Our Wildlife

News from the Wildlife Division

Department of Environment & Conservation Natural Heritage Branch

MISUNDERSTOOD MYOTIS

Bats are feared, villified and downright scary. They are also vital to the health of our province's ecosystems. The Wildlife Division is working with partners to help protect these fascinating mammals from a debilitating disease - and when you get to know them, you might just learn to love them.

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Hugh Broders

WHAT WOULD OUR PROVINCE BE LIKE WITHOUT BATS?


Hugh Broders

BATS CONTROL INSECT POPULATIONS AND HELP PREVENT THE SPREAD OF INSECT-BORNE DISEASES. THE RECENT OCCURRENCE OF WHITE NOSE SYNDROME (WNS) IN BAT POPULATIONS IN NORTH AMERICA HAS MADE THE THREAT OF SPECIES LOSS, ECONOMIC LOSS AND SPREAD OF DISEASE A REAL THREAT.

By Bruce Rodrigues

Would it become a safe haven from vicious, disease-spreading, blood-sucking flying rodents that enjoy entangling in your hair, or would it be the exact opposite: a province over-run by mosquitoes, which really are disease-spreading bloodsuckers that still may get tangled in your hair?

Confused? Then perhaps you need to understand the true role of bats in our environment. Generations of misunderstanding have created an image of bats as 'evil' creatures. The truth is, bats are fascinating animals and play an important role in our ecosystem, as well as our economic and personal health.

One common misconception is that most bats carry rabies, when in fact, prevalence of the disease is less than 0.5% of the population. The economic value of bats is evident, with a recent study estimating bats save the agricultural industry in the United States more than $3 billion annually in insect control (Boyle et. al. 2011). By controlling insect populations, including mosquitoes, bats also control insect-spread diseases. But the recent occurrence in North America of White Nose Syndrome (WNS) in bat populations has made the threat of species loss, economic loss and spread of disease a believable future scenario.

WNS is an infection of bats caused by the fungus *Geomyces destructans.* The fungus is expressed on hibernating bats and has been associated with up to 99% mortality in infected hibernacula (hibernation site). Infected bats tend to arouse early and repeatedly from hibernation. Subsequently, they expend energy reserves and become dehydrated, leading to their death. Infected bats surviving the winter may still perish in the spring or have varying degrees of wing damage.

To date no cure is known for WNS. First detected in New York State in 2006, the disease has spread rapidly through populations of bats in the States and has most recently been detected in Ontario, Quebec, New Brunswick and Nova Scotia. It is assumed the disease has yet to reach Newfoundland and Labrador, but may arrive shortly. A slim possibility may also exist that the ocean barrier between Newfoundland and the mainland can provide a barrier to WNS and serve as a refugia for bat populations here.

Two species of bats are known to breed in Newfoundland and Labrador: the Little Brown Bat and the Northern Long-eared Bat. Both species are vulnerable to WNS. While the disease is more easily detectable in the winter, knowledge of hibernacula in the province is limited. Thus, long-term monitoring and testing of maternal colonies – summer colonies composed of females and their offspring – will likely be an important means of documenting the arrival and prevalence of WNS, as well as a means of quantifying survivorship of the species.

The Wildlife Division, in partnership with St. Mary's University and assistance from Parks and Natural Areas staff, sampled maternal bat populations across the province in the summer of 2011. Bat wings were inspected for potential WNS damage and swabbed for *Geomyces* spores. Genetic data was also collected to determine the degree of isolation of provincial bat populations from their counterparts in other provinces.

Thankfully, to date, our bats have shown no sign of WNS. Unfortunately, it may be only a matter of time before the first signs of the fungus appear, so continued monitoring will be important. If provincial populations go through a "bottle neck" where populations crash, secure maternal and hibernating sites will be essential to allow bats time to recover.

The public can help in many ways. Building bat houses to provide habitat for maternal colonies is a great project that is mutually beneficial to bats and provides insect control for people; visit the Canadian Wildlife Federation (cwf-fcf.org) or Bat Conservation International (batcon.org) for information on how to build a bat house in your garden. Cavers and travelers can limit visits between bat colonies in other places and in our province. Be on the lookout for bats flying around in the winter; the energy expenditure caused by the fungus may often lead to bats coming out at this time in a desperate attempt to find food. Most importantly, sharing an understanding of the true nature of bats will help others to appreciate these important species.


Hugh Broders

BAT MYTHS DISPELLED

Myth: Bats are birds.
Fact: Bats are not birds, but flying mammals.
Myth: Bats are blind.
Fact: Bats can see quite well.
Myth: Bats get tangled in human hair.
Fact: Bats do not become entangled in human hair deliberately, though they may dive for flying insects near a person's head.
Myth: Bats bite and carry rabies and diseases.
Fact: Bats seldom transmit disease to other animals or humans, but bats are wild animals and should not be disturbed, in case they are carrying certain diseases.
Myth: Bats drink blood.
Fact: The bats of Newfoundland and Labrador do not feed on the blood of people or animals. The Little Brown Bat is a harmless insect eater. Most bats feed on insects or fruit.

- Salmonier Nature Park


Bruce Rodrigues

TO DATE, NEWFOUNDLAND & LABRADOR'S BATS HAVE SHOWN NO SIGN OF WNS

FACTS ABOUT BATS

IN NEWFOUNDLAND AND LABRADOR

Bruce Rodrigues

Little Brown Bat *(Myotis lucifugus)* is the most common bat species on theIsland of Newfoundland, and is the only bat species known to live in Labrador. It can be a challenge to locate, observe, identify and census bats because of their nocturnal and secretive nature. When you can find them, they are likely to be flying around, zigzagging and diving in the dark of the night.

An electronic bat detector enables humans to hear sound pulses emitted by hunting bats, and bat researchers with experience using bat detectors can learn to identify many bat species. Bats use certain frequencies, and every species has its own characteristic pattern, similar to the way each bird species has its own individual song.

Another monitoring aid is the Tuttle trap, which looks like a bed spring. This trap allows researchers to capture bats without harming them. Captured bats are identified, banded, counted, and released unharmed. More study is needed so that we may learn more about this fascinating creature.

