. It should be noted that large numbers of artifacts were unidentifiable often due to the brittle single-use nature of many of our items. Objects break down beyond human recognition but still exert considerable agency, especially as plastic is a toxicant (Liboiron 2021). Ultimately, there is both profusion and heterogeneity in these assemblages – a characteristic that defines contemporary material culture (for more see the Discard Studies blog – https://discardstudies.com/).

Yet, among the profusion of mass-produced material culture brought in from a globally distant elsewhere there are two objects that are unique to Labrador City – two iron pellets (found in SS2 and SS5, Loc 4). Pellets are spheroid objects approximately 1 cm in diameter and consist of approximately 64% iron. Though they might look like pebbles, they are wholly anthropogenic objects made from extracted fine iron powder and a binding agent, occasionally a flux. They are made for easy transport and smelting directly into the steelworks. As they are small, they could be easily transported in clothing and vehicles and they made occasional appearances throughout my fieldwork on trails, streets, and parking lots. They are yet another example of how ob-

Figure 38: A sample of artifacts from surface surveys – iron pellet is in the bottom right corner (photos by Anatolijs Venovcevs).

jects from the mines readily spill out into the regions that surround them.

Pellets are what makes Labrador City unique and is the reason for why Labrador City is there in the first place and why all the other objects are there as well. In a sense, they represent the material absence of things that have disappeared – mountains, landscapes, and traditional territories of Indigenous peoples only to be replaced by material culture from elsewhere – a material culture that we must endeavour to understand as it has and will continue to have implications for thousands of people in the present and future.

Conclusion

While this project has cast an incredibly wide net by tackling the mining legacies of western Labrador at a number of scales and at a number of sites, I was fostered into doing this in part due to the open-ended, theoretical nature of the broader Unruly Heritage Project (see Olsen and Pétursdóttir 2016) and in part due to the extremely generous contribution of funding bodies and university and community partners (please see the acknowledgements). This proved productive as in order to understand mining legacies in western Labrador one must consider them from as many angles as possible given the rapid transformations that industrialization has brought to the region. It is my hope that this work will foster deeper research on the many facets of this region.

Up to this point, Labrador City and Wabush has remained largely under-researched within social sciences and humanities in the province (though see Driscoll 1984; Hammond 2010, 2015; Hilton 1968; Ponte and Kowal 2015, 2016; Thistle 2016; Thistle and Langston 2016). One reason for this might be that they both fall outside the narratives the province likes to tell about itself – one focused on the settler Euro-Newfoundlander culture of the island portion of the province or on the many Indigenous cultures of Labrador and Newfoundland. Labrador City and Wabush defy these tropes by being a contemporary industrial Newfoundland community in a largely Indigenous Labrador.

The jellybean row mailboxes, iconic around St. John's and the island but relatively unseen in most of Labrador, underscore this connection in a subtle but material way – through drawing links down the railroad and across the Gulf of St. Lawrence, Labrador West becomes a conspicuously-Newfoundland exclave (Figure 39).

Yet, when one considers the history of industrialization and relocation of the post-Confederation Smallwood years, Labrador West fits into the high-minded optimism and brutally modernist planning. It is the other half of the story of the province that the architect Robert Mellin drew attention to in his book Newfoundland Modern (2011) – houses and iconic outports are only half of the story of the province that got rapidly, though imperfectly, modernised in a few rapid decades in the middle of the last century. As the stories of the communities in Labrador West demonstrate, such high-minded ambitions hardly ever achieved their goals and yet we must live with that heritage regardless – in part because it is impossible to remove and in part because it has started to evoke feelings of identity and association among tens of thousands of people who at one point or another have called these places their home.

Figure 39: Jellybean row mailbox in Labrador City, one of the small material links that connects western Labrador to Newfoundland's industrial colonialism (photo by Anatolijs Venovcevs).

As such and in addition to archaeological sites I registered as part of this fieldwork – Ashuanipi Runway (FgDn-04), D'Aigle Bay (FgDr-02), and Twin Falls (Venovcevs and Williamson, this volume) – we should also consider granting some level of historical built environment protection to older neighbourhoods of Labrador City and Wabush given their uniform style, iconic design, and origins in a transformative historical period. Precedents of modern built heritage have already been set in other jurisdictions across Canada and the world – including an urban heritage environment designation for a neighbourhood of post-war workers' housing in Kirkenes, Norway (my other case study).

Ultimately, Labrador West should be tied into a broader picture of Newfoundland and Labrador industrial/military heritage that emerged in the early twentieth century and accelerated after the Second World War leading to irrevocable social, geographic, and economic changes within the province. If communities like Corner Brook, Grand Falls-Winsor, Gander, Buchans, Stephenville, Happy Valley-Goose Bay, Churchill Falls, Argentia, and Come By Chance are any indication – in addition to dozens of fish plants in every corner of the province – Newfoundland and Labrador is a very industrialised place. We need to study that heritage accordingly.

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Twin Falls Revisited –A Survey of Labrador's First Industrial Community

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Figure 1: Location of Twin Falls within Labrador (map by Anatolijs Venovcevs).

The previous summer witnessed a continuation of fieldwork which began in 2019 (Venovcevs 2020) at the abandoned hydroelectric dam and community at Twin Falls, Labrador (Figure 1). The purpose of this revisit was to conduct a more in-depth survey to gain better understanding of the scope and nature of the remains at the hydroelectric power plant, associated infrastructural features, townsite and workcamp tied to the power plant, as well as to record the current conditions of the site to better understand the processes that have transpired since the power plant was mothballed in 1972 (Figure 2).

This research was conducted as part of Anatolijs's fieldwork on the contemporary archaeology of Labrador West (see Venovcevs, this volume). This was part of a larger PhD project on the archaeology of twentieth-century single-industrial mining towns in Canada, Norway, and Russia as part of the research project Unruly Heritage: An Archaeology of the Anthropocene out of UiT: The Arctic University of Norway (Olsen and Pétursdóttir 2016). For Twin Falls, James Williamson who provided the vital technical expertise in drone operations and photogrammetry necessary for this project joined Anatolijs.

The fieldwork at Twin Falls consisted of a drone survey of six areas, site visitation and photography of all visible structural remains, limited 3D photogrammetric modelling of some large standing structures, and the excavation of two test pits. The results illustrate the massive amounts of lingering industrial material from Newfoundland's post-Confederation industrial boom that reshaped the cultural and physical geography of Labrador. As heritage from this recent industrial period, Twin Falls presents a complicated narrative that saw the origin of three contemporary communities (Labrador City, Wabush, and Churchill Falls) and involvement of a sizable Labradorian workforce. As such, it contains a large assemblage of 1960s hydroelectric technology that deserves attention for its role in the energy history that has reshaped the human, economic, and political geography within Labrador and Newfoundland.

While Twin Falls can no longer fulfil its industrial function, it is still visited and remembered. Further engagement with Twin Falls can foster feelings of historicity, identity, and association – not just within Western Labrador communities but also within Labrador since it intersected the lives of many different groups and families. However, in so doing, Twin Falls demonstrates one of the harsh realities of heritage in the Anthropocene – it can be contaminated, conflicted, overbearing, and involuntary

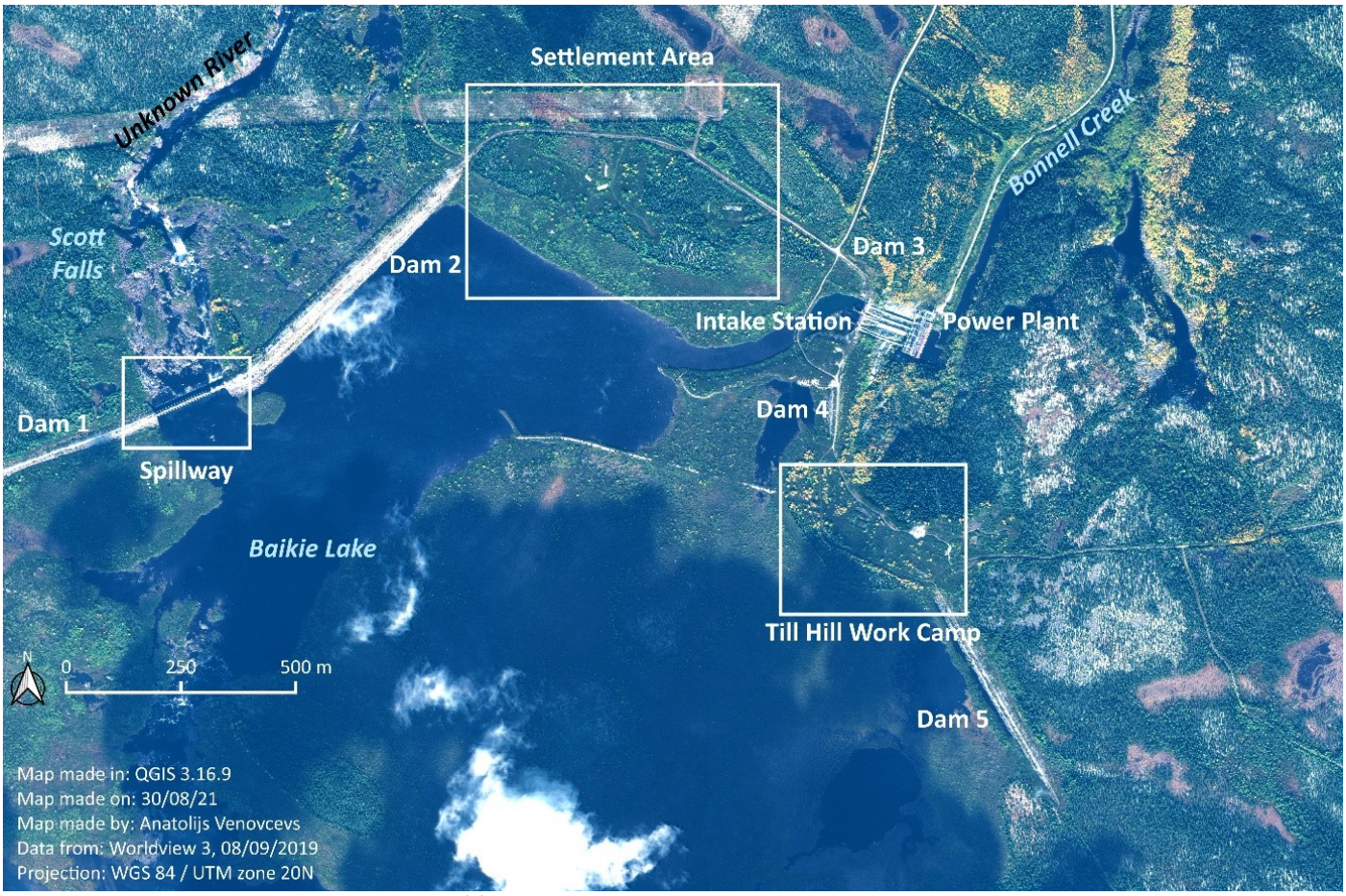


Figure 2: Twin Falls today (map by Anatolijs Venovcevs).

(Pétursdóttir 2019; Olsen and Pétursdóttir 2016; Olsen and Vinogradova 2019; Stewart, Jungkind, and Losey 2020). Paying attention to this recent heritage is important because it is here to stay – by its sheer mass and the impossibility of complete erasure – and because its legacies continue to play a role in contemporary life and politics of the province – the long string of controversies surrounding the succeeding hydroelectric projects being a prime example.

Geographic, Historic, and Research Context

Twin Falls is located at the outflow of Baikie Lake along the Unknown River, a tributary of the Churchill River (also known as Grand River or Mishta-shipu). The river is called the "Unknown" because at the time of construction the source of the river was not known (Excavating Engineer 1962, 7). Likewise, the annual flow of the river was not measured – recordings were only taken during the summer months of 1955. To compensate, the engineers designed for a hypothetical 100-year-flood creating a robust concrete and earthen facility (Water Power 1963, 10-11).

Today, the site is located 34 kilometres west of the present-day community of Churchill Falls. It lies within the traditional territory of the Innu and the NunatuKavut Inuit whose ancestors were in the area long before the arrival of the Twin Falls project and other industrial ventures (Brake 2007; Cockerill 2004; Loring et al. 2003; Neilsen 2016).

While a potential for a hydroelectric plant at Twin Falls was first put forward in 1937 (Geren and McCullough 1990, 20), it was not until the construction of the Quebec North Shore & Labrador railway (QNS&L) in 1954 that such a project became financially feasible. The railroad opened the interior of Labrador for large-scale resource extraction leading to the towns of Labrador City and Wabush (for a more in-depth discussion on the railroad and Labrador City and Wabush see Venovcevs, this volume, and the referenced literature there-in). To supply the new towns with power, a new corporation (Twinco) was formed out of the joint interests of the two mining consortiums behind the mines in Labrador City and Wabush along with BRINCO (British Newfoundland Corporation Limited) – entrusted to exploit the hydroelec-

Figure 3: Twin Falls airstrip north of the Trans-Labrador Highway – seen in the upper right (photo by James Williamson).

tric power in the Labrador interior, namely Churchill Falls (Smith 1975). McNamara Construction and Shawnigan Engineering Company Limited were the two main contractors for the project (McNews 1960).

To access the project site by land, people and equipment arrived at the railway siding at Esker, at mile 286 (460 kilometres) on QNS&L and then travelled 125 miles (200 kilometres) over a gravel road to reach the destination (Cockerill 1971; McNews 1960:10). An alternative method of transportation was the airplane with a float plane dock at Harland's Landing (McLean 1989a, 1) and a larger airstrip 17 kilometres north of Twin Falls (Figure 3). As such, Twin Falls was well-connected with flights to central and coastal Labrador along with daily flights west to Labrador City for mail and medical appointments (McLean 1989a, 1, 6-8).

The construction project started in 1960 with an access road to the site and a work camp – Till Hill (McNews 1960, 10). The original plan was to reroute water through Ossokmanuan Lake and Baikie Lake through a series of nine rock and earth fill dikes and a spillway and into a power channel leading to the intake station for the Twin Falls power house (McLean 1989b, 2-3). The water would then proceed through 13.5-foot (4.1-metre) penstocks and follow a 300-foot (91.4-metre) drop with each penstock powering a 60,000-horsepower turbine (Excavating Engineer 1962, 9; Water Power 1963, 10). The first two generators came online in May 1962, followed by two more in 1966, and a final one in 1968 bringing a maximum horsepower to 300,000 (Geren and McCullough 1990, 266; The Newfoundland Journal of Commerce 1968; Shawinigan Engineers Co. Ltd. 1969). These developments followed developments elsewhere in Labrador with the 1962 turbines providing power to Labrador City and Wabush and their mines, in 1966 powering a major expansion at the mines, and in 1969 providing power for the construction of Churchill Falls. The nine earth and fill dams created a reservoir of approximately 210 square miles (544 square kilometres) to power Twin Falls (Shawinigan Engineers Co. Ltd. 1969). Twin Falls is thus the second hydroelectric dam in Labrador – the first is Menihek Dam built in 1954 to supply electricity to Schefferville and still operating in a reduced capacity under the auspices of Hydro Québec (Hydro Québec 2006).

Like most projects of the period, Twin Falls relied on a great deal of outside labour. This was predominantly comprised of Newfoundlanders but others came from Nova Scotia, Quebec, and Europe (Cockerill 1971; McNews 1960, 9, 16). Twin Falls also had a contingent of a native Labradorian workforce during construction, as well as eight families recruited from North West River to build and operate the plant, providing half of the necessary full-time labour (Baikie 2011, 2008; Budgell 2013; McLean 1989a, b). The reasoning was that local Labradorian labour would provide a more stable workforce in contrast to the high rate of turnover seen in Labrador City, Wabush, and QNS&L projects (Cockerill 1971). At its peak, the project had approximately 200 workers and 21 families during construction; 15 families stayed for the operation (McLean 1989b, 6).