Habitat
In Newfoundland, Little Brown Bats are found virtually anywhere there are trees, buildings, or caves. In the summer they roost in buildings or trees; in winter, bats find frost-free places in which to hibernate, such as caves, mineshafts, cellars, tunnels, or unoccupied buildings.

Bats and people are not always compatible when it comes to sharing living space. Harmful chemicals have been used in trying to eliminate bats from attics, but this can be harmful to humans as well. Local wildlife officials can offer advice and help remove bats without harming them, you or your property.

Appearance
The Little Brown Bat's fur colour can range from pale tan to reddish or dark brown, and its ears and wings are dark brown to black. This species reaches a maximum length, from nose to tail-tip, of approximately nine centimetres. An adult weighs only eight grams and can crawl through an opening about one centimetre wide. The wingspan is about 22-27 cm. Wings are membranes of skin, supported by forearms and elongated fingers that have evolved to form the support structure. Wings extend down the sides of the body to the legs. Besides flying, bats use their wings for crawling, catching prey and grooming. Little Brown Bats also have a membrane between their hind legs (interfemoral), which helps them to manoeuvre in flight and to scoop up insects. Pregnant females catch their newborns in this membrane.

Breeding biology
In Newfoundland, in early April, pregnant females begin their spring migration to summer roosting sites, where they establish maternity colonies. Males either roost alone or form small separate colonies. The gestation period is two months or so, depending on available food and climate. Most Little Brown Bats produce only one young or pup a year, usually in June or July. A pup may weigh as much as 30% of the mother's weight; that's like a 120-pound woman giving birth to a 36-pound infant. For the first three or four days of its life, the pup hangs on to its mother, even when she is searching for food. Young bats fly on their own in about three weeks.

Food
Little Brown Bats feed on insects such as moths, beetles, mosquitoes and flies. A single Little Brown Bat can catch 600 mosquitoes in just one hour. Bats hunt for about two hours after sunset and two more hours just before sunrise. Between hunts, they nest in roosts - often crevices - where they form tight clusters. During the summer, bats consume about half their weight in insects each night, enabling them to gain body fat needed to survive during months of hibernation.

Lifespan
Bats often live for more than 10 years. Other equally small mammals, such as shrews, have a very short life span of a year or two. Two Little Brown Bats were recaptured 29 and 30 years after banding! The 30-year old bat did not appear fragile or have worn teeth, the tell-tale sign of age.

Predators/Threats
One great threat to bats is habitat loss or disturbance. Traditionally, bats roost in trees and caves, but have adapted to living in buildings because fewer trees and caves are available.

Food supply loss is another threat to the bat population. Disruption of natural habitat reduces the numbers and varieties of insects the Little Brown Bat feeds on. Pollution and pesticides can also reduce bats' food supply, and pesticides can potentially poison bats.

When bats are disturbed during winter hibernation, they use up vital energy reserves. The Little Brown Bat's food supply consists of insects, which are available only in spring and summer. Without being able to replenish the lost energy, the bats could die.

Some natural predators such as hawks and owls can harm bats. Even trout will prey on hunting bats while they are flying low over the water. Small carnivores such as cats, rats, weasels, mink and squirrels can enter the bats' roosting areas and prey upon the bats.

Michael Blackwood

Nearly 40% of North American bat species are threatened or endangered. Around the world, many more bat populations are declining at alarming rates.

- Information courtesy of Salmonier Nature Park

THE BIG PICTURE

THE WILDLIFE DIVISION'S **HABITAT MANAGEMENT PROGRAM** EVALUATES THE POTENTIAL IMPACTS OF HUMAN DEVELOPMENT AND LAND USE ON WILDLIFE POPULATIONS AND WILDLIFE HABITAT THROUGHOUT NEWFOUNDLAND AND LABRADOR. THE ENVIRONMENTAL ASSESSMENT (EA) PROCESS IS ONE MECHANISM FACILITATING THIS EVALUATION.

By Kirsten Miller

Examples of three habitat areas used by endangered Red Wine Caribou in Labrador. Above an esker shown in the central part of the range.

Photos: Isabelle Schmelzer

An extensive bog complex often used for caribou calving.

A typical lichen woodland - this open-canopied forest with an extensive lichen mat is at least 100 years old.

THE PURPOSE OF ENVIRONMENTAL assessment, as defined in the Environmental Protection Act, is to "protect the environment and quality of life of the people of the province; and facilitate the wise management of the natural resources of the province." Any project proposal that could have a significant effect on the natural, social or economic environment is required to be registered through environmental assessment for review to ensure the undertaking proceeds in an environmentally acceptable manner.

The Environmental Assessment Division of the Department of Environment and Conservation administers the EA process, which includes consulting with interested government departments and the public.

In order for the Wildlife Division to assess potential impacts on wildlife and wildlife habitat, it is necessary to consult information pertaining to species habitat use, habitat preferences and identified key habitat use areas on the landscape.

This information includes species information collected through surveys that have been undertaken by the Division to determine species presence over time and space, population size estimates, overall health and fitness, species composition (sex and age ratios), behaviour, density, and associated food sources. Other data sources are used as required.

Additionally, information on species that are sensitive to human activities and developments on the landscape, such as species that are in decline, rare, or at risk, are included in the assessment. Species sensitivity is also based on seasonal variables, such as life-cycle stages, weather conditions, and the availability of food resources.

DETAILED PROJECT INFORMATION REQUIREMENTS

in environmental assessment registrations provide reviewers with the big picture view of proposals necessary in order to properly assess any potential effects.

RECOMMENDATION OPTIONS

Once the necessary information has been collated and used to assess the undertaking, a recommendation is submitted to the Environmental Assessment Division for evaluation and coordination of submissions by the proponent and reviewers.

The recommendation options are as follows:

i) The undertaking may be released, subject to any conditions recommended to minimize the impacts of human-induced disturbance and ensure the ecological integrity of our natural ecosystems for the benefit of current and future generations.

ii) An Environmental Preview Report (EPR) may be required, providing additional information that is not contained in the registration and necessary for evaluation of the undertaking.

iii) An Environmental Impact Statement (EIS) may be required, where significant negative environmental effects are indicated and a comprehensive environmental review of a detailed project description is required.

iv) The undertaking may be rejected, where an unacceptable environmental effect is indicated and/or is inconsistent with an existing law or government policy.