The community was divided into two parts – the Till Hill construction camp south of the intake and the townsite to the west. The exact amount of buildings in the community is unknown as some buildings were built, moved, or demolished during the period the site was in use. Based on 1972 orthoimagery from the Department of Fisheries, Forestry, and Agriculture and old photos from Them Days Museum and Archives Inc., Till Hill contained 12 buildings in total including a mess hall, a recreation hall, and a clinic. At the townsite, in 1962, six

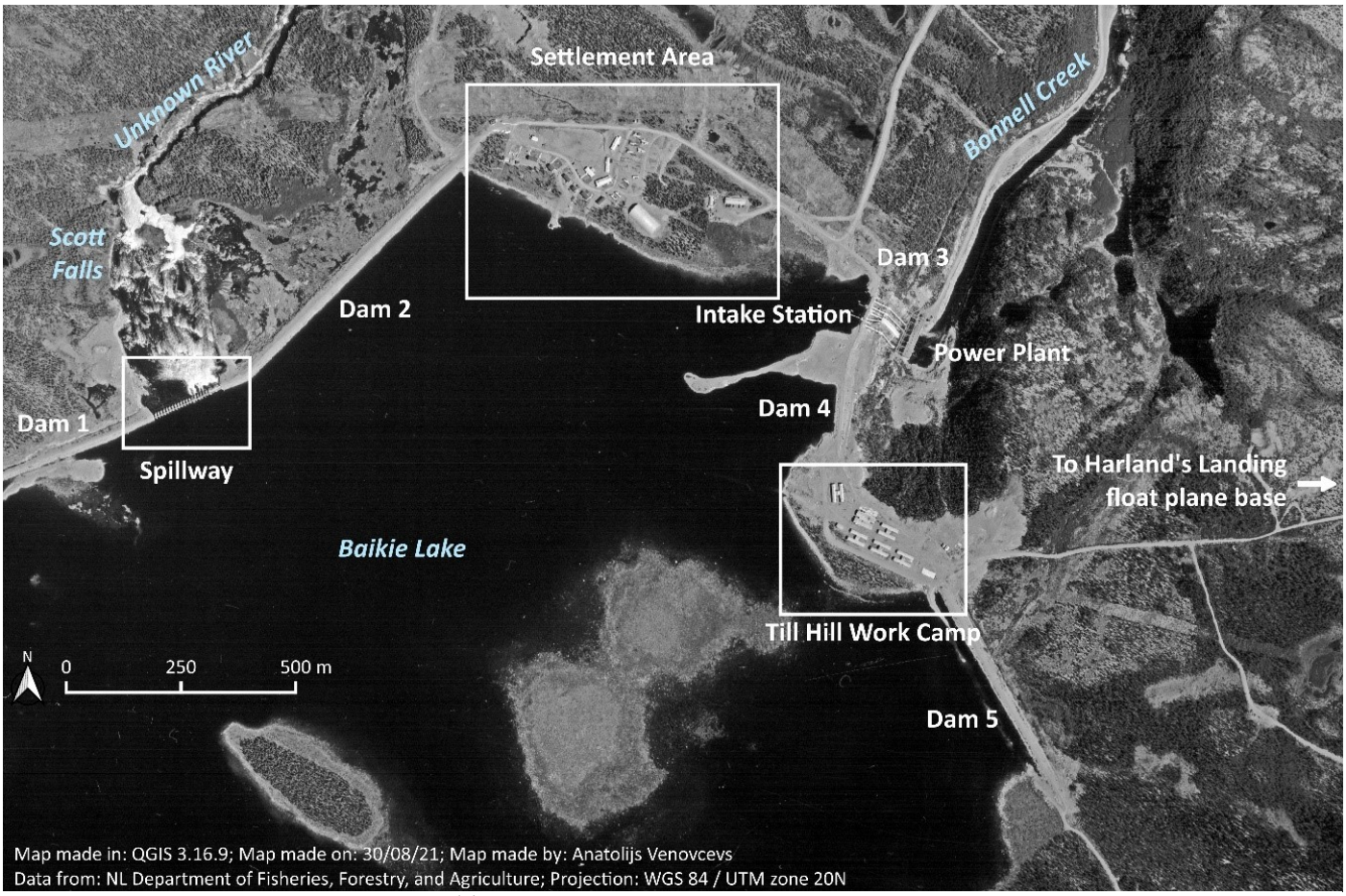


Figure 4: Twin Falls in 1972 (map by Anatolijs Venovcevs).

duplexes and two single houses were constructed for permanent staff to run the hydroelectric operations (Baikie 2008, 20; McLean 1989a, 6). In addition, there were numerous trailers (nine in the 1972 image). For amenities, the community contained a hospital, school, recreation centre, water tower, and grocery store (McLean 1989a, 6-7; Baikie 2011, 41). There was no store in the community and all commodity items had to be ordered (Baikie 2008, 20-21).

Meanwhile, the recorded industrial infrastructure around Twin Falls consisted of a float plane base at Harland's Landing, runway, garage, power house, five penstocks to power the turbines, control station for the water intake, bridge adjacent to the control station, spillway, and the beginning of the transmission line that ran 115 miles (185 kilometres) to Labrador City and Wabush (Water Power 1963; Cockerill 1971). However, this is not an extensive list as the 1972 imagery shows a variety of other ancillary buildings at the site (Figure 4).

Twin Falls only produced electricity for 10 years. While it was originally planned that Twin Falls will run concurrently with Churchill Falls, this was never realized. The newer power plant with its 7,000,000 horsepower dwarfed Twin Falls that generated 300,000. At the same time much of the water from the Twin Falls was needed for Churchill Falls (The Newfoundland Journal of Commerce 1968; Smith 1975; McLean 1989a, 9-10). Thus, while Twin Falls was technically mothballed, it was unrealistic for the plant to ever operate again.

With the power rerouted through Churchill Falls, the community was dissolved in 1972 with most of the workers transferred to the new power plant (McLean 1989a, 10-11; Baikie 2008, 23; Budgell 2013, 63). Two of the homes were moved to Labrador City while six were relocated to Churchill Falls on flatbed trailers where they can still be seen today along Ossokmanuan Street (McLean 1989b, 5-6). Everything else, with the exception of the power plant and associated structures, was demolished and buried upon abandonment (McLean 1989a, 10).

Despite being mothballed, Twin Falls still has a place within the collective memory of Labrador

(Baikie 2008, 2011; Budgell 2013; McLean 1989a, b, 1990; Parsons 2008). The buildings at Twin Falls are now owned by Churchill Falls (Labrador) Corporation (CFL Co) – a subsidiary of Nalcor Energy – who maintains the roads and supervises the facilities. People utilize Twin Falls access roads for hunting and fishing and several cabins exist along the Twin Falls access road.

Given Twin Falls historic and ongoing role within western Labrador, the site was visited by Anatolijs along with a team of individuals in 2019 (Venovcevs 2020). The brief visit was able to confirm that significant structural remains were present at the site including foundations of former buildings, roads, and the power plant itself. In addition to these remains, human disturbance facilitated a dense forest of alders that greatly limited visibility especially at the height of summer. These results revealed the need to conduct a drone survey to document the extent and nature of archaeological remains at the site.

Methodology and Results

Anatolijs and James conducted the proposed drone survey from June 7 to June 13, 2021, as part of the revisit to the site. In addition to simply being there in place and engaging extensively with the material affordances of the site for seven days (an archaeological method whose value should not be overlooked Andreassen, Bjerck, and Olsen 2010; Farstadvoll 2019; Olsen et al. 2012, 58-78; Pétursdóttir and Olsen 2014, 24-25), the fieldwork was inspired by an "archaeology of surfaces" approach (Harrison 2011) documenting how the past manifests itself in the present by focusing on drone survey, photogrammetry, and surface surveys. We also excavated two test pits to see what an excavation of Twin Falls might produce. These are discussed in turn below.

Drone Survey and Photogrammetry

Drones allow on-demand aerial surveys, and as a result, archaeologists can attempt to bridge the gap between quantitative GIS studies and experiential analyses of sites (Millican 2012) as methods using more immersive techniques such as 3D GIS (Forte 2014), or in this case imagery, allow for interpretive views of landscapes and their surfaces.

Archaeological surveys follow pragmatic designs, and we chose different tools for different tasks. We used a medium drone (a Phantom 3 Pro) to record areas, a smaller drone to record building profiles (a Mavic Mini), and a handheld camera to record the interior of buildings. The larger drone flew grids over the features, as it could fly in stronger winds, while we used the smaller drone to record profiles, as it is easier to control. The models were processed using Agisoft Metashape (Agisoft LLC 2019) and the areas recorded were georeferenced using GPS points gathered using an Emlid RS+. Agisoft Metashape was used to output rasters visualized in QGIS.

To analyse the Twin Falls archaeological site, we required high-resolution imagery to show the individual features and visualize the vegetation. The photogrammetric method included both a UAV component and a handheld component.

The spillway, townsite, power station, Dam #2, Till Hill, and Harland's Landing were surveyed using the larger UAV flown in a double grid using the Drone Harmony application for Android Devices. An additional flight of the townsite area was carried out at 90m above ground level using DJI GS Pro to prepare cohesiveness to the imagery. The purpose of the double grid flight for the townsite was to avoid a situation in which we took too few photos of tree-covered regions, which can lead to an inability of the software to gather topographic data (Williamson, Levasseur, and Whitridge 2019). The area flights were carried out with an overlap of 60-70%, with additional photos taken to increase detail in specific areas. The area photography acquisitions had ground resolutions of less than 6 cm. This overlap level achieves coverage of more than nine photos per pixel. We also took a set of pictures of each side of both the spillway and Dam #2 using the smaller drone to provide detailed orthomosaics.

We photographed the interior of two out of the three intake buildings (though not the power station) using a handheld camera. We carried out the photogrammetric acquisition of the interior of these buildings following a pattern of circular acquisitions around specific objects at several distances to the features, which follow an augmented view of how these should be carried out (Chatzifoti 2015). Agisoft Metashape was used to process all of these models because it has the most accurate and least artifact-prone algorithm for preparing 3D models (Probst, Gatziolis, and Strigul 2018; Jaud et al. 2016). Agisoft has previously used a similar photogrammetry process to Bundler for making the point clouds, a similar

Figure 5: Areas surveyed by drone with Anatolijs's GPS logs tracking weekly movement (map by Anatolijs Venovcevs, imagery by James Williamson).

algorithm to CMVS/PMVS, and finally, most likely uses Poisson surface reconstruction to sample the point clouds, and then a texture mapping method, but an Agisoft spokesman only discussed these in detail on a single forum post (Semyonov 2011), and there are no descriptive papers. The closed nature of the Agisoft algorithm due to its commercial nature is problematic as it means that researchers using the software cannot read about the algorithm in detail. In the future, we will switch from using Agisoft to MicMac, as MicMac is more flexible, produces less noisy point clouds, and is open source (Firdaus and Rau 2017).

We took the GPS points using the Emlid RS+, an RTK GPS, which we chose because the internal error within each new measurement can be within 2 cm of accuracy within a survey. After the prepared models were georeferenced, they were exported as raster images to show both the orthomosaic, a mosaic of the photos, and a DEM was produced.

The DEM was then visualized using a GIS to prepare maps of the area. QGIS (QGIS.org 2020) was used to quality control the imagery produced and design the output graphics. In the case of the area imagery, we are currently working on a method to improve the overall cohesiveness of the imagery. We produced specific shots for the interior model, giving a 'feel' of the model. While 3D imagery is often helpful for interpretation (Katsianis et al. 2008), it can be challenging to use with publications (De Felice 2016). As a result, most digital archaeological imagery outputs have been rendered as 2D images.

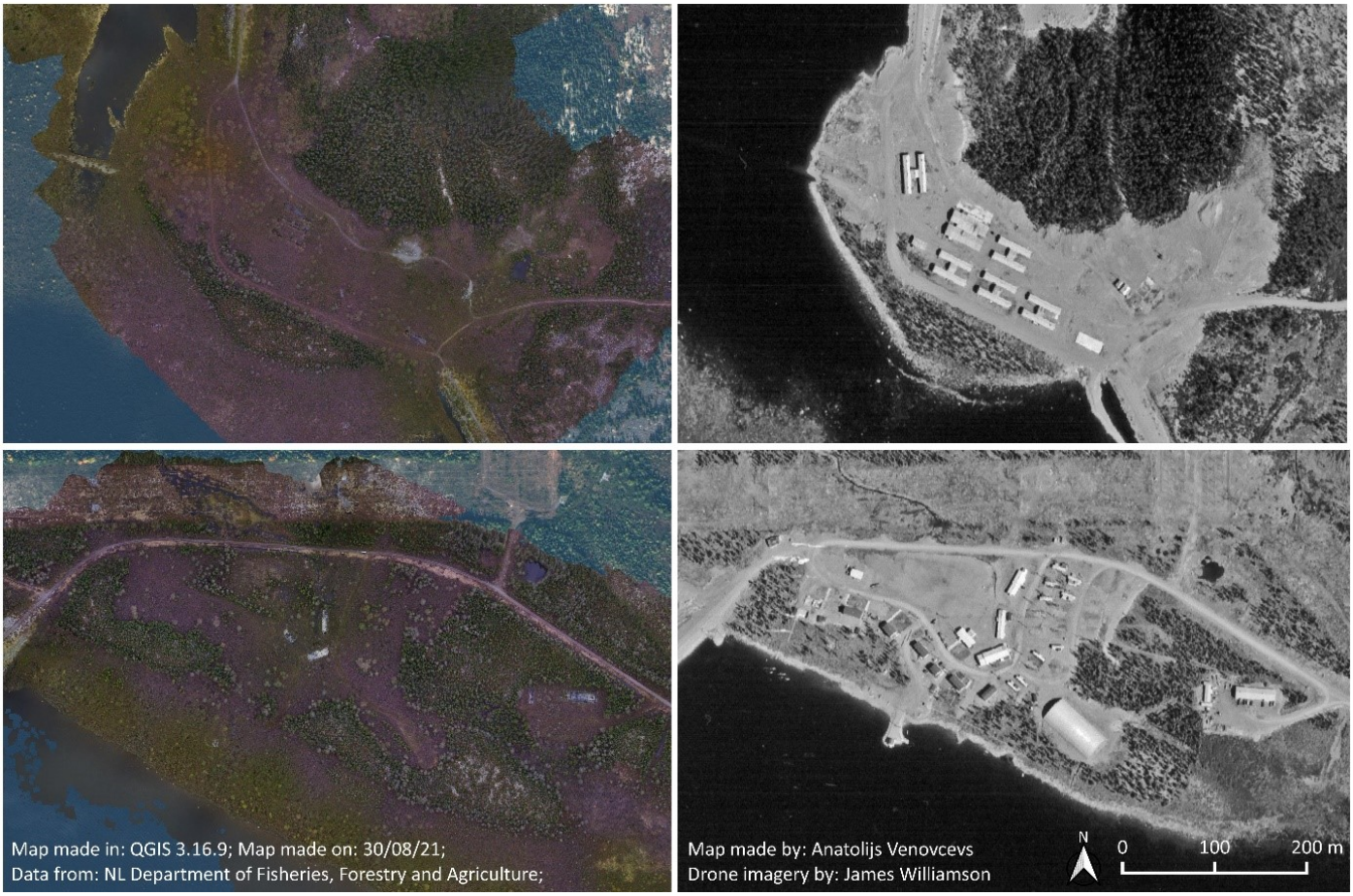
In total, drones recorded approximately 1 square kilometre of the site (Figure 5) and profiles were done of both sides of the spillway and power

Figure 6: Drone-derived spillway cross-section (image by James Williamson).

Figure 7: Drone-derived image of the intake station, penstocks, and powerhouse (image by James Williamson).

Figure 8: Tiling remains at the townsite – details from Building 2 (map by Anatolijs Venovcevs, imagery by James Williamson).

Figure 9: Drone imagery today (left) and in 1972 (right), Till Hill (above) and town site (below) (map by Anatolijs Venovcevs, drone imagery by James Williamson).



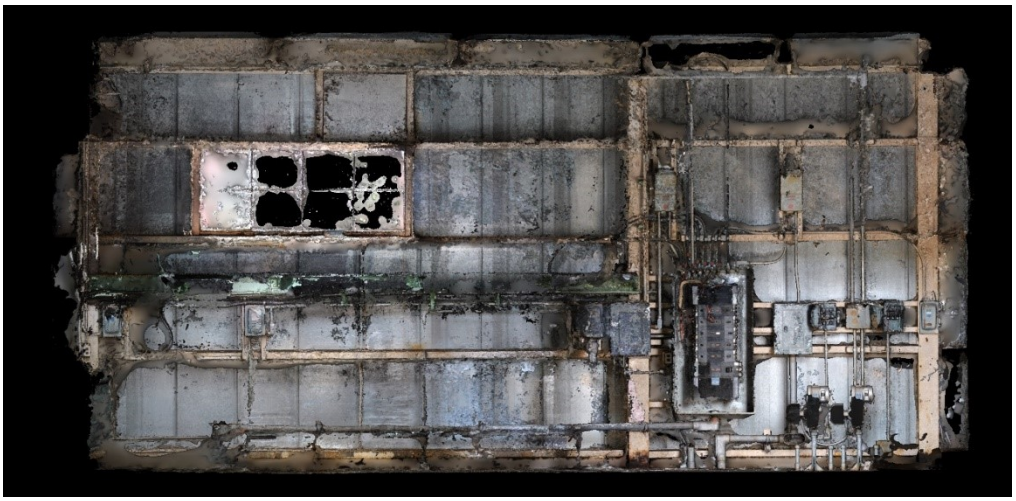


Figure 10: Small intake building – east profile (image by James Williamson).

station (Figure 6 and 7). The drone-produced orthomosaics showed exciting features and generated profile imagery that displays the industrial features' enormity. Handheld photogrammetry allowed 3D models of the intake buildings' interior and the emergency generators to be produced.

The preliminary imagery gives details at different levels of focus. The tiling on the floors of buildings in the townsite is particularly interesting (Figure 8), which is visible as a grid pattern across the floor of the building. It provides a view into the lives of the people who worked in an intentionally forgotten place. On a larger scale, the drone survey results allowed us to see what we would otherwise miss from the ground – namely the remains of concrete foundations, traces of former roads seen in the difference of vegetation height and health, and the extent to which alders have recolonized the site in the absence of human occupation (Figure 9). Handheld photogrammetry allowed 3D models of the intake buildings' interior and the emergency generators to be produced.

There is, however, a significant issue in that due to the changing temperature of the colours in the photography, there were issues with the hues in the preliminary imagery, which James is currently resolving. The different colour temperatures result from the changing cloud cover during the flight and lead to a variegated colour throughout the orthomosaic, for which a solution is currently being sought. The issue is with the larger townsite and Harland's Landing areas. While the built features are visible, this is necessary to analyse the vegetation.

In the case of the 3D models of the spillway and the intake, the models show a great deal of the 3D detail present. While they were effective, the flowing river around the models' bases prevented good data from being gathered beside the significant industrial features.

The photogrammetry inside standing structures produced interesting preliminary results – 3D models of the newest (and smallest) of the three buildings comprising the intake station as well as an emergency diesel generator in the oldest of the intake buildings (Figure 10 and 11). These show the potential of using 3D recording tools like photogrammetry and laser scanning to document other standing industrial heritage at Twin Falls.

Figure 11: Intake building detail – penstock gate raising mechanism (image by James Williamson).

Surface Survey

During our time at Twin Falls, we visited and visually surveyed all standing buildings and structural remains at Twin Falls (Figure 5). Locked standing structures – like the power house and one of the intake structures – were only surveyed from the outside. Signs and communication with Nalcor employees informed us of the potential chemical dangers associated with the site including presence of PCBs, dioxins, and furans in the building and high concentration of PCBs in Bowell Creek downstream from the power plant (Figure 12).

Figure 12: Warning sign on the door of the power house (photo by Anatolijs Venovcevs).

Two of the three control structures at the intake station were open – the northern-most/oldest one and the southern-most/youngest one. These were recorded with both traditional archaeological photography and photogrammetry. The intake structures are made of corrugated metal and steel – the older of the two visited was riveted in place while the younger was bolted and welded indicating a technological succession in construction techniques over the seven years between the two structures. Other differences include different concrete pours and different types of bolts used in constructing different parts of the intake station. These successions would have had technological and organizational ramifications for work at the site.

Assessment of the intake station also allowed us to ascertain that two of the larger control structures housed the controls for two penstocks each while the third and smaller control structure had controls for one – for the total of five. Each penstock had two gates both at the intake and in the outflow from the power house. The controls consisted of a mechanism for opening and closing the penstock gates as well as an emergency diesel generator to get it started. Manufacturing tags on the machinery tie Twin Falls into a broader industrial network with equipment coming from places like Montreal, Hamilton, Toronto, and West German industrial centres like Koln and Stuttgart.

Except for growing stalactites from the sheet-metal roofs of the intake structures, animal droppings, and a few pieces of missing hardware the equipment for the operation of the plant was still there fostering "not so much a feeling of abandonment as that of 'offline-ness'" (Olsen 2013, 185) even after 49 years. Though, as observed in the preliminary visit (Venovcevs 2020), the intake station was purposefully made redundant by fusing-closed the penstock gates with bridge support beams and damming the power canal in front of the intake with gravel (Figure 13).

As part of site visitations, we also visited the power house and the spillway – documenting the structures and assemblages around these structures. One notable observation was a multiple collection of drink cans around the spillway – this included cans with pull tab openings dating from 1962 – mid-1970s (Busch 1981, 101-102) and corresponding to the period when Twin Falls was in operation as well as later cans, pieces of wood, and evidence of recent fires – highlighting the fact that the spillway has maintained the ability to attract people even after it ceased opera-

Figure 13: Close-up of the power station (map by Anatolijs Venovcevs, imagery by James Williamson).

tions.

Site visitation also went further afield like to a former sand quarrying location southeast of Till Hill as well as the airfield near the Trans-Labrador Highway (approximately 18 kilometres north of the site) that has been incorporated into the regional snowmobile network. Surveys also included Dam #5 that was not surveyed by drone. The view from Dam #5 was able to better capture the size of the area that was flooded to make the reservoir and now delineated by a large scrub forest of speckled alders (Figure 14). It also included a surface survey of Harland's Landing – re-documenting the disassembled float plane dock and documenting evidence of recent visitation like a campfire, drink cans, shotgun shells, a canned fish tin, a skidoo accessory, and a bird feeder. We found no evidence of the former trailers that used to be at Harland's Landing (McLean 1989a, 4).

We took to documenting other recent items across the site like a yield sign with bullet holes or facemask near the intake station, an uncomfortably recent diagnostic artifact (Figure 15). Other contemporary items consisted of things like shotgun shells and cans found along roads. The northern edge of the site is delineated by a live transmission line – the start to the original 115-mile transmission line that ran from Twin Falls to a substation in Wabush, the power for which has now been rerouted from Churchill Falls. Nalcor regularly maintains this line and uses one of the electrical towers to train its employees. Finally, recent land use also consisted of two

Figure 14: Former Baikie Lake reservoir as seen from Dam #5, trunks of flooded trees are in the centre, spillway gate can be seen near the horizon on the right (photo by Anatolijs Venovcevs).

Figure 15: Facemask by the intake station (photo by Anatolijs Venovcevs).

cabins – one made from an old camper-trailer and another from an old school bus. These recent objects highlight continued visitation to the site into the present day and accumulations of more material, long after the power plant was mothballed and the community dismantled.

Finally, looking at and interpreting drone imagery in the field allowed us to visit the remains of all former buildings and document any significant surface finds and features. In total, the drone imagery identified the remains of nine former buildings which were numbered for organizational purposes (Table 1). They are described in detail below.

Buildings 1, 2, and 3 are located in the centre of the townsite. All consist of concrete foundations that were poured in two pieces. Judging from the 1972 aerial imagery Building 1 was 100 x 40 feet (30.5 x 12.2 metres), Building 2 was 70 x 30 feet (21.3 x 9.1 metres), and Building 3 was 100 x 25 feet (30.5 x 7.6 metres) in size. All of the buildings had additions which are not represented in the concrete foundations implying that they were built without one. Building 1 had remains of concrete walls that ranged from 71 to 95 cm in height around the perimeter of the building (Figure 16). The surfaces of the foundations only contained the remains of utility lines like water and electrical connections. The surfaces were also characterized by thin square discolorations from 9-inch asbestos tiles along with thicker discolorations highlighting the former locations of rooms inside the buildings. Their size, construction, presence of tiles, and the location within the townsite suggests that these buildings may have been some of the institutional buildings like the hospital, grocery store, or school (Figure 17).

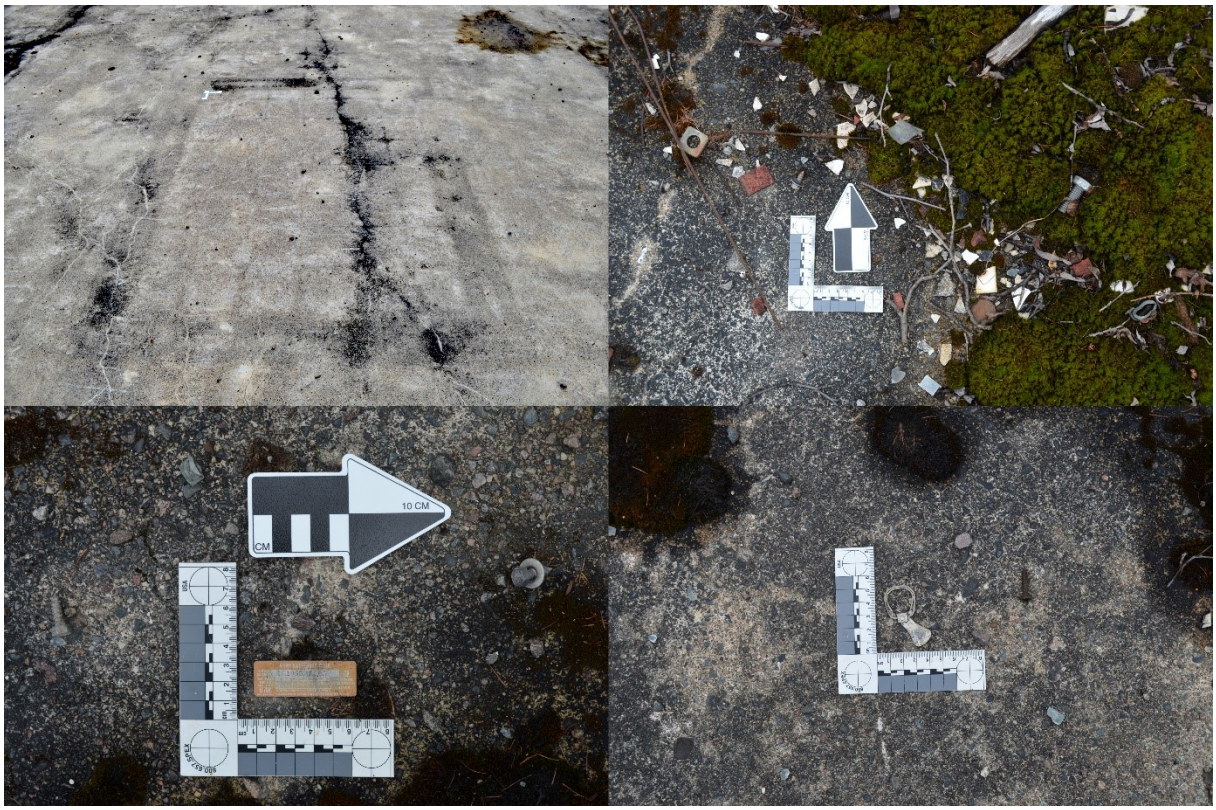
Building 4 was likely the garage with Building 5 a possible machinist shop – something not mentioned in the archival record. The foundations of these buildings are just east of the townsite. Both consist of concrete foundations where Building 4 was poured in three separate pieces. In the aerial imagery Building 4 was 140 x 40 feet (42.6 x 12.2 metres) while Building 5 was 85 x 20 feet (25.9 x 6.1 metres). In the aerial imagery both had large number of cars parked in the front along with additions that are not visible today. Unlike Buildings 1-3, Building 4 and 5 have a bare concrete floor without tiles. While Building 4 has visible utility connections, these are missing from Building 5. Building 4 has a machine pit on the western end reinforcing the suggestion that this was the garage. The surface of Building 4 is relatively

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	Institutional
Building 2	Concrete	70 x 30	Tile and wall outlines, utilities	Institutional
Building 3	Concrete	100 x 25	Tile and wall outlines, utilities	Institutional
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	Workshop
Building 6	Concrete	20 x 16	Nails, melted lead, glass, charcoal, large pieces of machinery	Pumphouse
Building 7	Concrete	115 x 40	Wooden supports, couple pieces of hardware	Industrial
Building 8	Asphalt	95 x 40	Empty	Industrial
Building 9	Asphalt	(135 x 40) in three parts	Couple pieces of hardware	Mess hall and recreation hall

Figure 16: Building 1 (photo by Anatolijs Venovcevs).

Figure 17: Surfaces of buildings at Twin Falls. Top left, tiles and wall traces at Building 1; top right, gradual revegetation of Building 5; bottom left, General Electric tag; bottom right, pull tab at Building 5 (photos by Anatolijs Venovcevs).



clean consisting of a few pieces of wire and other hardware components. The surface of Building 5, on the other hand, was filled with an assorted assemblage of screws, washers, nuts, bolts, windshield glass, electrical insulator ceramics, wires, springs, nails, machine tags, can pull tabs, and bottle caps (Figure 17). Melted lead and burnt wood suggests that the building's superstructure may have been burnt (something seen in Building 6 as well). These surface finds suggest that this may have been a workshop or something similar – the items are indicative of the sorts of small unvalued ubiquitous objects associated with maintenance tasks (Myers 2011).

Figure 18: Surface of Building 6 – pump house (photo by Anatolijs Venovcevs).

Building 6 is the remains of the pump house. Today it is a small, rectangular concrete pad from a building that was 20 x 16 feet (6.1 x 4.8 metres in size). Water pipes encased in utilidors lead away from the structure in the direction of the townsite. The building is now surrounded by alders but would have been right at the water's edge when the reservoir was flooded. The platform is raised over a concrete superstructure that would have pulled the water from the reservoir for domestic consumption. The surface of the platform is filled with copper wires, glass, nails, melted lead, hardware, and large pieces of mechanical and electrical components (Figure 18). The charcoal and melted objects suggest that the superstructure was burnt with most components inside upon abandonment.

Building 7 is an unknown structure – possibly of industrial origin – east of the Till Hill workcamp. It appears unroofed/partially demolished in the 1972 aerial imagery of the site next to two smaller structures. It was approximately 115 x 40 feet (35 x 12.2 meters). It did not follow the grid of the H-style barracks of the work camp suggesting an alternative purpose. Today the road goes through the centre of the building. Unlike Buildings 8 and 9, the foundation is concrete, not asphalt, with wood beams for an unknown purpose going through the centre. One piece of machinery and one crushed bucket were the only objects identified on the surface.

Building 8 is an unknown structure on the southeast end of the Till Hill workcamp. The building was rectangular, 95 x 40 feet (29 x 12.2 metres) in size, and without windows. It had an asphalt foundation. The foundation, rectangular style, and the lack of windows indicate that this was an industrial building – possibly a garage or storage.