IF THE PROPONENT IS REQUIRED TO PREPARE EITHER AN Environmental Preview Report (EPR) or an Environmental Impact Statement (EIS), a committee is formed with representatives from within interested government departments and chaired by a representative of the Environmental Assessment Division. The committee's role is to prepare guidelines that will aid the proponent in developing their EPR or EIS document.

An EPR primarily focuses on the main unanswered questions in the registration, which can usually be addressed using existing information. An EIS primarily focuses on key potential effects of the project on the bio-physical and socio-economic environments, which usually requires original research to be conducted. Component studies may be required in preparing an EIS to identify existing valuable ecosystem components that may be significantly affected by the project and data gaps that need to be addressed as part of the EIS. Committee members are responsible for the review of all applicable documents when submitted by the proponent.

The Environmental Assessment Division evaluates all submissions by proponents and reviewers. It prepares a recommendation based on these submissions to advise the Minister of Environment and Conservation on potential environmental effects prior to a decision being made on an undertaking. The division also monitors approved undertakings to ensure compliance and effectiveness of any mitigation measures applied to the release of the undertaking.

The environmental assessment process benefits the protection of wildlife and wildlife habitat in this province by ensuring comprehensive project planning and design. Detailed project information requirements in environmental assessment registrations provide reviewers with the big picture view of proposals necessary in order to properly assess any potential effects.

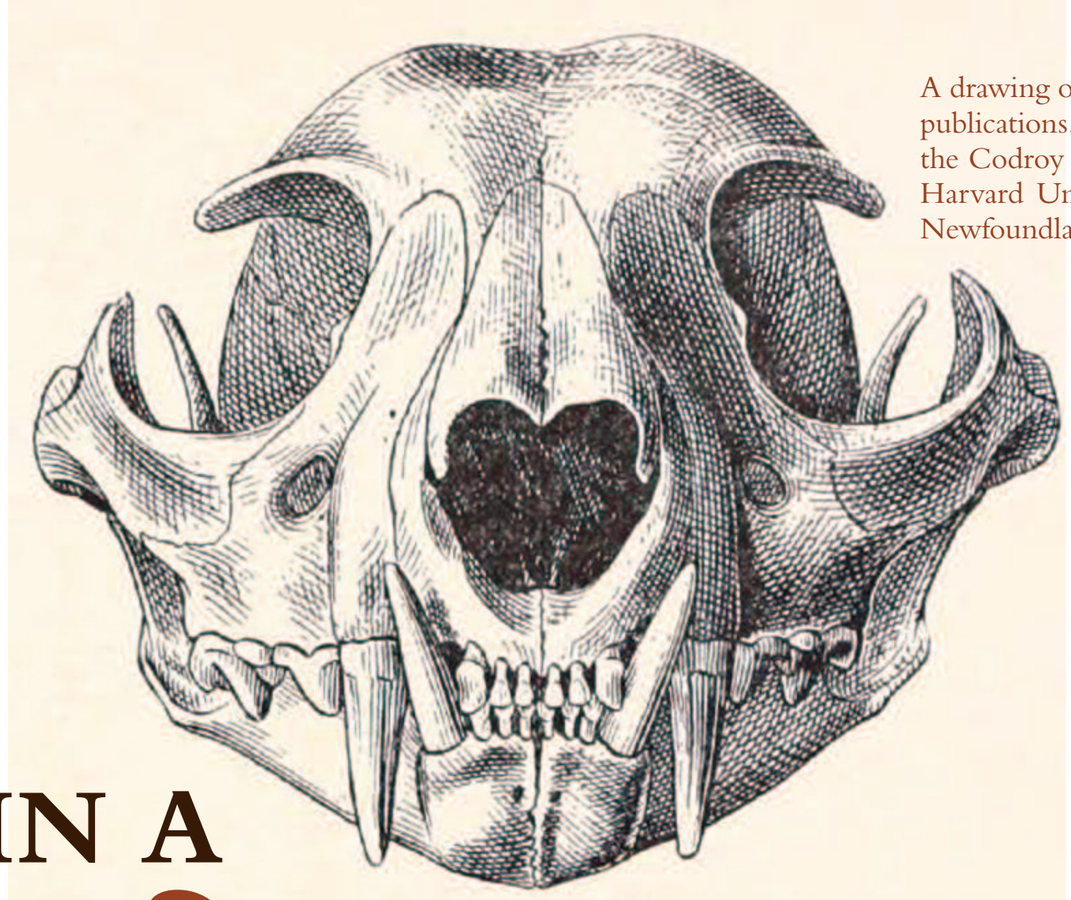
The process maximizes environmental protection by being transparent, allowing for the input of public values, expert knowledge, and opinion integration into the decision making process. Coordination and information exchange within the Wildlife Division is vital to making wildlife-related recommendations.

Due to the information requirements required to assess the project; staff within the habitat management program are constantly liaising with experts within the Division to ensure the most up-to-date information is being used. Environmental assessments within the province also make sure existing legislation, such as the *Wildlife Act* and the *Endangered Species Act*, are adhered to throughout all phases of the project.

The Wildlife Division and Memorial University (MUN) are starting a study of native land mammals of the Island of Newfoundland. The purpose of this and a subsequent article is to describe and explain parts of this work, which will address a variety of questions about ecology and evolution of Newfoundland's land mammals. Some of this work will be accomplished by using specimens from trappers and hunters, or housed in museums.

By Dr. Edward Miller

WHAT'S IN A NAME?



A drawing of a Newfoundland lynx skull taken from one of Outram Bangs's publications. Bangs studied Newfoundland mammal specimens collected in the Codroy Valley by Ernest Doane in the late 1800s. Bangs was situated at Harvard University, which has the world's largest scientific collection of Newfoundland mammals.

Moose and caribou hunters know about the importance of physical specimens like skulls or jaws: biologists can determine the age composition of a hunt by counting growth rings in teeth, for example. This information is used in making management decisions. Specimens of known age can also be used to study body growth and maturation, which may be slow or fast depending on habitat quality and population density. Slow growth and late maturation are common if habitat quality is poor or populations are high.