Building 9 is the final set of interconnected asphalt foundations on the western end of Till Hill (Figure 19). This building appears often in the photographic record at the Them Days Archives in Happy Valley-Goose Bay where it is identified as a mess hall and recreation hall. It consisted of three sheet metal-clad structures, 135 x 40 feet (41.1 x 12.2 meters) in size, interlocked with covered passages. At the time of the surface survey the asphalt was cracking and deteriorating much faster than concrete foundations (Figure 20). The long straight cracks were indicative of how the foundation was formed. The surface was mostly clean of debris with only two objects being a large bolt and a small piece of window glass.

Very little else was documented on the surface of the workcamp and the townsite though thick alders and 49 years of vegetal accumulation limited visibility and practicability of a full surface survey at the site. This is not to say that there is nothing there as the excavation of test pits revealed significant buried deposits.

Figure 19: Building 9 in circa 1960-1961 (photo from Max McLean collection, Them Days Magazine and Archives Inc.).

Figure 20: Building 9 in June 2021 (photo by Anatolijs Venovcevs).

Test Pitting

Finally, we excavated two 50 x 50 cm test pits along the southern edge of Building 1. The goal was to see what sorts of subsurface remains were present at Twin Falls that could not be seen from the surface. The soil was not screened and, following the guidance of the Provincial Archaeology Office, we did not collect the artifacts we found. Instead, we photographed the artifacts we recovered (Figure 21 and 22) and backfilled them with the soil into the test pits. Before backfilling, we collected seven soil samples from different layers in both test pits and sent the soil for analysis at the archaeology lab at UiT: The Arctic University of Norway.

We placed Test Pit 1 by the remains of a door in the southern corner of Building 1. James dug it to a depth of 44 cm. The first 10 cm was organic followed by a greying yellow fill to 25 cm with gravel inclusions and very wet sand. Below this layer was a construction sand fill layer. It was difficult to say if subsoil was hit, though the sand became more compact in the last 5 cm of the test pit. The artifacts from this test pit consisted of 1 nail, 4 pieces of wood, 2 pieces of metal, 1 tin foil wrapping, and 1 fragment of an outdoor lamp.

We placed Test Pit 2 inside a small addition along the southeast edge of Building 1 that is delineated by the remains of a concrete wall without a concrete footing. Anatolijs dug this test pit to a depth of 76 cm. Directly under the top organic layer, the test pit contained a 4 cm thick wooden layer, possibly a floor, with a wet and compressed layer of asbestos 2-7 cm thick directly underneath it, below that was a yellowish-brown sand with bits of gravel – likely construction fill. The artifacts from this test pit consisted of 11 pieces of bathroom ceramic, 6 pieces of wood (1 laminated), 1 piece of floor tile (potentially asbestos), and 1 metal 11-cm disk with asbestos corroded unto it.

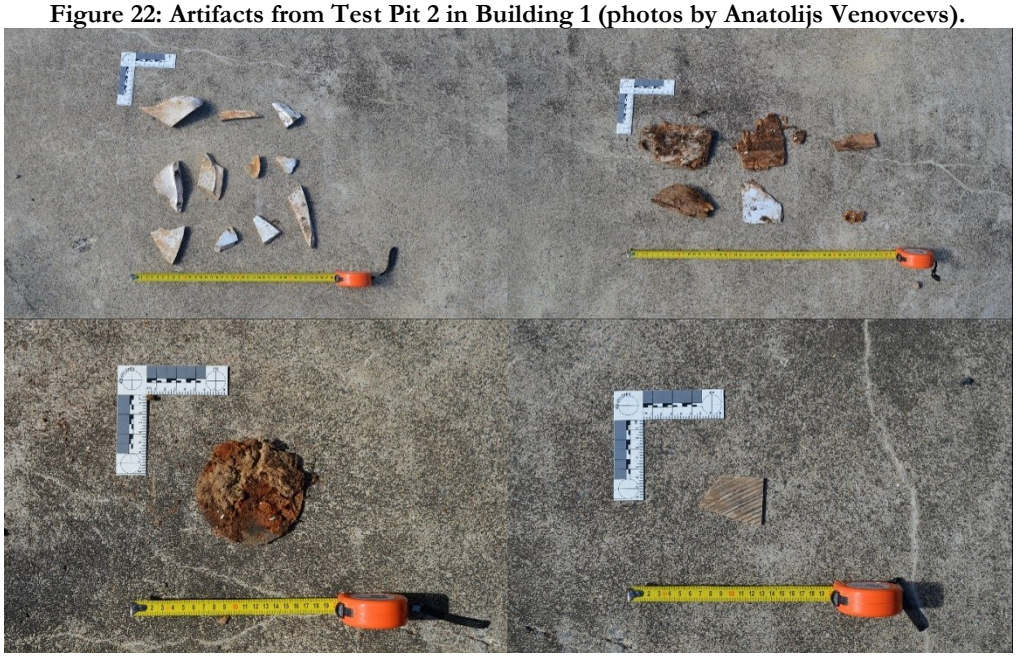
Figure 21: Artifacts from Test Pit 1 by Building 1 (photo by James Williamson).

Discussion

Our encounter with asbestos – an infamous carcinogen – within Test Pit 2 was visceral and unnerving. It poses similar concerns raised by Julia Brenan and Scott Neilsen in their work on Birch Island (Brenan 2019; Neilsen and Brenan 2018) as well as Brenan's ongoing PhD research – how does one do archaeology in and on a contaminated world? This is both a methodological and theoretical question and a necessary one to address as many parts of the world seem to be accumulating contemporary heritage at an accelerating rate – heritage that is bound to be toxic (Holtorf and Högberg 2016; Stewart 2017; Stewart, Jungkind, and Losey 2020; Whitmore and Francisco 2021).

For the purposes of this work, we limited our

Figure 22: Artifacts from Test Pit 2 in Building 1 (photos by Anatolijs Venovcevs).



toxic exposures via drone and surface surveys but ultimately archaeology also necessitates excavation as it is often impossible to recover full material stories from the surface or find what has purposefully been buried. How archaeologists approach the excavation of potentially contaminated sites will remain a pressing methodological challenge.

However, even our distance did not spare us the unease of being around potential harms. Beyond buried asbestos, water was a big concern as signs warned of PCB contamination downstream from the dam and within standing structures. This, as well as fear of other potential toxic chemicals like heavy metals in the soils led us to distrust the water around the dam echoing the primacy of social and cultural relationships as opposed to molecular ones within toxic landscapes (Lerner 2010; Liboiron 2016; Stewart 2017). As we navigated the landscape around Twin Falls, we developed a hierarchy of water safety depending on their proximity to industrial ruins – sometimes driving far away for water just to gain a sense of comfort.

The irony of struggling for water while being surrounded by it, camping in a former settlement, and running a generator by a former power plant was not lost on us. These personal experiences highlight the absurd contradictions that arise through rapid cycles of development and obsolesce that broadly characterizes this latest stage of modernity (González-Ruibal 2019, 34). In fact, investigations reveal how Twin Falls was literally built into ruin starting with unknown flow values for the river that overbuilt the plant with construction continuing non-stop until the power plant was mothballed three years after reaching its final, lasting form.

The tragedy of Twin Falls should not detract from the fact that it is heritage and has cultural, historic, and scientific value. It represents the first industrial community in western Labrador that gave rise to the modern towns of Labrador City, Wabush, and Churchill Falls – fundamentally transforming the interior of Labrador. As a key node within this industrialization, the lives of many people intersected with it as illustrated by the material remains left behind at the site. This material is not just from a brief period between 1960 – 1972 when the plant was in construction and operation but also from subsequent revisits by Nalcor employees performing maintenance duties and residents of western Labrador visiting the site and hunting and fishing in the area. Twin Falls holds the material memories of those who have passed there.

Our fieldwork has started the work in documenting some of those material memories in the forms of buildings, roads, and the finds and traces associated in, on, and around them through the use of drone and surface surveys. The work identified the remains of buildings, captured imagery for 3D models of the outsides of all standing structures, and experimented with photogrammetry on the inside of some small standing structures. Additional work is needed to carry out 3D recording, optimally laser scanning, upon the 1960s hydroelectric technology found within these buildings. As such, these objects form a foundation to better improve the understanding on the legacies left by the industrial colonization of western Labrador, specifically its energy heritage (for examples of similar work see Bjørsvik, Nynäs, and Faugli 2013; Brandt and Dame 2017; DeSilvey 2010; Kuban, Güven, and Pretelli 2019; Marshall 2014).

Besides documenting what is there, the surveys – both drone and surface also identified what was not there (an archaeological specialty!). Though the drone survey identified nine structures, the 1972 aerial imagery and archival photography indicate the existence of at least 55 structures (Figure 23 and 24). The discrepancy indicates that many structures – including H-block barracks, residential structures, offices, and the arena were built and demolished in such a way that prevented their footprints from impacting the growth of alders in their place.

It is likely that most structures like trailers for residential or office use did not create significant subsurface remains. Meanwhile, historic photographs from the Them Days Archives suggest that the barracks at Till Hill might have sat on a simple slab foundation while the houses were on short step walls (Figure 25 and 26). Upon resettlement these structures were either picked up wholly and moved (as seen with the permanent houses) or demolished and buried, facilitating the creation of a nearly-uniform alder forest. Such details allow us to understand the technologies of industrial colonization of Labrador – while Twin Falls might have assumed an air of permanence with families, store, school, and family

Figure 23: Town site with buildings and features traced from georeferenced 1972 imagery, buildings documented during the June 2021 survey are labelled (map by Anatolijs Venovcevs, imagery by James Williamson).

Figure 24: Till Hill with buildings and features traced from georeferenced 1972 imagery, buildings documented during the June 2021 survey are labelled (map by Anatolijs Venovcevs, imagery by James Williamson).

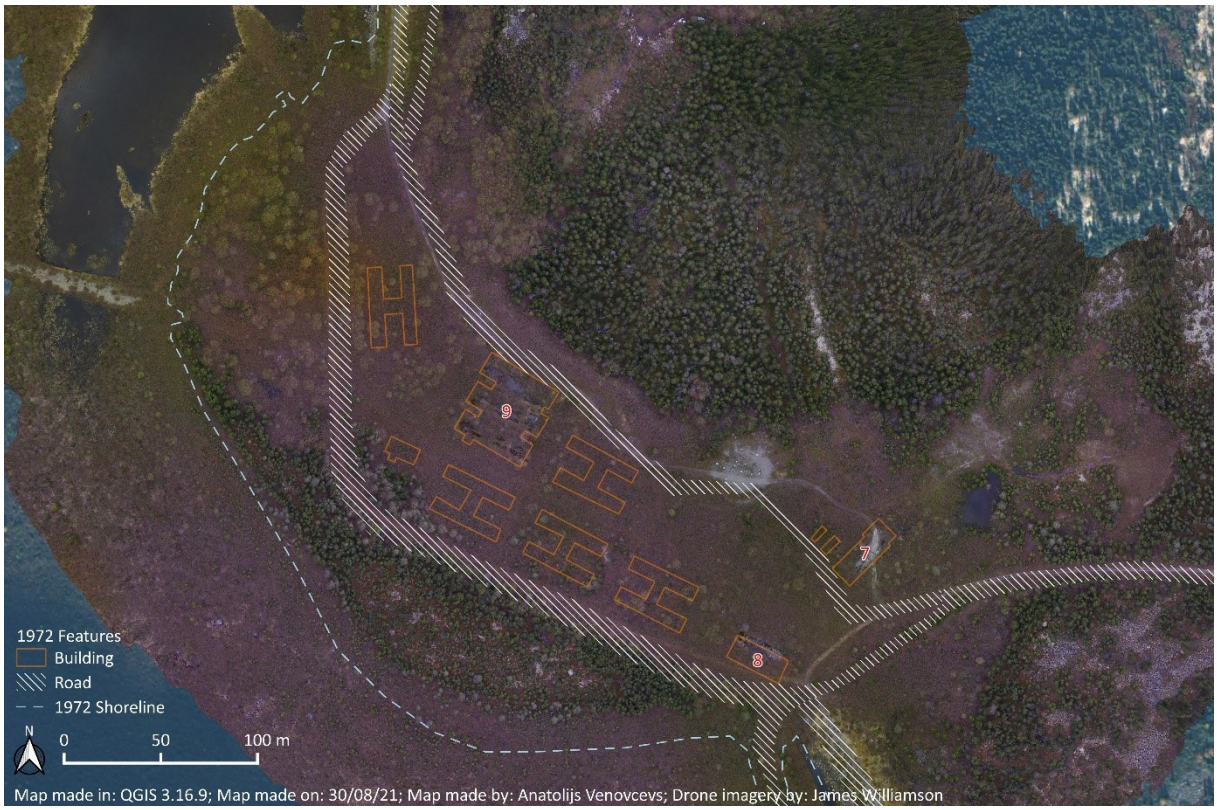


Figure 25: Till Hill work camp, September 1960
(photo from Max McLean collection, Them Days Magazine and Archives Inc.).

housing, the near disappearance of it highlights the impermanence associated with this type of settlement. Twin Falls may have been among the first industrial communities in western Labrador but ultimately it was erased almost as quickly as it was created.

However, annihilation is rarely complete (González-Ruibal 2019, 42-44). Twin Falls lives on its larger and more controversial progenies like Churchill Falls and Muskrat Falls, in the memories and stories of Labradorians and Newfoundlanders, and in the significant quantities of heritage remains at the site – power plant structures, concrete foundations, buried subsurface objects, and various toxicants. As such, Twin Falls continues to attract human engagement through facility maintenance, hunting and fishing trips, camping, and off-road access. Twin Falls also has the ability to further mobilize community memory and evoke discussions about contemporary identity. Finally, Twin Falls is not going away any time soon as it is financially infeasible and practically impossible to return the site to a time before construction. As such, it behoves archaeologists and residents of Labrador and Newfoundland to seriously evaluate how to treat, study, and live with contemporary heritage like that at Twin Falls.

Conclusion

This write-up summarizes our activities at Twin Falls, Labrador in early June 2021. The project successfully documented major features of the site with high-resolution drone imagery and surface survey. It also has shown the efficacy of 3D modelling of the standing industrial heritage left at the site as well as potentials and dangers of subsurface excavation. Future work should focus on oral interviews and story gathering – something that was limited this year due to COVID-19 precautions. Interviews at the site would be especially useful since there are many visible remains to help activate memories of people who have connections to the site.

However, such work should not supersede engagement with surface remains and even subsurface deposits – given that much of Twin Falls was purposefully demolished, excavation can reveal hidden parts of the past. For example, while contamination around Twin Falls is relatively well known and documented, it was through excavation that we got a glimpse of the extensive presence of dangerous toxicants that lie below the surface. This ubiquity suggests that places need not be designed as intended "sacrifice zones" by heavy industry or zones of indus-

Figure 26: Duplex at the town site, September 1962
(photo from Max McLean collection, Them Days Magazine and Archives Inc.).

trial waste (Lerner 2010; Stewart, Jungkind, and Losey 2020), rather the sacrificial nature of some places is an emergent property from the use and deposition of everyday toxicants through the systemic operation of the plant itself. Archaeological attention to the material evidence is what draws out the causal ubiquity of such substances in the recent past (as well as the present, for example see Liboiron 2021).

In fact, according to Bjørnar Olsen and Christopher Witmore, it is this engagement with things that is a fundamental archaeological "responseability" (Olsen and Witmore 2021, 21) – especially in a period of accelerating climate change where the overaccumulation of things from our past – like ocean plastics, industrial rubble, toxic chemicals, and greenhouse gases – calls for an archaeological engagement with the unintended consequences of everyday items that underpin our lives. The methods of a truly toxic archaeology are developing and will remain a challenge for future work at Twin Falls and similar places like it across the world.

Questions of pollution are also questions of care (see for example Beckett and Keeling 2018; Liboiron 2021; Storm 2021) and places like Twin Falls ultimately challenges the Provincial Archaeology Office practice of documenting everything after 1960s as "ethnographic" sites (Hull 2020). Side stepping the efficacy of calling a Euro-Newfoundlander industrial-colonial monument as something "ethnographic", research at Twin Falls has showed that the site conforms within the NL Historic Resources Act's definition of an "archaeological object" as "an object showing evidence of manufacture, alteration, or use by humans that is found in or on land within the province and is of value for the information that it may give on prehistoric or historic human activity in the province…" (Historic Resources Act 1990, 2b). In addition to its scientific value, it also holds historical bonds for people across Labrador and Newfoundland (Baikie 2008, 2011; Budgell 2013; McLean 1989a, b, 1990).

While the legacies of Twin Falls can never be erased, how this "unruly heritage" (Olsen and Pétursdóttir 2016) is to be treated rests upon the decisions of the current landowners, CFL Co., along with the people whose lives have been directly impacted by it – either positively, through family connections, or negatively, through a 50-year legacy of additional hydroelectric development. Ultimately, such negotiations should facilitate a healthy opportunity within the heritage community of Newfoundland and Labrador to create better policies and legislations to take account of more recent complicated heritage that has left its mark upon the province.

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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 us access to carry out this research. We would also like to thank Memorial University faculty and staff within the Department of Geography, Department of Archaeology, School of Arctic and Subarctic Studies, and the Internationalization Office who made this project possible through institutional, material, and logistical support – especially during the times of a global pandemic. Aimee Chaulk at Them Day Magazine and Archives Inc. also deserves a great debt of gratitude for providing archival photos from the Max McLean collection. Special thanks also goes to the employees of CFL Co and residents of western Labrador, specifically Jordan Brown, Oral Burry, and Walter Parsons. 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.

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Surveying problems in the photogrammetry of Beothuk house-pits

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The purpose of this review is to describe some of the work carried out in 2021 as part of my thesis project, 'Beothuk House-pits in the Exploits River Valley,' and to discuss two issues with photogrammetry in boreal forests and solutions for these issues. The Beothuk were an indigenous group in Newfoundland, and they and their ancestors lived on the island from ~AD 400 until AD 1829, when the last known member of their group, Shawnadithit, died in St John's (Holly, 2002; Marshall, 1996). Archaeologists believed them to have retreated to the island's interior near the end of this period. This research aims to examine whether there are substantial differences between the remains of their dwellings (now known as house-pits) by recording them using image-based modeling and analyzing them with geostatistical analyses. This review will discuss the photogrammetric method and problems in producing map data for the house-pits.

In 2021, I spent time preparing maps of the house-pits and worked through problems with georeferencing and interpreting the house-pits' topography which is directly related to the fact that I primarily gathered the data from archaeological features under the forest canopy. These difficulties are that forests often expose technological frailties and make interpretation more difficult (Chapman, 2006; Howard, 2007; Le Blanc, 2004). Using image-based modeling techniques, I have mapped Beothuk house-pits for morphometric and geospatial analyses. I want to examine homophily (abstracted similarity) between individual residences and buildings described as house-pits and prepare network or cluster analyses to examine relationships that may go beyond discussions of their number of sides. Archaeologists have defined house-pits as low earthworks with interior mounds, which were residences used by the Beothuk people (Marshall, 1996; McLean, 2015). The typical requirements for the data to prepare analyses are an error of less than five percent of the total area, or five percent of a measurement unit, meters in this case (VanPool & Leonard, 2011).

Archaeological remnants of structural remnants are often more challenging to detect in forested areas due to different taphonomic processes (Le Blanc, 2004). Archaeology aims to improve our understanding of the human past, and in the case of earthworks, this means searching for features of interest and analysing them (Chapman, 2006). Trees occupy much of the space and inhibit movement and transport, making these areas hard to access and increasing the biological taphonomic effects through activity such as plants growing over features or root growth, making it challenging to recognize artificial topographies (Le Blanc, 2004). The subtlety of these features created issues when visualizing the models, as the features often blend in with each other, and there are fewer easily detectable edges. Difficulties in detecting discrete features is a common problem where there is a great deal of close activity in earthworks (Chapman, 2006). The complexity of constructed living spaces often creates issues because there is a greater density of activity (Gron, 2014), and activity areas can often be marked physically, such as sleeping hollows or shelves (Marshall, 1996). To prepare clear interpretations of the features, archaeologists could apply a visualization method to view the edges of features more clearly (Stular et al., 2012). The second point that there are trees in the forest may seem obvious, but a busy working area has implications for using geospatial techniques in the boreal forest. GPS location recording technologies often require an unobstructed view of the sky of 30 degrees centered on the normal of the antenna (Howard, 2007). Other modern surveying methods, including photogrammetry, usually require moving cameras and complex equipment in confined spaces. The lack of clear satellite signaled to models with inaccurate GPS locations, which meant that the features were the wrong sizes. This piece will explain the method used the implications of these problems, and the solution chosen to overcome these problems. In particular, the use of a scaling script.

Photogrammetric Recording

I chose photogrammetry because it allows me to gather high-resolution models of features, and the method can work in the boreal forest (Erwin et al., 2017) at a comparatively low cost (Ostrowski & Hanus, 2016). Because it relies on cameras rather than other technology, it is more portable and flexible. This method also satisfies my aims in preparing internally consistent 3D models.

There are three steps in a photogrammetric recording: photographic acquisition, processing, and exporting data products (Remondino, 2014). As the end product focuses on a GIS method, the products are raster images depicting the microtopography of features (Digital Elevation Models, or DEMs) and color ortho-rectified mosaic imagery (orthomosaics). In this review, I am using microtopography to DEM data viewed at a household scale or a resolution of less than five centimeters.

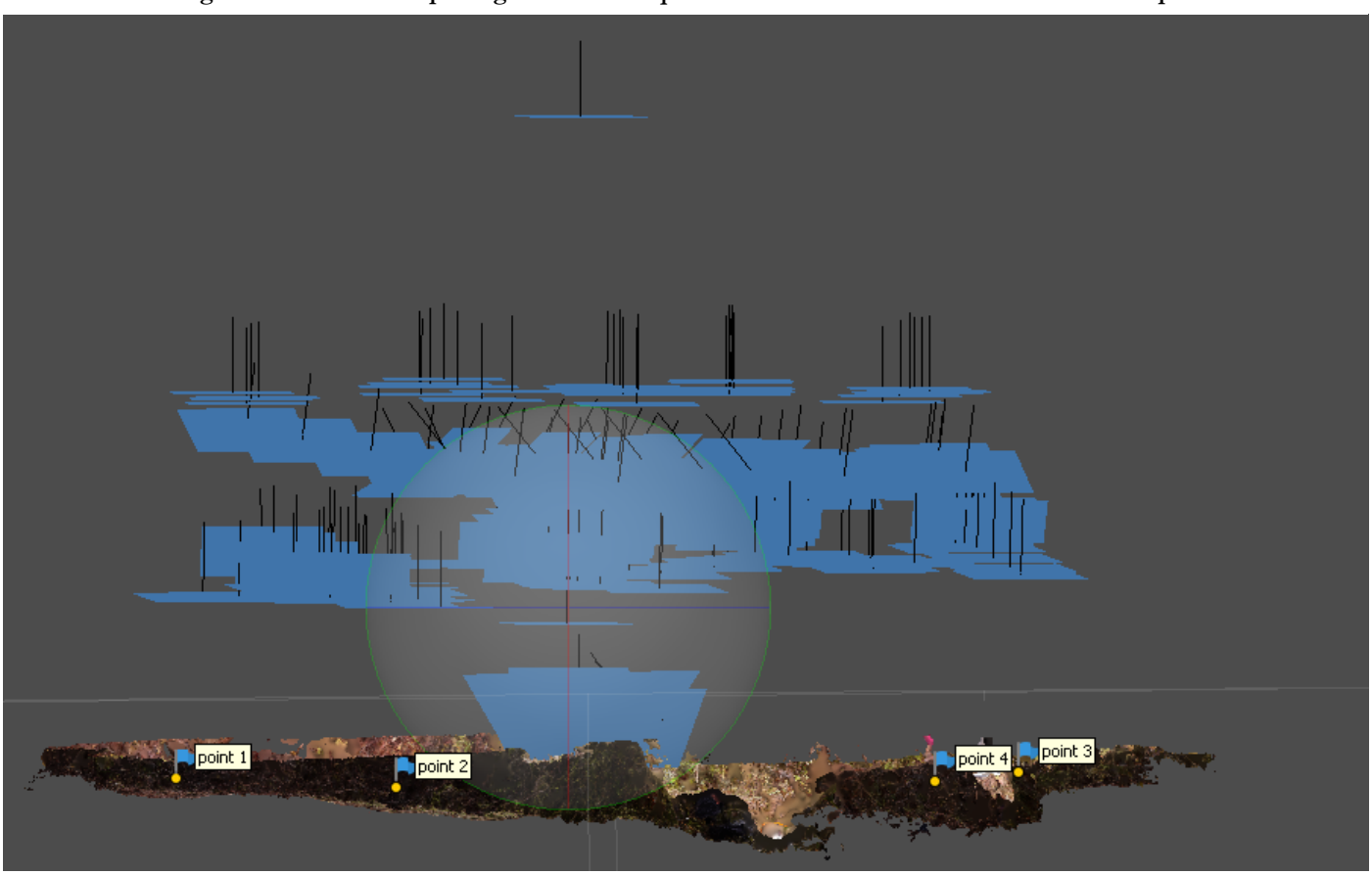
The first step of photographic acquisition is to take photographs with different views of the feature. I took photos using a Phantom 3 Pro in 2018 and 2019 and a Mavic Mini in 2020. I used the Phantom 3 Pro as it can provide quality imagery (Hamilton, 2017). The Mavic Mini superseded this because it is easier to control and provides a similar level of photographic image quality because of its camera properties and longer flight time (DJI, 2017, 2021). The Mavic Mini is also easier to fly, and it does not bank as much when turned sharply.

The pattern of photographic acquisition is important because it determines the quality of the output data (Chatzifoti, 2015). The acquisition should include:

- Grids of photographs to cover the feature at several different levels.
- A set of photos with the drone turning around to get a panoramic view of the feature.
- Pictures from a height overlooking the site.

The purpose of these images is to get photos covering the house-pit (using the grids) to make sure you view the 3D aspect of the features from the center (with the panorama from the interior). A set of photographs to make sure these photos tie together (taken from a height). You can see an example of the tie point cloud in Figure 1, where I carried out the

Figure 1: A view of the photogrammetric acquisition over a model of Boom Island house-pit.



acquisition over Boom Island. I flew several grids at different heights, a lower panorama, and took a set of photos at a greater altitude (but not all of these are visible in Figure 1). This acquisition pattern differs from most acquisition methods because of oblique pictures (Agisoft LLC, 2019; Chatzifoti, 2015); however, these are necessary to ensure tie points between each photo.

In other situations, the drone flight should be pre-programmed, as this would allow a much more standardized flight, with a set overlap. If the user can set these, the quality of the photographs and coverage will be more homogeneous throughout the model. However, one would expect wind tunnels under the forest canopy and along rivers in boreal regions, and GPS is technologically fragile (Howard, 2007). In this case, trees block a direct line of sight to the sky, breaking the technological chain that makes up GPS signals. The lower quality signal would cause the drone to fly off course. The effect of the wind tunnels would be to push the drone off-course and likely crash on a tree branch. I manually flew the photographic acquisition and took between 80 and 400 photos, determined by the drone's battery life and the weather. The coverage goal was always to prepare an acquisition plan that would lead to each site area having at least nine overlapping images, the maximum measurement in Agisoft (Agisoft LLC, 2019).

Furthermore, surveying for preparing 3D models is also best carried out using Real-Time Kinetic GPS (a GPS with high precision corrections, RTK) points for georeferencing the 3D model (positioning and accurately scaling the 3D model). The RTK GPS used was an Emlid RS+, which has been used at other sites to gather imagery with a root mean square error of two and a half centimeters at other sites (Williamson et al., 2019). While I could use an RTK GPS in some areas, under the tree canopy, there was often around ten centimeters of error, which was double the acceptable level of accuracy. At Boom Island, Sabbath Point, Red Indian Falls II, and Two Mile Island, there were some features at which it was possible to use an RTK (an Emlid RS+). Where this was not possible, I used the drone-based GPS because this included a large number of points, which, as they often included several hundred points, should have led to a good averaged dataset. The features appeared in the correct location but were slightly off in their measurements.

The photogrammetric process involves producing a set of tie points, a dense point cloud, a model in that order (Agisoft LLC, 2019). I chose the Agisoft Metashape software because it is the most accurate in several difficult conditions (Probst et al., 2018). In the future, however, I aim to use IGN MicMac for processing photogrammetric models, as the designers discuss algorithms in the manual, and the software produces less noise or random points than Agisoft (Firdaus & Rau, 2017).

I imported the photographs into Agisoft Metashape, a commercial photogrammetric software. At this stage, the photos are matched by similar points in different images, creating a sparse cloud or a tie point cloud (Agisoft LLC, 2019). You can see an example of the sparse cloud in Figure 2, with a view from the top of the Boom Island house-pit. The algorithm produces points from each picture to place them in 3D space. In Agisoft Metashape, it is also possible to use a pre-processing tool to include GPS points in the EXIF files for the 3D models and prepare generic pre-processing. I did not use those options as they lower the accuracy of the models. I set the quality option to high accuracy setting. I then optimized the placement of the pictures. The optimization process attempts to fix the camera lens warp issues across several parameters.

The next stage is to produce a dense cloud (Agisoft LLC, 2019). The thick cloud interpolates points from the photos based on the tie points. An example of the dense cloud can be seen in Figure 3, in the same view of Boom Island as the tie points in Figure 2. The noticeable difference is that there are many more points, as there are often fewer than a hundred thousand points in a large sparse cloud but several million in a dense cloud. I prepared the dense cloud at high quality with aggressive depth mapping. This choice means that the program will use half the data from the photos and that the algorithm will map the geometry to introduce differences between surfaces.