Specimens collected long ago also contain rich information relevant to conservation and management, such as changes in pollutants, body size, or geographic distribution over time. Finally, specimens housed in museums are vital for study and documentation of which species are present in an area.

A saying in biology is, "If you can't name it, you don't know what you're talking about." This statement emphasizes the importance of systematics – the naming of species and organizing information about the world's organisms.

Early explorers and scientists collected plant and animal specimens, and many of these still exist in museum collections. Such collections enabled the mapping of species distributions and permitted scientists to describe new forms and species. Newfoundland is a good example. Here, many mammals were collected in the 1800s and early 1900s and deposited in museums, mainly in the United States, but also in Canada and England.

The large size and great scientific and historical value of these collections can be illustrated with a few examples. Several dozen specimens of Newfoundland Caribou are housed in American museums, including 20 in the Museum of Comparative Zoology (Harvard University) and 10 in the Academy of Natural Sciences in Philadelphia (the oldest specimen was collected in 1881). Five specimens (skulls) of the extinct Newfoundland Wolf also reside in the Museum of Comparative Zoology, and many specimens of smaller mammals are there and in other museums. These early collections were the basis for scientific descriptions of new forms.

Systematics

A saying in biology is, "If you can't name it, you don't know what you're talking about." This statement emphasizes the importance of systematics - naming species and organizing information about the world's organisms. The most basic part of this enterprise is recognizing and naming new species, which are the fundamental unit of biodiversity. Most of Newfoundland's native land mammals (except Arctic Hare, Ermine, and Timber Wolf) were scientifically distinguished as unique species.

The history of Newfoundland mammal names begins in the late 1800s. In two 1894 publications, the Newfoundland Wolf (now extinct) was named as a distinctive subspecies and the Meadow Vole, the only small mammal native to Newfoundland, was named as a new species.

The scientist who described the Meadow Vole was Outram Bangs, who studied specimens collected by Ernest Doane in the Codroy Valley. Bangs was situated at Harvard University, which has the world's largest scientific collection of Newfoundland mammals. He used these as the basis for scientific publications in which he described new forms of otter, muskrat, beaver, etc., which he judged to be unique to Newfoundland. He recognized that certain of these forms were very distinctive; for example, he stated that the skull of Newfoundland beavers "can be distinguished at once" by several anatomical features.

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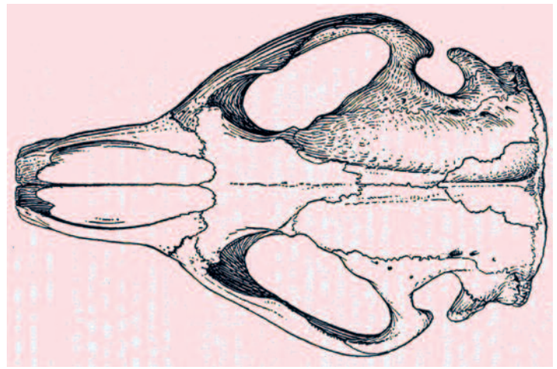
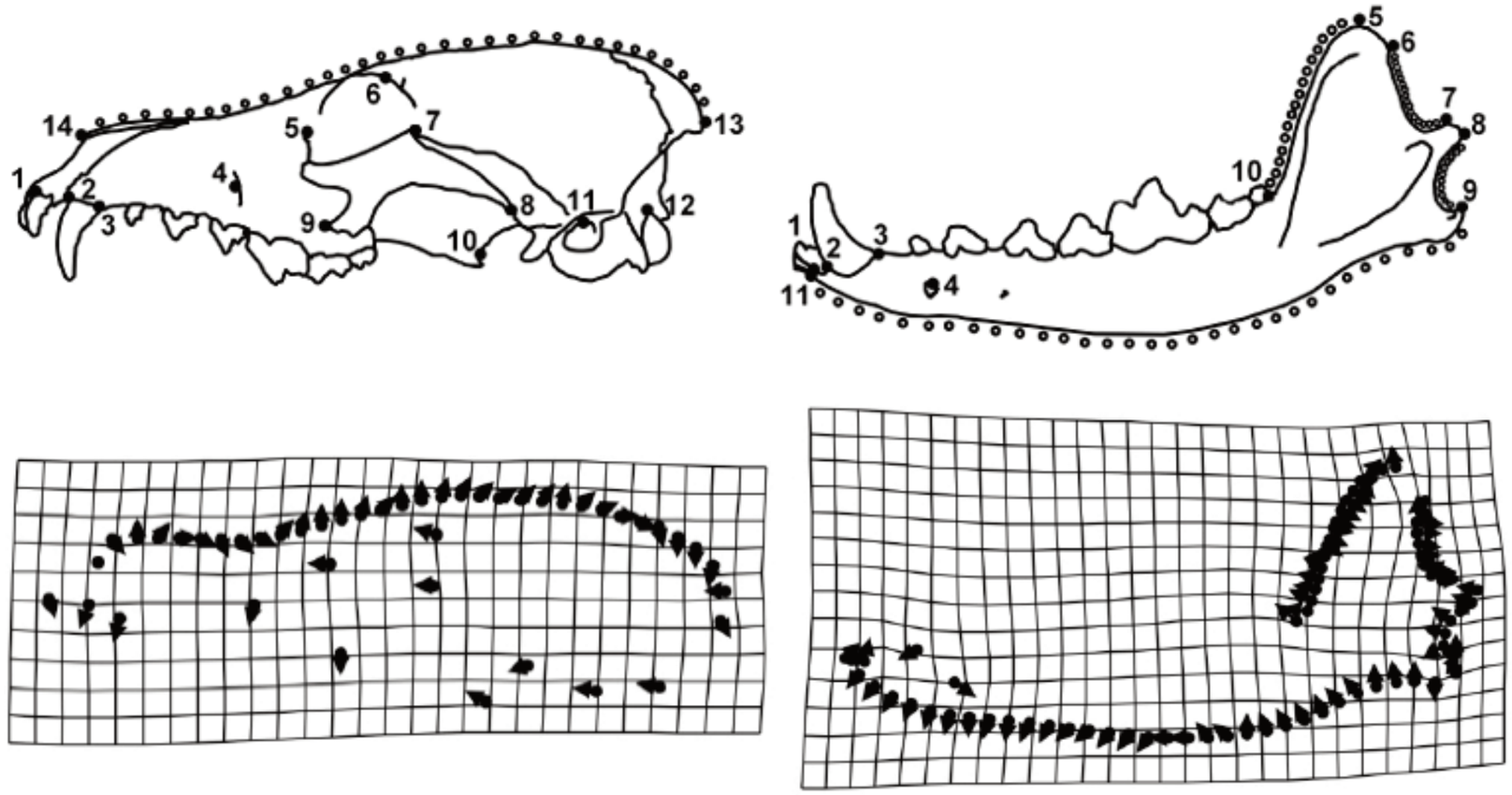
Newfoundland Wolf on display at The Rooms in St. John's.