Finally, the software generates a surface model by creating a mesh of triangles to join the fifth sample of all the points. The surface is a 3D virtual view of the house-pit, and you can see it in Figure 4. The

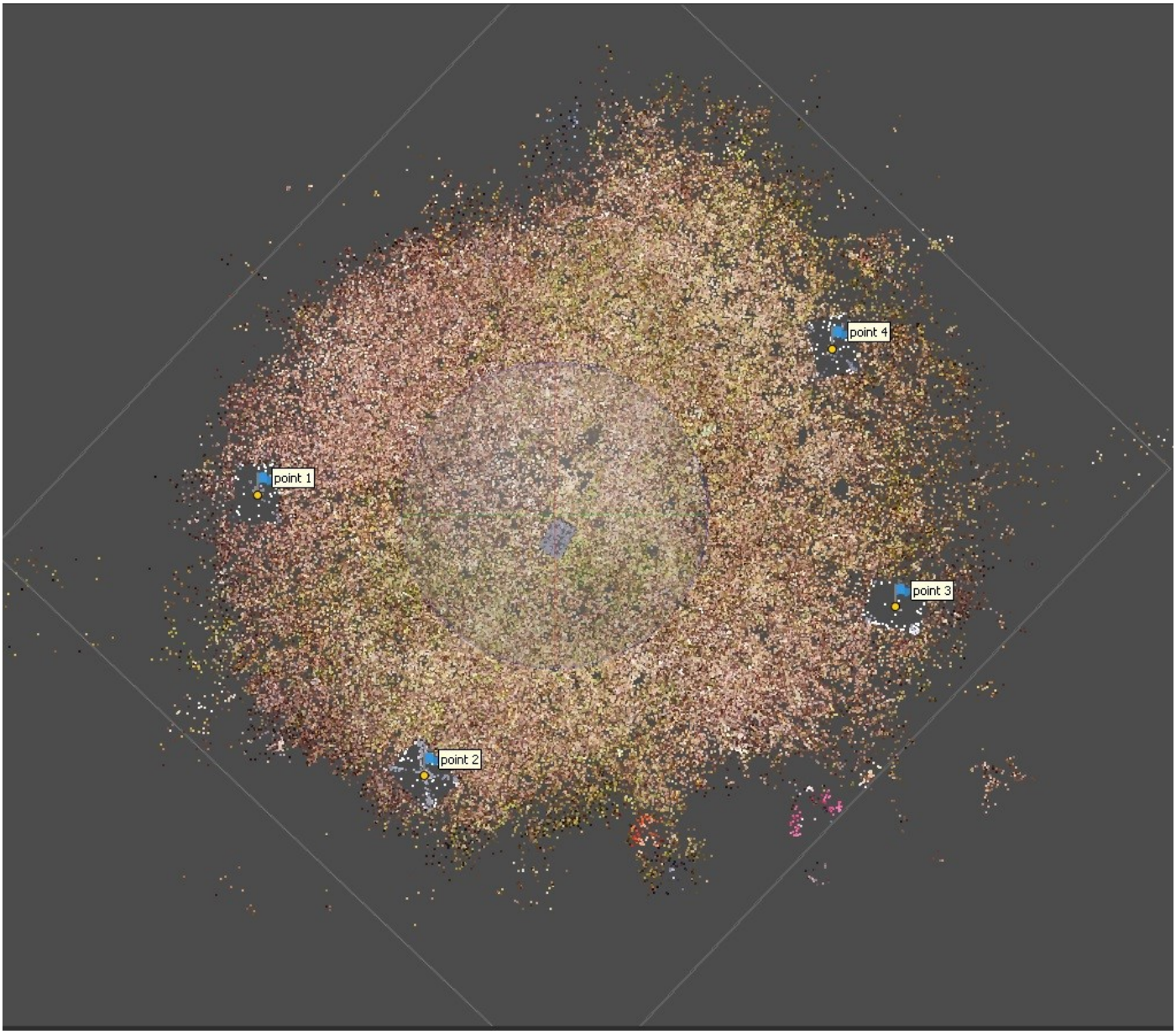


Figure 2: The tie points prepared from the photos of Boom Island.

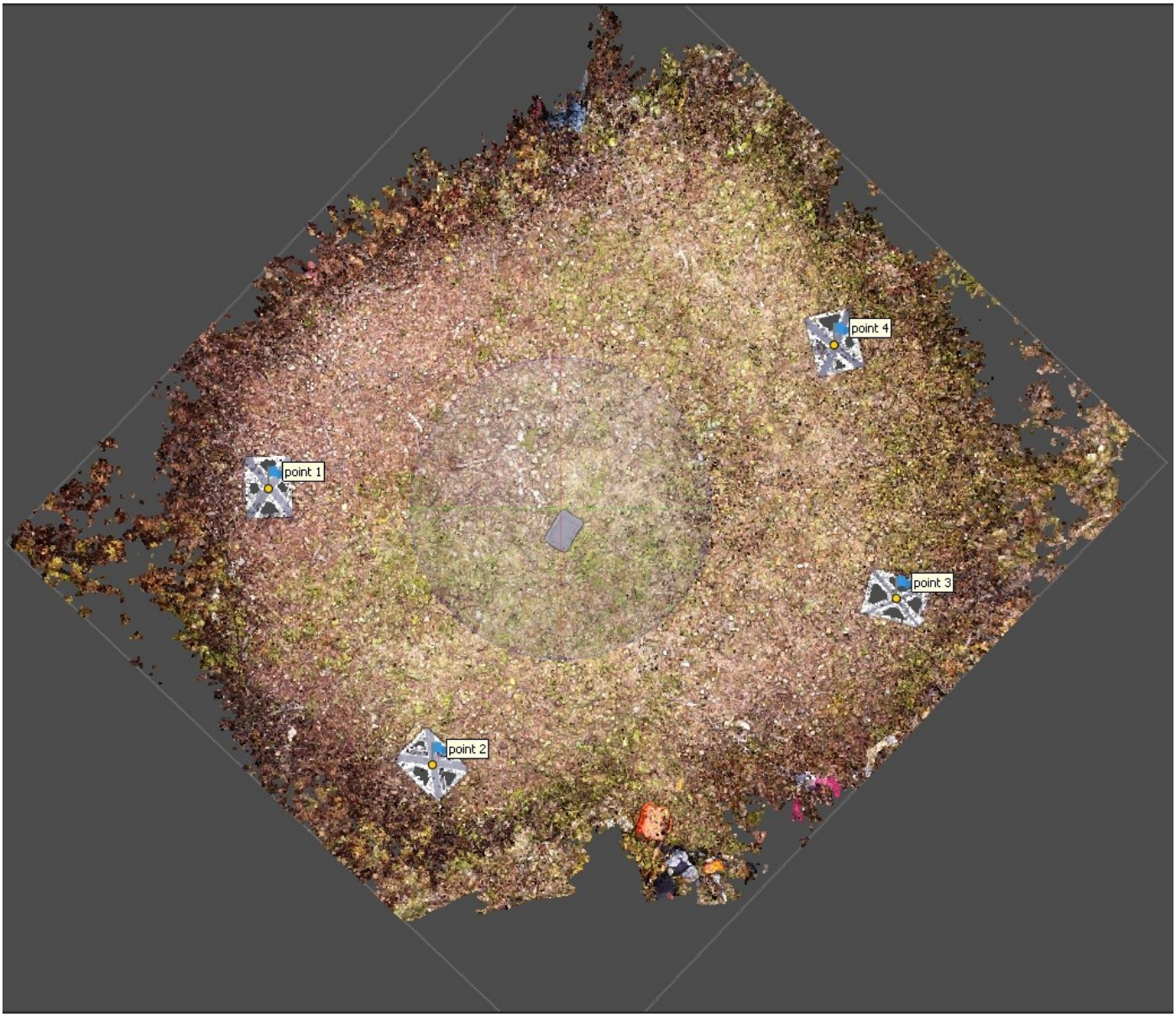


Figure 3: The dense cloud for Boom Island.

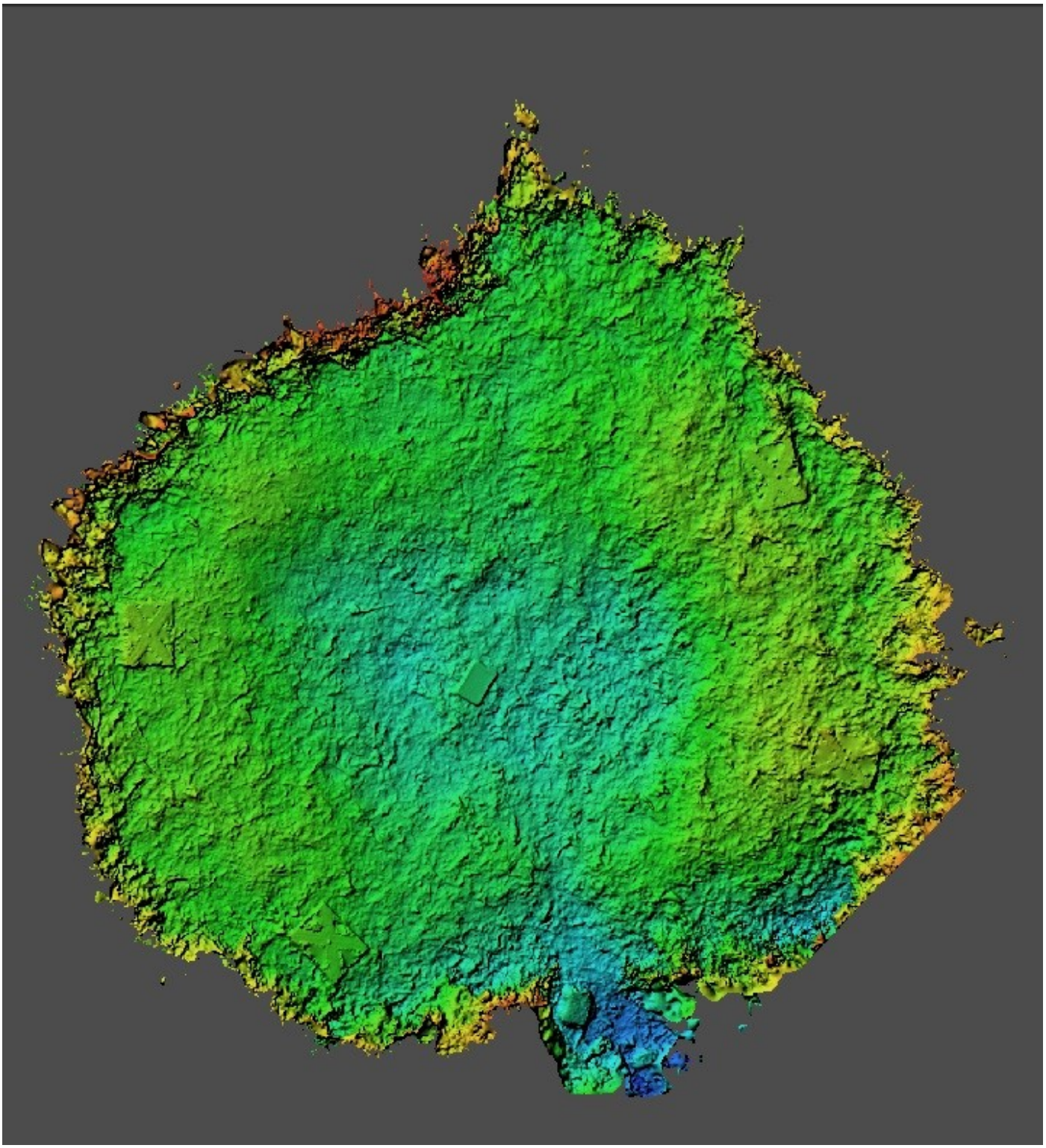


Figure 4: The DEM created from the 3D model, showing the comparative topography of the feature.

DEM is a pixelated image representing the surface topography of a feature.

I exported the model from Agisoft Metashape. I chose the raster format because it was one of the two data structures used by nearly all GIS programs (Sherman, 2012), the other being vectors. Rasters, a 2D format, are standard tools for archaeological analysis and have been widely used, even for 3D analysis (De Felice, 2016). As GIS software designers used software libraries built around these formats, many more algorithms are available for their research than other data forms. Typically, GIS users export areas representing topography or color as rasters. This choice allows them to be more easily handled within GIS software because 3D model vector files are more difficult to load for algorithmic reasons.

In contrast, rasters are grids/matrices, and software can handle these more easily as many programming languages have matrices as a base component. The two chosen data products are Orthomosaics and Digital Elevation Models. The orthomosaics are mosaic imagery or stitched together photos, while DEMs are images with monochrome values, in which each pixel represents an area in the landscape or feature. I exported the rasters to the WGS 84 Coordinate Reference System (CRS) (Maptiler Team, 2019b)and warped them to the Web Mercator CRS (Maptiler Team, 2019a). In the metadata for the drone imagery, DJI listed the imagery as WGS 84, which is the traditional variation of the Web Mercator (or Pseudo-Mercator), but this is not the correct CRS as it makes the features appear stretched. The GIS user should warp the imagery to the Web Mercator, removing the stretching caused by an incorrect projection (Sherman, 2012).

GIS analyses

The GIS processing aimed to prepare data for morphometric analyses, representing the edges of interior features. Thus, the models had to be validated, visualized, and digitized.

I checked the accuracy of the exports to ensure that the imagery had accurate internal dimensions. Validation is almost always necessary when processing geospatial data, and analysts often do this by comparing the data to a known measurement (Thomas, 2017). I used a clipboard with known measurements as a take-off and landing point. The clipboard gave measurements to check the dimensions in the models. I found that models, which had been georeferenced, were accurate; however, non-georeferenced models were not, and thus I decided to rescale the rasters, using the script discussed in the next section.

Photogrammetry records 3D models with internally consistent measurements when the surveyor does not use an RTK (Chatzifoti, 2015). However, I hoped to create accurate GPS measurements, onboard either the drone or an RTK. The measurements taken from the clipboard were inaccurate, which meant that the model was out of scale. I wrote a script which I will discuss in the last section, and which I have linked to my GitHub page for use by others.

A significant difficulty of imagery analysis in the boreal forest is that the features are often subtle and heavily bioturbated (Le Blanc, 2004), which makes it more challenging to interpret features. The biological activity creates a similar difficulty to detecting discrete features when there are overlapping features as the visible activity often overlaps, and the solution is usually to apply different visualizations (Chapman, 2006). Archaeologists typically assess boreal sites as temporary habitations or hunting spots, used sporadically by sparse populations due to this difficulty (Le Blanc, 2004). However, the Beothuk of the Exploits River Valley built semi-permanent houses, with conical structures placed on top of short bases (Marshall, 1996). The house-pits' interior features are also difficult to detect, but they can be seen by experienced archaeologists using GIS raster visualizations of the DEMs.

GIS visualizations of rasters have previously been categorized into three groups (Stular et al., 2012). These were color cast methods (color coding the DEM), DEM manipulation methods (changing the DEM information), and image processing filters (such as edge detection, used to examine the shape of features). Color casting is simply coding different heights as different colors, and such coding leads to either highly contrasting colors if the user chooses a multi-color ramp or a cloudy appearance if there are only two colors in the color ramp. DEM manipulation methods include all-terrain analyses and transformations applied to the shape. These typically show the information present in the DEM through the derivatives; however, not all of them are directly related

to the topographic information. Finally, image-processing methods include edge detection and typically involve mathematical manipulations of the color values.

However, I've found the most helpful difference between visualizations is between surface reflectance maps, and DEM manipulations, as they represent two different data types. As color casting methods are simply changing the color settings and rendering the map data (QGIS.org, 2020), I would not consider them a visualization method on their own. Surface Reflectance methods provide a view as though a light source were shining on the feature from a specific point. Hillshades or relief represent digital versions of paper relief maps (Horn, 1981). Either DEM manipulation methods are based on derivatives of the DEM (such as the slope) or specific color codings. I prefer the former in these studies, as it allows certain information to be visualized and overlaps these views. I also have a strong preference for visualizations that can be replicated in any GIS or with simple python or R scripts, and thus I have focused on several standard views present in QGIS (QGIS.org, 2020).

To visualize the model, I examined a set of images of the house-pits. First, I checked to see if I could use a color-coded DEM to analyze the feature. You can see the colored DEM in the top left corner of Figure 5. I chose a greyscale color-ramp, which I used to view the feature, and while other color schemes are possible, they often rely quite a lot on the choice and styling. They also share the same issues as graphics depicting the digital elevation model. It is usually pretty tricky to detect the edges. While a GIS user can use these views to show landscapes, they are too blurry to use these micro-topographic views.

The following visualization was the hillside, and you can see the best iteration of this on the top left of Figure 5. The Hillshade is a surface reflectance -based method. Hillshading is a method of displaying a surface in a 2D view, highlighting the gradients of each pixel, and creating and attributing a reflectance to each different feature (Horn, 1981). Hillshading emulates relief mapping and the shading work of cartographers before digital cartography. I placed the light source (the sun) at a bearing (this is the azimuth measurement) and a certain number of degrees above the horizon (the altitude). Graphics produced using this method are brilliantly illustrative; however, they only work well for isolating features along a specific axis (in this case, along a bearing of 270). I used this in the primary analysis of the features as it allowed me to prepare a good view of the features. However, I was unsatisfied with it because it would be inefficient to create several of these maps and use a lot of computer memory. Furthermore, if I did not use a set of cursor-linked maps, I would have to switch between different views of the house-pit to prepare feature recordings.