Outram Bangs used collected skulls as the basis for scientific publications in which he described new forms of mammals that he judged to be unique to Newfoundland. He recognized that certain of these forms, such as beaver, above, were distinctive, and "can be distinguished at once" by several anatomical features.



Above: coyote skull. The Wildlife Division and MUN are undertaking studies of skulls to complement further planned genetics research that will provide information about the differences betweem Newfoundland and mainland mammals.

Why do land mammals of Newfoundland and the mainland tend to differ? Because Newfoundland (and islands generally) differ biologically and in climate, which means that species evolve differently in island environments. Islands also have fewer plant and animal species than the mainland, and island floras and faunas are unrepresentative of mainland biotas.

These differences in community composition exist because, after islands form or become habitable (in the case of Newfoundland, this was after the covering ice sheets started to retreat about 15,000 years ago), they are colonized gradually only by those plant and animal species that can disperse across the water and can then survive and reproduce in the island environment. Newfoundland has no native frogs or salamanders because they cannot survive in salt water long enough to make the crossing. It also lacks many kinds of small mammal because they also cannot survive a swim or ice crossing to the Island. As a result, Newfoundland has few native species of land mammal, and most are medium to large in size. This has important ecological implications.

But back to systematics and the distinctive forms of mammals in Newfoundland. All those Newfoundland mammals originally described as unique species were subsequently relegated to the lesser rank of subspecies; they didn't seem to be quite different enough to merit species status in the eyes of many biologists. More recently, genetic studies have shown that at least some Newfoundland mammals are in fact quite different from mainland forms, such as marten and muskrat.

The Wildlife Division and MUN will undertake studies of skulls to complement further planned genetics research, using modern methods of computerized description and analysis that will provide much finer-level information about Newfoundland-mainland differences than that available to early taxonomists. The results of this genetic and specimen-based work will provide a solid basis for re-evaluating the evolutionary distinctiveness of Newfoundland's land mammals.

Who settles down for a long winter's nap?

Life is beginning to change for the animals at Salmonier Nature Park with the fast approach of winter. The inescapable cold of short days and long nights looms for all species in Newfoundland and Labrador, and now is the time for adaptations that will allow survival through the long months of snow and frigid cold.

By Michael Blackwood

Bats

Fourteen mammal species are native to insular Newfoundland, and of these, only our bats are true hibernators. True hibernation is a state mammals achieve while sleeping, when their metabolic and respiratory rates are allowed to drop drastically; they burn just enough calories, and breathe just enough air, to stay alive and keep their body temperatures above freezing. (Body temperatures drop significantly due to the drastic reduction in their metabolic rates.) Carefully selected hibernation sites and thick winter coats are also essential in keeping them warm on as few calories as possible. The layer of fat stored as fuel for the winter also provides insulation at first, but dwindles constantly as the winter's long fast progresses.

> Hibernation is the first thing many of us think of when considering how animals might survive a Canadian winter. This makes sense as it is a very successful adaptation employed by many Canadian species, particularly small mammals. However, on the Island of Newfoundland, true hibernators are definitely in the minority.

Black bears

Doesn't our native black bear also hibernate? The answer to that is, "sort of." Bears become lethargic and sleep for most of the winter, and their respiration does slow down, but their metabolic rates and body temperatures are far less depressed than is typical of a true hibernator such as the Little Brown Bat or the woodchuck. This means the black bear is relatively easy to wake during the winter, and will often wake for a mid-winter wander if there is a spell of mild weather.

This is actually the key to how the black bear became a native mammal of Newfoundland in the first place. At the end of the last ice age in Newfoundland about 15,000 years ago, the island had been scraped bare by glaciers, as had much of what is now Canada. Being cut off from the mainland by salt water greatly reduced the number of species that could colonize the island as temperatures warmed and the first vegetation returned via wind-blown seeds and spores. **Continued Page 14**

Michael Blackwood

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Michael Blackwood

Unless an animal was capable of surviving a long swim in cold salt water, there were only two ways to reach the island: fly here, or drift over on debris or ice.

Dense winter ice pack made for an excellent annual "causeway" for colonization by species from Labrador and the Maritimes, but flightless true hibernators could never use this route since it was only available during their period of dormancy.

Our black bears, caribou, lynx, wolves (now extinct), red foxes, arctic hares, otters, martens, ermines, beavers, muskrats and meadow voles are all presumed to have arrived via winter pack ice or some other form of natural raft. The fact that none of these mammals truly hibernates would tend to support the idea of a winter crossing, though the smaller ones may have come via wood debris in the summer. Coyotes, newcomers to the island's ecosystem, are technically "new natives" because they arrived on the west coast via ice floes in the mid 1980s, in the same manner of natural range expansion as the rest of our native mammals.

Woodchucks

One hibernating animal displayed at Salmonier Nature Park is the woodchuck (a.k.a. groundhog), a Labrador native and one of Canada's largest true hibernators. The woodchuck is a perfect example of the benefits of hibernation as an adaptation to harsh northern winters. The largest North American member of the squirrel family, the woodchuck's diet would be very hard to maintain throughout a Canadian winter. They feed mostly on fresh green vegetation, supplemented with fruit and vegetables when available, and infrequently on insects and snails. None of these foods are readily available in the depths of winter, so an ideal strategy is to consume enough of them by the fall to be able to hibernate and live off of stored fat for the winter. (The woodchuck's cousins, the red squirrels, cache food throughout the fall to supplement their winter foraging, whereas many birds, like the Canada goose, migrate to temperate winter feeding grounds.)