The next set of observations was the slope maps, which show the slope gradient measures zero to ninety degrees (Neteler & Mitasova, 2008). The slope map displays the heavily sloping areas as white, allowing the user to visualize the edges of the size of the interior features. However, this only gives the slope value, not the direction. The implication is that the edges of features are discernible but not their direction, as though they were hachures without endings. The aspect provides the following view, which is the direction, measured as a bearing from zero to three hundred and sixty degrees. When viewed together, colorizing the slope and setting the transparency to fifty percent gives a clear view of the edges of features and the direction of these edges.

You can see the slope over the aspect in the lower right box in Figure 5. Here, I used a color gradient from green to brown in QGIS, which allowed me to differentiate between the different features within the house pit. This view was handy as it shows both the direction and amount of slope.

The features were drawn onto the model, starting from the inside and working out. These features always included the hearth, followed by the interior depression, slopes and possibly benches, and the apex of the outer wall. I used this to draw the current interior areas and topography to analyze relationships between house-pits.

A Python Script

Python scripts are helpful in GIS software, and most prominent GIS platforms have a method for using Python and R scripts to automate processes and analyze data. Using these can make long and arduous workflows easier; however, they require the user to acquire basic programming skills.

The goal here was to scale the model of the house-pit to show the area that these features should

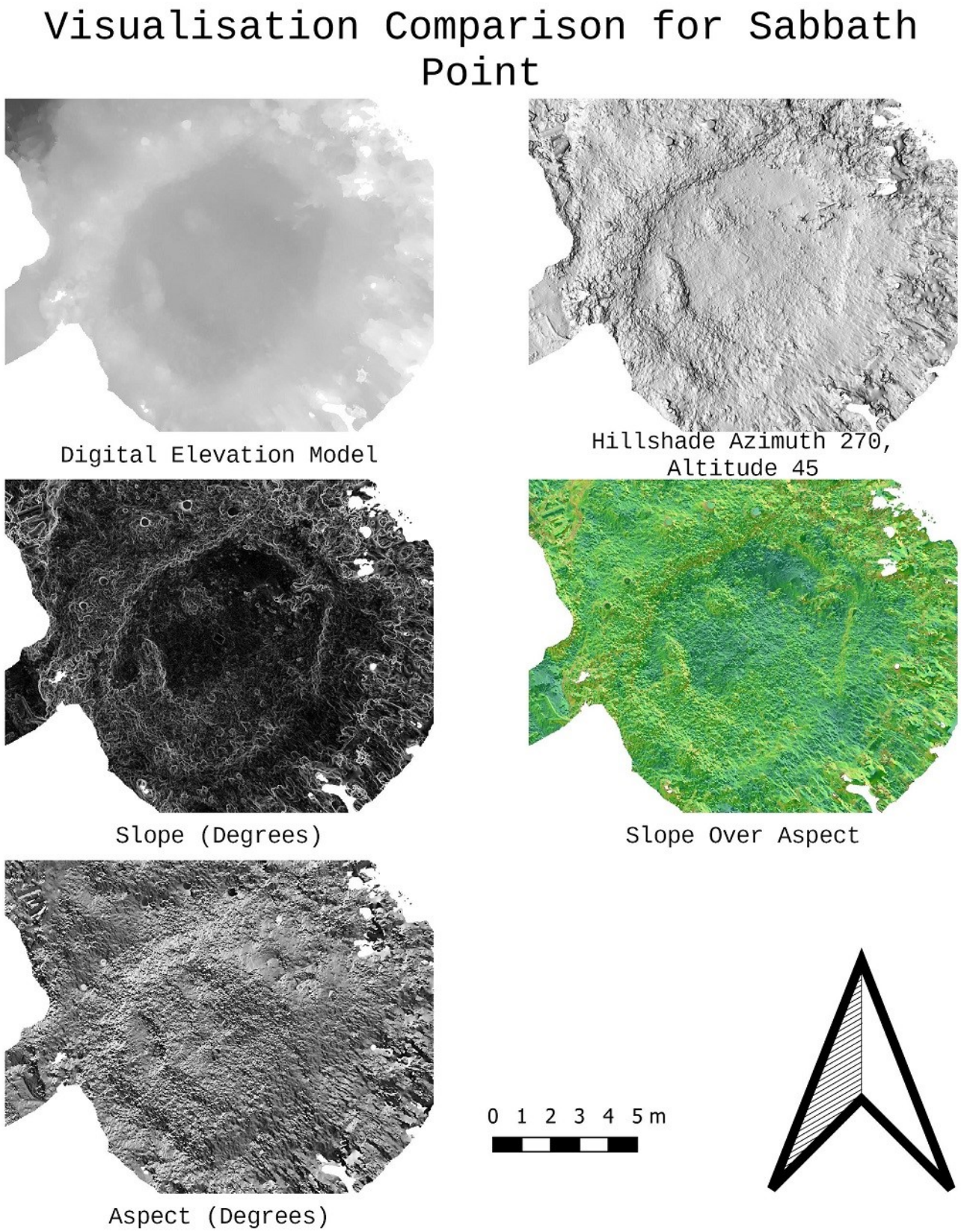


Figure 5: Comparison of the visualisations of Sabbath Point.

cover. In ArcGIS, this can be a lengthy process, as the rasters are large files, and ArcGIS desktop products are often somewhat unstable when compared to QGIS and GRASS GIS (Cook, 2008); however, I have found that ArcGIS is the geospatial industry-standard GUI software. A method for batch processing that could run in the background was necessary. Rescaling creates a situation in which the location of the center of the feature would not be accurate. However, the origin point for the raster will still be in the same position, which in this case means that the bottom left corner will still be in the same place, while the rest will have moved a certain amount. The issue here is that this will increase the error of the raster by the scale factor. The acceptable location error is thirty meters, which is much greater than the size of the raster. As the resolution (the size of each pixel) of the widely available ASTER DEM is thirty meters (Parcak, 2009), used in other parts of this more extensive study for spatial modeling, this is not an issue. Other methods of surveying that do not incorporate RTK GPS locations are often much more inaccurate when plotted in a GIS.

In this case, I used a python script to perform the batch script. I used Pycharm to write the script, which allows the user to set the environment, or python installation. Also, writing python scripts in the small window shown in most GIS programs is impractical. Once the user selects this to the version installed in ArcGIS Pro, you can run the script in Pycharm (an image of which can be seen in Figure 6). When the script runs in Pycharm, a console window

Figure 6: The script prepared for ArcPy.

```
import arcpy
def main():
# The raster_list will be a list of dictionaries, which is going to be the place where the name of the input raster, the
# output raster and the scale will be studied.
    raster_list = [
    ]
    on_off = ""
    # This is the r_in variable, which is going to be used to make the raster_in value.
    r_in = 0
    # This is the r_out variable, which will be used to make the raster_out variable.
    r_out = 0
    # This is the scale to change the values by.
    scalefact = 0
    # This is the destination Geodatabase. It will prompt for the input.  Make sure that there is a backslash at the
# end of it.
    DestGDB = input("What is the destination Geodatabase called?")
    #This is the while loop to grab the values for where the features are coming from. It will run a loop through the
    # on_off, then inputting the rasters, then doing the scale factor.  These will then be seated into a dictionary.
    while on_off != "q":
        r_in = input("What is the filename?")
        r_out = input("What will the filename be?")
        scalefact = input("What is the scale factor for this raster?")
        raster_list.append({
            "raster_in": r_in,
            "raster_out": DestGDB+r_out,
            "scale": scalefact
        })
        on_off = input("Do you want to continue? to stop press q")
# The next step is to place these all into the arcpy function we are using.  This is:
# arcpy.management.Rescale(in_raster, out_raster, scale x, scale y)
    for i in raster_list:
        in_raster=str(i["raster_in"])
        out_raster=str(i["raster_out"])
        scalexy=str(i["scale"])
        arcpy.management.Rescale(in_raster, out_raster, scalexy, scalexy)

if __name__ == '__main__':
    main()
```

will open, with a prompt to type in the geodatabase the files should go to, the current location of the files, the name of the rescaled raster, and the scale factor. This workflow could be made simpler by allowing the user to prepare a set of lists; however, I chose to use a console and prompt approach for each item because lists would require a specific format, sometimes leading to bugs.

The link for this script is: https://github.com/JWilliamsonArch/PythonScriptTools/blob/main/RescalingRastersBatch.py

Conclusion

This review has discussed two issues in using modern technologies for surveying boreal environments, which I have applied to this study. The use of RTK GPS in the boreal forest is inherently tricky (Howard, 2007), but if there are clear limits on the necessary location, you can accept lower location placement accuracy. In the case of DEM visualizations, there are many solutions (Stular et al., 2012), but using two layers in this way should allow anyone to use these tools. The next step in this analysis is to prepare a geostatistical analysis of the features, which I am currently preparing an R script to carry out.

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Research Opportunities

As the regulatory agency responsible for archaeology conducted within the Province of Newfoundland and Labrador, the PAO is also the repository of archaeological site records in the province that are regularly in the review of land use applications and the development of survey and salvage operations and other research activities. Tied to our ArcGIS database, these data also provides staff archaeologists with a unique overview of all of the past and current archaeological investigations and effectively identify research opportunities that has also informed our Grant and Directed Research programs. In addition to providing financial support, from time-to-time the PAO has discovered new sites and has generated research questions, which we are eager to share with archaeology students and researchers.

1) Bay Bulls Arm Telegraph Station (ClAl-04)

The first official transatlantic cable message was received at the Bay Bulls Telegraph station on August 16, 1858. That message was one of congratulation from Queen Victoria to United States President James Buchanan, in which she hoped that the communications cable would be "an additional link between the nations whose friendship is founded on their common interest and reciprocal esteem". Unfortunately, this celebration was short-lived – as the cable would fail within weeks and the station abandoned within a year. Now a footnote in history, official recognition shifted to Heart's Content, when in 1866 the first permanent telegraph cable connecting Europe and North America was established.

Located in the Town of Sunnyside, the archaeological remains of the telegraph station have been the subject of considerable local interest and more recently a desktop assessment (McLean 2019)

1858 Robert Dudley Watercolour of the Bay Bulls Arm Telegraph Station.

Drone Imagery of Bay Bulls Cable Station (2021).

which identified the archaeological potential and areas of potential research. Recent site clearing and aerial photography has further revealed the nature and extent of the archaeological remains (Elliot 2020) which had until recently been largely hidden by the encroaching forest.

The review of historical, archaeological and environmental information pertaining to the Bay Bulls Arm Telegraph Station site identified a number of features related to the laying of the Atlantic telegraph cable in 1858. These features include stone foundations and bricks from a chimney as well as a small outbuilding/activity area, part of the road leading to the station and drainage ditches outside that outline the perimeter of the stone foundations. Although this cable project ultimately failed, it contributed to the successful telegraph connection, eventually established in 1866 between Heart's Content in Trinity Bay and Valentia, Ireland.

2. The Old Garrison Hospital

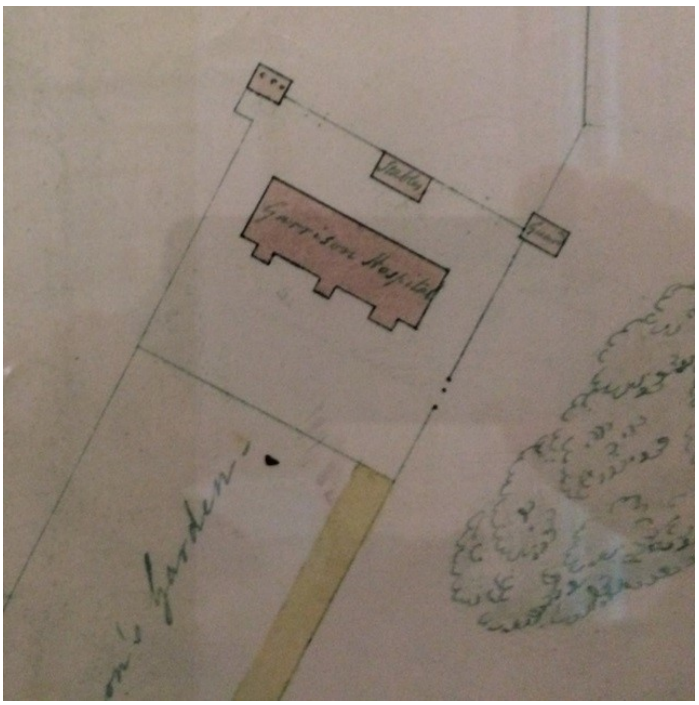
"In 1805, the army opened a hospital between Government House and Fort William on Military Road. Widely known as the 'Pest House' and later the 'Old Garrison Hospital, the building had a bed capacity of 10 and enough facilities to treat up to 31 patients; it also admitted civilians, but only when space allowed. As the city's population continued to grow, however, it demanded better medical facilities. A large public movement, led by Scottish physician and reformer William Carson, successfully petitioned the government to establish a civilian hospital at St. John's in 1811".
https://www.heritage.nf.ca/articles/society/19th-century-health.php

Despite a plaque, which marks the general location of the Old Garrison Hospital, surprisingly little is known about this early hospital. Recent investigations sponsored by the PAO resulted in the discovery and positive identification of these foundation of the hospital and additional outbuildings, as well as the "Surgeon's Garden" were identified on an 1830 plan. While the last vestiges of this complex were razed in the 1850s, recent field investigations by Temple (2021) on behalf of the PAO, have discovered the remains of the hospital's stone foundation, which were further explored by Lear with the aid of Ground penetrating radar (See Brake et. al. this volume for more information).

Although described as a single storey wooden structure, there appear to be significant archaeological resources preserved. In addition, to the hospital are the surgeon's residence, a stable, another unidentified

structure, as well as the Surgeon's Garden –all of which represent a potentially unique opportunity to provide a glimpse into the history of medical care of St. John's as well as the life of the resident surgeon.

Excerpt of 1830 Plan illustrating Garrison Hospital, Ancillary Structures and Surgeon's Garden .



(See either of Brake et. al., Crompton or Temple, this volume for more information).

3. Little St. Lawrence 2

The book *The Log Book of H.M. Ship Pegasus commanded by Prince William Henry (later William IV) on his first visit to Canada, 1786*. which is at both the National Archive of Canada C 2510 and the Centre for Newfoundland Studies MF-714 contains a water colour sketch entitled *A view of Little St. Lawrence Harbour (*See below*)*. Documentary research established water colour showed a fishing room/trading premises established by Newman & Company in 1784. The footprints of each of the buildings depicted in the water colour can be readily identified on the ground, including the site of a flagpole.

Earlier use of Little St. Lawrence by the French and Basques from the 16th to the 18th centuries is also documented.