The woodchuck will start hibernating in September or October, as soon as nighttime temperatures drop below freezing. While hibernating in their burrows, which are dug deeply enough into grassy banks to be below the frost line, their body temperatures can drop as low as three degrees Celsius, while their heartbeats drop to five beats per minute from their usual 80. It is this drastic alteration in metabolism that allows them to survive for a year on food consumed over just five or six months. They will emerge in March or April, still reliant on the remains of their fat reserves, but supplemented by eating bark and twigs until fresh green growth returns.

Green frogs

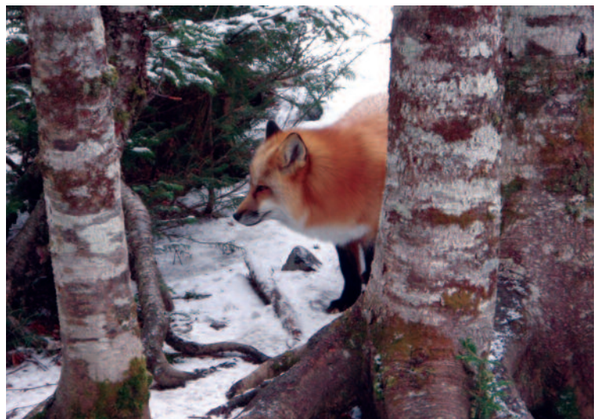
Animals that don't generate their own body heat, such as amphibians, have their own adaptations to deal with the cold of winter, and many of them go dormant in a way much like hibernation. Green frogs, the most common amphibians in Newfoundland, bury themselves partway in mud on the bottom of ponds and go dormant until spring. Their body temperature drops to match that of the sediment surrounding them, so they must burrow in ponds where water is deep enough not to freeze to the bottom. As the frogs are buried underwater, what little oxygen they need while dormant is easily absorbed from the water through their permeable skins.

The fact that green frogs are dormant in the winter and cannot survive salt water indicate that they were introduced by humans. They actually arrived in the St. John's area in the 1800s, unintentionally hidden in bales of hay imported from Nova Scotia, and have since spread across the island. Unlike Labrador, which has native frogs, toads and salamanders, all the amphibians on the Island of Newfoundland were introduced by human activities.

Though many animals in our province are not hibernators, they all have finely tuned adaptations that allow them to deal with drastic seasonal changes that come each year. Ingenious winter adaptations such as migration, insulation and hibernation simply prove that "survival of the fittest" is definitely a winter sport in Newfoundland and Labrador.

Survival of the fittest is a winter sport

PHOTOS, CLOCKWISE FROM RIGHT: A WOODCHUCK EATING CABBAGE AT SALMONIER NATURE PARK TO BUILD UP FAT RESERVES FOR WINTER; A GREEN FROG WILL PARTIALLY BURY ITSELF IN MUD AND GO DORMANT; RED FOXES ARE PRESUMED TO HAVE COME TO NEWFOUNDLAND VIA A WINTER CROSSING, SUCH AS PACK ICE, AND DO NOT HIBERNATE. *PHOTOS BY MICHAEL BLACKWOOD*. BATS BURN JUST ENOUGH CALORIES, AND BREATHE JUST ENOUGH AIR, TO STAY ALIVE AND KEEP THEIR BODY TEMPERATURES ABOVE FREEZING. THIS FROST-COVERED BAT IS HIBERNATING IN A CAVE. *PHOTO BY BRUCE RODRIGUES.*



The Wildlife Division is always looking for ways to get the public involved and engaged in the work it does. One way to accomplish this goal is to make use of "citizen science," the participation of an individual or group in collecting information for use in recovery or management of species.

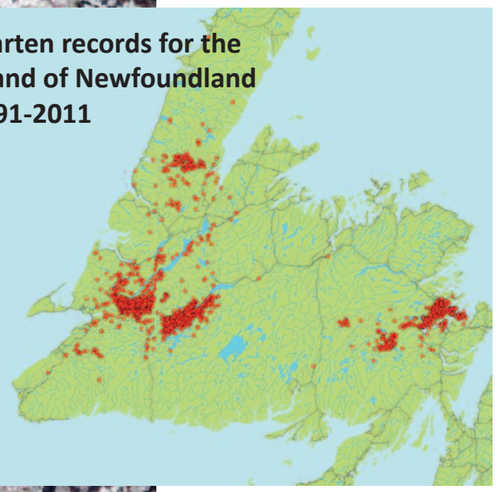
By Glenda Bateman | Photos by Emily Herdman

Citizen science aiding marten recovery

In the fall of 2010, the Wildlife Division started recruiting volunteers for a marten hair snag project. The aim of the project was twofold: a) to collect information on the current distribution and abundance of marten; and, b) to involve snarers, trappers and other resource users in a hands-on activity that will contribute to the recovery of marten.

The population of American marten in Newfoundland is genetically and geographically distinct from marten found on the mainland. This population has been listed as Threatened under both federal and provincial legislation (the *Species at Risk Act* and the *Endangered Species Act*, respectively). This listing reflects the recent increase and stabilization of the marten population on the Island of Newfoundland.

Marten records for the Island of Newfoundland 1991-2011



This designation demonstrates the continued need to support marten populations as they increase and expand their range. Current major threats to marten recovery have been identified as habitat loss and degradation, and incidental capture in snares and traps. Significant efforts have been made to manage habitat for marten and to minimize snaring and trapping mortality by introducing best practices, including using 22- gauge brass and six-strand picture cord wire for snaring small game.

Ongoing effective management of marten is challenged by a lack of direct and current knowledge of marten abundance, trends and distribution. Having better knowledge of the distribution and abundance of marten will aid in future status assessments and may lead to the long-term downlisting of this species.

The marten hair snag project involves resource users in the deployment of "traps" designed to collect hair samples from marten without causing harm or significantly disturbing the animals.

Each participant will deploy 10 or more snags spaced at least one kilometre apart. Each volunteer will check their snags every 7-10 days to determine if marten have visited the trap. Collected hair will be analyzed genetically using microsatellite DNA analysis to identify individual marten, and to provide information on the sex of the animal. If hair snags are repeated from year to year, it will be possible to identify animals that are resident to an area rather than just passing through.

Most of the hair snags are being deployed by volunteers in areas where marten have been reported but not confirmed, or in areas adjacent to known marten populations. Information volunteers collect will contribute greatly to our knowledge of where marten are and where they are not, and will help focus further efforts to determine abundance and other characteristics such as habitat use, population composition, and causes of mortality.

More than 15 volunteers, including trappers, snarers, hunters, outfitters, and cabin owners are engaged in this project, but more are needed. The Wildlife Division and Atlantic Canada Conservation Data Centre will provide all supplies necessary for the hair snags. If you are interested in volunteering or would like more information on this project, please contact: Glenda Bateman, HSP Marten Project Coordinator, Atlantic Canada Conservation Data Centre, 637-2356 (glendabateman@gov.nl.ca) or Emily Herdman, Ecosystem Management Ecologist, Wildlife Division, 637-2423 (emilyherdman@gov.nl.ca)

This project is a joint venture by the Atlantic Canada Conservation Data Centre and the Wildlife Division and is supported by the federal Habitat Stewardship Program.

Help protect the American marten

Report sightings to the Wildlife Division.

Adhere to snaring and trapping regulations (as outlined in the NL Hunting and Trapping Guide)

Support habitat protection for our rare species

Tips for deploying snare wire

Only use approved snare wire. Approved snare wires for the Island of Newfoundland are 22-gauge brass and six-strand picture cord.

Ensure snares are set properly.

Form your snare on site, not at home. This will avoid kinking and may result in higher retention.

Snares that have previously captured game or have kinks are more prone to breakage.

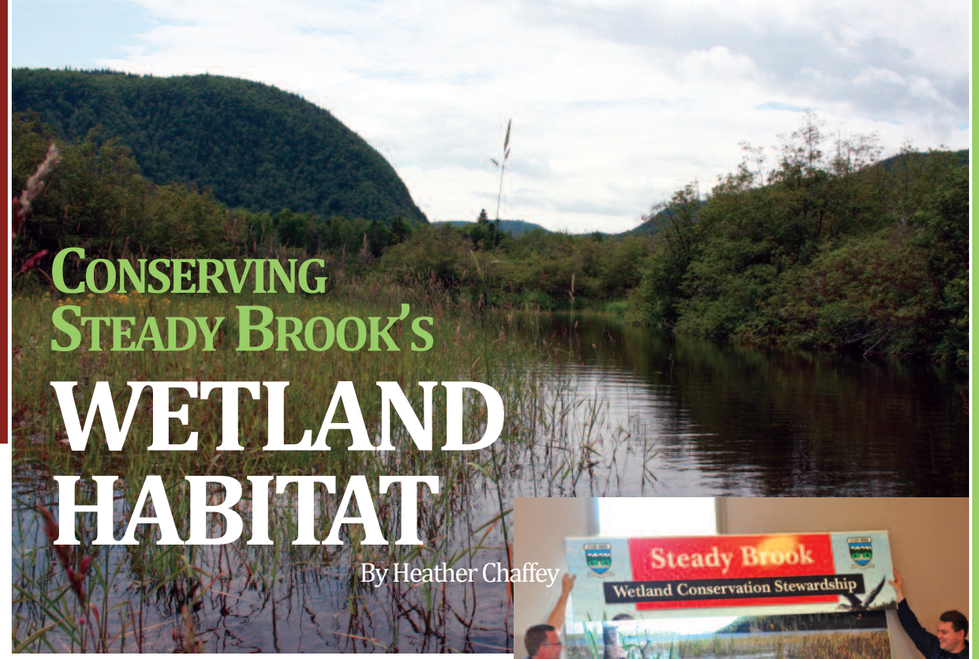
There are variations between the different types of 22-gauge brass and six-strand picture cord wire available. Some brands may outperform others.

Check snares daily, preferably in the morning.

Remove your snares on or before the season closing date.

Every effort should be made to release non-target animals accidentally taken in snares.

The Town of Steady Brook celebrated Canada Day by signing a Municipal Wetland Stewardship Agreement with the Department of Environment and Conservation. Minister Ross Wiseman was represented by Humber East MHA and Finance Minister Tom Marshall, accompanied by Steady Brook Deputy Mayor Brenda Duffy and Councilor Rob Perry.



Conserving Steady Brook's WETLAND HABITAT

By Heather Chaffey

Top photo: Steady Brook councillor Rob Perry and EHJV program manager Jonathan Sharpe unveil the town's new stewardship road sign. Below: Deputy Mayor Brenda Duffy, Humber East MHA and Finance Minister Tom Marshall, and Jonathan Sharpe sign the stewardship agreement. Photos: Heather Chaffey.

Steady Brook's wetlands, which will be conserved under the stewardship agreement, have a high density and rich diversity of songbirds and many waterfowl species. Some of the species noted there are belted kingfishers, American goldfinches, cedar waxwings, song sparrows, common grackles, tree swallows, common ravens, pine siskins, dark-eyed juncos, black and white warblers, blue jays, American robins, black ducks, mergansers and geese. By conserving these wetlands, the Town of Steady Brook is ensuring habitat for these birds to survive.

Wetlands provide many important ecological functions. One of the best known is the habitat they provide for birds. According to the U.S. Geological Survey, about one-third of North American birds use wetlands for food, water, shelter and or breeding.

The Importance of Wetlands

Wetlands are filled with a rich supply of food for birds. Birds eat plants, vertebrates, and invertebrates found in wetland soil and water. When migrating in spring and fall, birds travel long distances between breeding and wintering areas. They use wetlands, which provide a concentrated and abundant food supply and also an important rest area, to fuel up in order to continue their journey. For breeding birds, the food supply and fresh water available in wetlands allows nesting birds a chance to quickly replenish themselves, and also aides in the quick development of young birds.

Wetland vegetation is not only a food source; it also provides shelter. Wetlands offer protection to birds from upland predators such as foxes, and reduce the risk of predation to nesting or young birds. Vegetation also provides shelter from weather. This is especially important in the spring when waterfowl protect their young during bad weather. Compared to coastal areas, wetlands provide more shelter from weather and predators and therefore, are a safer place for birds to nest, feed and rest.