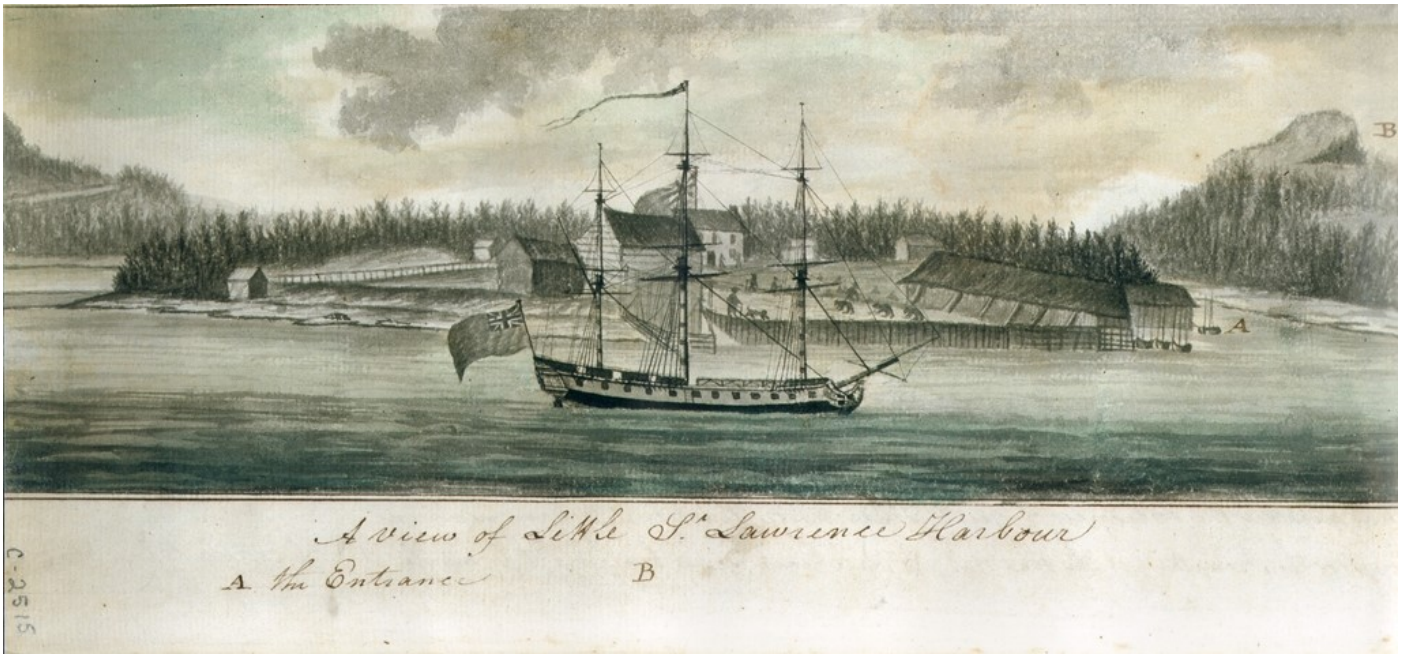
Finally, the area also has some characteristics associated with precontact site advantage. Based on the overarching principle that "a good spot is a good spot," the area might well repay archaeological investigation at some future date.

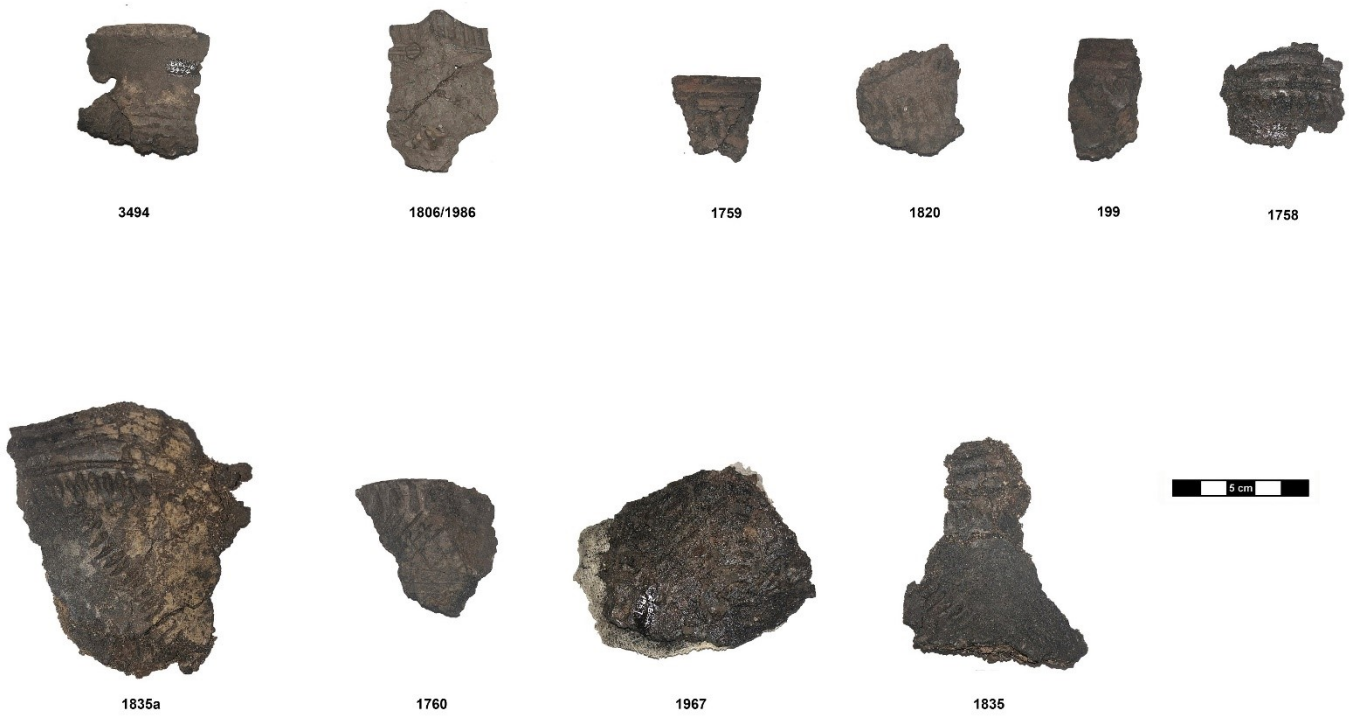
The PAO briefly visited the site in 2007 and that visit formed the basis of a blog post.

4. Saddle Island West (EkBc-16)

The Saddle Island West site (EkBc-16) on Saddle Island, Red Bay, Labrador, was discovered in the 1980s

A view of Little St. Lawrence Harbour.





Decorated Indigenous Ceramic Sherds in the EkBc-16 Collection.

and was immediately recognized to be of high archaeological significance, not only for remains of 16th-century Basque whaling facilities in Red Bay, but also for the extensive Indigenous occupation of the site. The site's 170 hearth features comprised the largest late precontact Indigenous site in the province. The lithic assemblage from this site, situated in the Strait of Belle Isle at the nexus of the north-central Labrador coast, the Côte-Nord, and the Island of Newfoundland, held the promise of revealing significant new information on late precontact interrelationships between these regions, including insights into the degree of cultural isolation of the Beothuk of the Island in the centuries prior to their extinction. More than this, the site also exhibited potential evidence for interactions between the contact-period Indigenous inhabitants and the Basques, as well as a large collection of Indigenous ceramics; at the time, this ceramic assemblage was almost unique in the province.

Unfortunately, although the site was obviously significant, further research and a clearer understanding of the site was hampered by a number of factors. Originally, EkBc-16 was expected to be the subject of doctoral thesis research at McGill University, but this research was never pursued to completion. In addition, significant portions of the collection, including material from the earlier (1986 and 1987) excavations, and including much of the important collection of Indigenous ceramics, went missing in the 1990s. Some of this material has since been relocated and returned to the Province. Not only artifacts, but also substantial site records (site plans, profiles, fieldnotes etc.) are also missing. As a result, despite the widely recognized importance of the site, there has been no comprehensive site report, and little or no further research or conclusions beyond the first impressions obtained in the 1980s.

Consequently, in 2020 PAO requested a review and inventory of the records and collection to assess the quality of the extant data and collection, and identify the research potential of the materials, and to order these materials to make the data less intimidating and more attractive for further graduate research. This was to include a review of documents and site records, and also of the collection itself.

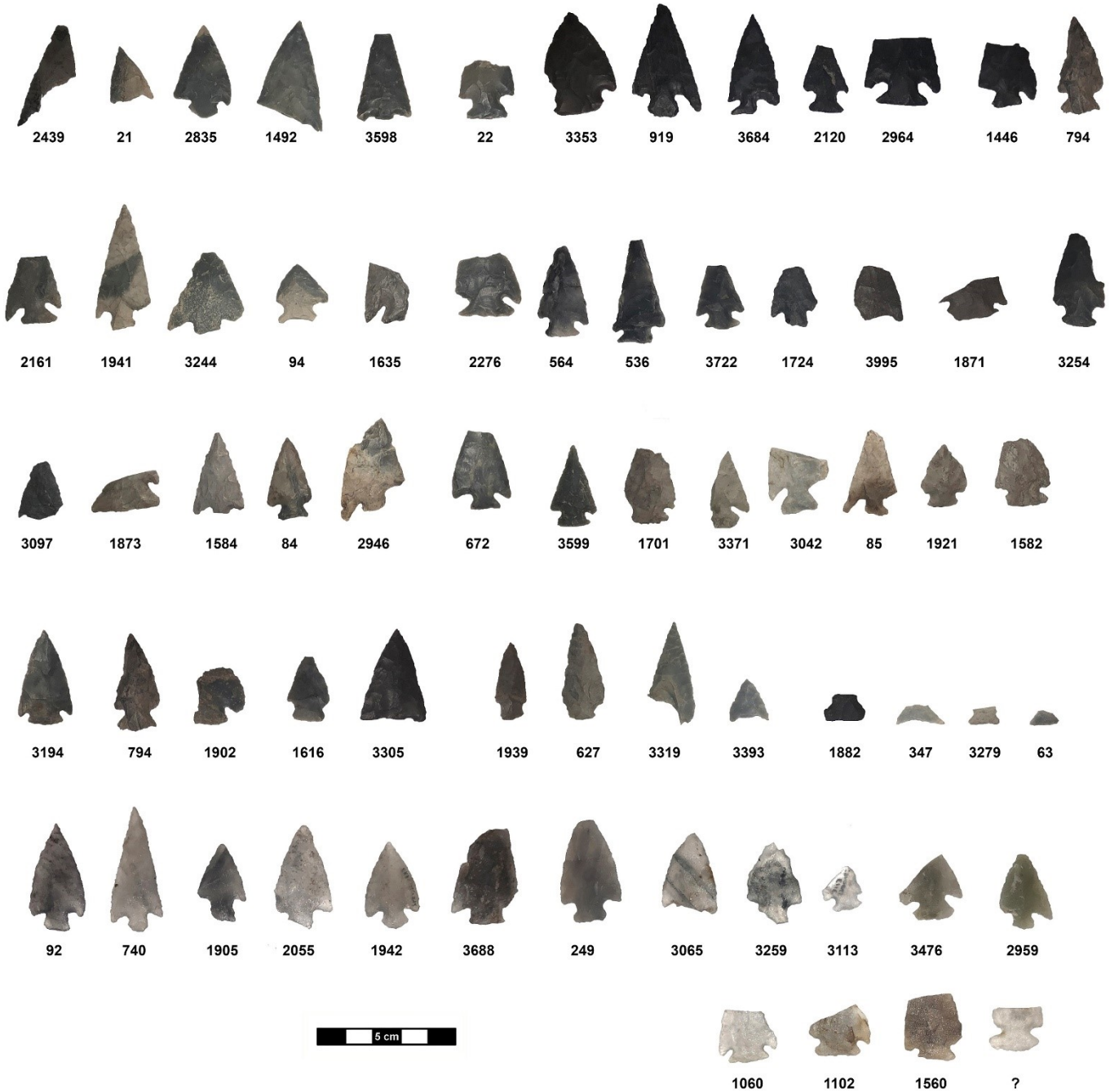
Review of the site records indicates that the artifact catalogue is largely complete. Site profiles almost entirely missing, but the site stratigraphy appears to have been relatively simple and seems fairly easy to reconstruct in outline. For the western and central

portions of the site (excavated 1988-1989 and 1991), site plans are available (along with fieldnotes from 1988). For the eastern portion of the site (excavated 1986 and 1987), site plans are largely missing, or do not identify Indigenous hearth features.

There are indications that the eastern and west-central portions of the site are not precisely equivalent. The less-well-documented eastern portion of the site appears to have yielded most of the potential evidence for contact or contemporaneity between Indigenous and Basque occupations, as well as the majority (74%) of the Indigenous ceramics. Features in the west-central portion of the site yielded lithic assemblages with significant quantities of quartz and quartzite lithic debitage, which may be earlier, on average, than the features to the east.

A feature-focused review of the site records indicates that of the 170 numbered features recorded

Assorted Projectile Points in the EkBc-16 Collection.



at EkBc-16, 100 are well enough documented to be confirmed as hearths. Seventeen of these are known or probably historic European, leaving 83 confirmed hearths (49% of total features) with potential to be Indigenous hearth features. Forty-six of these (27% of total features) are augmented by descriptions in fieldnotes. These may sound small in percentage terms, but nevertheless, the site has yielded a very large sample of well-documented late precontact Indigenous hearth features from a single site. The results of collection review indicate that gaps in the collection are complementary with gaps in the records, and that much of the central and western portion of the site, excavated in 1988 and 1989, is both well-documented and well-represented in the artifact collection at The Rooms.

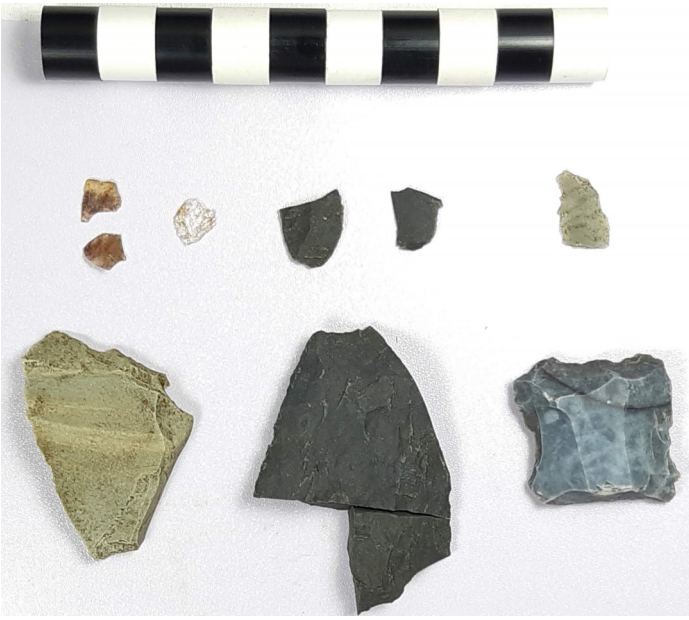
Saddle Island West is in some ways less unique than it was when first excavated in the 1980s: the distinctive lithic assemblage now has numerous analogues in the Blanc-Sablon area, while Indigenous ceramics have since been recovered from a number of sites in Newfoundland and Labrador.

Nevertheless, the site has yielded a large number of well-documented Indigenous hearth features, a substantial collection of diagnostic lithics, and an Indigenous ceramic assemblage that remains unique in the province. There is thus significant potential for further research into the lithic assemblage, the ceramic collection, and the interpretation of the site as a settlement. It is argued that a comprehensive site report, describing the hearth features and feature-based artifact associations, is a desirable precondition for such further research (Schwarz 2022:ii-iii).

Other Research-Ready Opportunities:

- Penguin Islands (DiAk-02) – Historic lighthouse occupation and unidentified Indigenous occupations with excellent faunal preservation on the small Islands east of Musgrave Harbour.

Penguin Islands (DiAk-02) eroding shore showing the shell lens on the north shore.



Lithics and gun flint collected at Penguin Islands (DiAk-02).

- Four Mile Rapids (DfAv-01) – Beothuk camp site containing three house pits a short distance from the town of Grand Falls-Windsor.
- Ryan's Store Collection (DcAi-03)– A collection of over 40,000 historic European artifacts (much of which dates to the 18th century) with associated field notes, maps, and photos (totaling hundreds of pages) from an historic premises excavated in 1978 by a former MUN graduate student that has never been analyzed.

Prospective graduate students please contact the PAO for more information. We are happy to discuss any of these projects or others that you may have in mind. You are also encouraged to apply for project support though our student Grant Program!

Looking down at one of the three Beothuk house pits at the site of Four Mile Rapids (DfAv-01).

Photo of the 1978 excavations at the site of Ryan's store DcAi-03.

A very small selection of the catalogued material from the Ryan's store DcAi-03 site.

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If you have any comments or suggestions for the next Provincial Archaeology Office Review please contact Stephen Hull.

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