In fall, many migratory birds will fly to southern wetlands to store up on food before the next breeding season. Many wetlands in the north are frozen during that time and cannot provide fish, submerged invertebrates or vegetation. Some birds will survive on these frozen wetlands using emergent vegetation as food and shelter.

Wetlands across North America are being lost due to drainage and degradation. When wetlands are destroyed, birds lose habitat and have to find other suitable areas for feeding, breeding and resting; sometimes these areas are not available. Conserving wetlands is very important in maintaining survival of bird species.

The Municipal Stewardship Program has been instrumental in conserving wetlands within municipal boundaries of communities throughout Newfoundland and Labrador. The Town of Steady Brook joins 28 other municipalities that have signed stewardship agreements to conserve habitat for wildlife via the Wildlife Division's Municipal Stewardship Program.

For more information on the importance of wetlands, visit: Technical Aspects of Wetlands - Wetlands as Bird Habitat. National Water Summary on Wetland Resources, United States Geological Survey Water Supply.

Facts about MIGRATION

Source: Ducks Unlimited Canada

Common types of migratory birds found in Canada:

Waterfowl (ducks and geese)
Raptors (hawks and eagles)
Wading birds (cranes, herons, gulls, terns and shorebirds)
Songbirds (sparrows, warblers, blackbirds and thrushes)

• Birds take on the arduous task of migration to access good habitat conditions year round. In spring and summer, they take advantage of abundant food and good habitat for nesting and breeding in the north. In autumn, they journey south to enjoy the same benefits.

• Different species migrate at different times, based on a combination of biological and environmental factors. Many species instinctively start preparing for migration by slowing their metabolism (building fat for the long flight), and increasing their feeding.

• Shorter days in fall and longer days in spring also trigger migration, as well as changes in temperature that affect the freezing or thawing of wetlands.

• Migratory birds go to areas they know to be rich in food and resources, although loss of wetlands has reduced available habitat. Different species of birds migrate to different areas; birds that migrate north to Canada for the spring and summer usually breed and nest here. Many go even further north to coastal Alaska and the Canadian territories.

• In autumn, many common migratory birds migrate to the southern United States and northern Mexico, and to coastal regions around the Gulf of Mexico. Many songbirds migrate even further to central and South America.

• Migratory birds fly thousands of kilometres to reach their wintering grounds, facing hazards such as poor weather, lack of food, exhaustion and predators. Birds are physically and strategically prepared for these challenges:

• Birds use the sun as a compass. They are aware of daily light and dark cycles, and rely on shadows to help them determine direction.

• Birds distinguish between north and south by orienting themselves according to the position of the stars. Cloudy skies and bright city lights can cause problems for migrating birds.

• Small crystals of magnetic iron oxide within the base of birds' beaks and bills lead scientists to believe that birds are responding to the Earth's magnetic fields.

• Birds use landmarks along their route and follow rivers, coastlines, ridges and mountains.

• Many birds fly almost non-stop, but others rest and refuel along the way, often at the same areas every year.

• Large, fast and predatory birds travel and feed during the day, utilizing upswelling air currents emanating from the earth's warm surface.

• Songbirds or poor flying birds (such as coots and grebes) migrate at night to avoid predators and avoid dehydration.

• High flyers make better time: some migratory birds have been recorded at altitudes between 1.5 and six kilometres (5,000 to 20,000 feet).

• Many migratory birds, such as geese, travel together, sometimes as protection from predators, and often as family groups.

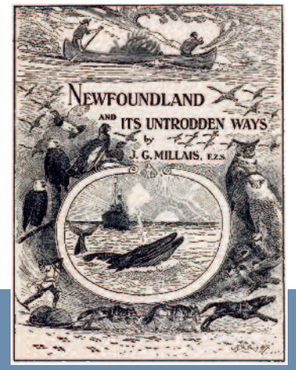
Visit Ducks Unlimited Canada to access an interactive migration map

Hindsight

Newfoundland and its Untrodden Ways by J. G. Millais was published in 1907. The book, which includes photos and illustrations by the author, is an account of his expeditions to Newfoundland.

John Guille Millais was an English artist, naturalist, gardener and travel writer. He began his career in the army with the Seaforth Highlanders, but after six years resigned to travel the world, including Europe, Africa and North America. He explored Canada and Newfoundland and helped map uncharted areas of Alaska.

Newfoundland and its Untrodden Ways provides interesting details on Newfoundland's natural history in the early 1900s, especially its caribou herds. The book can be downloaded as a PDF at:
http://www.archive.org/details/newfoundlanditsu00mill



Our Wildlife

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www.gov.nl.ca/env/wildlife

The mandate of the Wildlife Division is to protect and conserve Newfoundland and Labrador's biodiversity and manage its wildlife and inland fish resources for the benefit of present and future generations. To deliver on this mandate requires an incredible amount of work, both in the field and at the office. It is our hope that these newsletters will provide a snapshot into the work of the professionals who are striving to fulfill this mandate, and to highlight the complex nature of wildlife research and management.

Our Wildlife
coordination/design:
Linda Skinner
Wildlife Division

RENEW 2011

Members of the REcovery of Nationally Endangered Wildlife (RENEW) working group met in Corner Brook, NL Sept. 20-22, 2011.

This working group was established in 1988 and reports to the Canadian Wildlife Directors. Members from every province and territory, as well as Fisheries and Oceans Canada, Parks Canada, and Environment Canada, meet annually to exchange information and ideas, and collaborate on species at risk recovery issues.

This year's meeting was a great success. Participants had an opportunity to share information on innovations and challenges from recovery programs and critical habitat protection initiatives within their respective jurisdictions.

They also spend time exploring topics such as the use of aboriginal traditional knowledge, voluntary stewardship programs, and species bundling in species at risk recovery programs. Participants were treated to a presentation on the success of the Limestone Barrens Habitat Stewardship Program and a tour of the Tablelands in Gros Morne National Park.

Department of Environment & Conservation

Wildlife Division

Newfoundland Labrador