The Snow Bunting Report

Canadian Snow Bunting Network

Presenting the 4th annual newsletter

Welcome to the Canadian Snow Bunting Network annual newsletter! Thank you to all of those who invested their time and enthusiasm to this project and allowed it to thrive. A special welcome goes out to everyone who has joined the network within the last year. One thing that is key to the success of this collaborative effort is that it allows for people from different places, ages and background to work together. On that account, we are pleased to present the multiple facets of this collective success with the 4th edition of the newsletter.

- Follow us on the new CSBN Facebook page at: www.facebook.com/SNBUnetwork
- Don’t forget to send your banding updates to Marie-Pier Laplante (marie_mary[AT]hotmail.com) to post on the CSBN blog on a bi-weekly basis: www.ruthvenparknatureblog.com
- Questions about current Snow Bunting research in Canada? Contact Oliver Love at the University of Windsor (olove[AT]uwindsor.ca)
The Year of the Snow Bunting

Marie-Pier Laplante – Editor of the Snow Bunting Report

Last year at the same date, I would have given anything to be part of this wonderful network of enthusiastic winter banders and observers that is the CSBN. Surveying every country road in the Quebec eastern townships area in search of flocks of Snow Buntings, I tried several baiting sites throughout December and January. I had no success until on a stormy day towards the end of January, sweet-chirp calls attracted my attention to the apple orchard by the cabin where I lived. Snow Buntings were having breakfast at my place! Oh my god!

I therefore had the privilege to work with this remarkable bird for the first time last winter. I set up the trap for at least a couple of hours on most days during the peak of the season and ended up having several individuals visiting the trap multiple times over a relatively long period. # 54 was my all-time-award-winner, with 12 visits on different days over a month-long period. This determined bird also visited the trap as many as 5 times in a single day. So much for trap-shyness! From my perspective, it seems that within-winter movement dynamics vary depending on location. For example, David Lamble in Fergus, Ontario, bands a lot of birds over the course of a winter and seldom recaptures the same individual over a prolonged period. On the other hand, data such as those collected in the eastern townships of Quebec suggests that some individuals stick around the same location, perhaps making short local flights in search of exposed food.

I ended up banding just over 400 birds last winter. It was fantastic that friends and family with no previous ornithological interest became acquainted with banding activities through this project as well. I realized some years ago, when I first volunteered at Ruthven Park banding station, how banding has this unique potential to connect people of all ages to the natural world. Kerns High School in the Temiskaming area, where winter banding is part of the curriculum, is an inspiring example of the tremendous educational capacity of the Snow Bunting banding project beyond the great scientific knowledge it generates.

My fascination for this bird kept growing and I started wondering about several aspects of its ecology. It occurred to me that pursuing graduate studies on the Snow Bunting would be 1) the coolest of all things and 2) a great way to try to make sense of the banding data so meticulously collected by the CSBN members. Desperately wishing to be involved in the network activities back in December 2013, I would have never thought that a few months later, I would be given the privilege to coordinate the updates on the blog, edit the annual newsletter and study the species at the University of Rimouski for a Master’s project! Yet this study (and other ones that you will read about in this newsletter) could not be carried out without the effort of you, hardy winter banders, who collect the data fundamental to the expansion of knowledge on this iconic Canadian species. Thank you all for your effort and eagerness and good luck this winter!
Greetings, Snow Bunting enthusiasts! I would like to introduce myself, and hopefully get to know some of you in person over the coming seasons. I am a post-doctoral fellow with Dr. Oliver Love at the University of Windsor, and my job is to analyze some of the amazing data that you have been collecting on Snow Buntings!

I have been studying songbirds for about 10 years, most recently with the guidance of Dr. Bridget Stutchbury (author of *Silence of the Songbirds*) during my PhD on Wood Thrushes at York University. For my PhD I worked in the hot, humid, bug- and snake-infested tropical jungle in Belize. Needless to say, working on Snow Buntings will be a welcome change! I do have experience working in more ‘northern’ settings as well, having completed a Masters on the rare and elusive Bicknell’s Thrush with Dr. Tony Diamond (Hi Tony!) in New-Brunswick.

While I have yet to actually band a Snow Bunting myself (can’t wait!), I have started analyzing some of the extensive data collected by Dr. Love, students, and the CSBN. One of the most unique aspects of Snow Bunting biology we are examining is their link to seabird colonies in the Arctic. Snow Buntings nesting near seabird colonies appear to have higher reproductive success than those nesting farther away.

We think this is because the seabirds are actually fertilizing the freshwater Arctic ponds with their poop, resulting in more emergent aquatic insects from the ponds, which the buntings use to feed their chicks! See figure below. We are hoping to trace this ‘ocean signature’ in the buntings by examining chemical markers in their tissues, to see if Snow Buntings really are ocean-powered songbirds.
Model showing our hypothesis about how seabirds might be affecting Snow Buntings.

I’m also interested in examining the within-winter movements of Snow Buntings in relation to climate change, to make predictions about where and when they might be found, given a warmer and less snowy winter for much of their current range. The CSBN data will be invaluable for this project, and I hope to visit many of the CSBN sites for part of this project next winter. I live in Winnipeg, Manitoba, and I also hope to get some more local banding going in this region, with the help of BSC’s Christian Artuso and Paula Grieef of Oak Hammock Marsh interpretive centre.

I will post updates on our Snow Bunting work on my blog (www.birdbiologist.wordpress.com) and on Twitter (@BirdBiologist), and I would love to hear from individual banders about ideas and observations of buntings in the winter. Happy banding!

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Closest thing to winter fieldwork so far – hand feeding colour-banded Gray Jays in Algonquin Park!
CSBN expands to the James Bay lowlands

By Steve Marson, teacher at Northern Lights Secondary School, Moosonee, Ontario

It is with pleasure that we join the Canadian Snow Bunting Network. My wife, Jessica Plourde, and I have always enjoyed bird watching, so we jumped at the opportunity to be a part of something as exciting, rewarding, and important as the CSBN. We’ve had some wonderful experiences working with birds in various capacities during our time at Trent University, the MNR, Environment Canada, and here in Moosonee. Another place I got to see experience bird banding was in my hometown of Fergus where I had the chance to band with my former science teacher and soccer coach, David Lamble. Another connection I had to Snow Buntings occurred while working one summer at East Bay Island, Nunavut. In addition to researching eiders, I got to see first-hand the research being done on Snow Buntings. Staying in touch with various researchers from past projects has allowed me to get involved in banding Snow Buntings in Moosonee. A friend from Moosonee, and avid birder, Christina Nielsen, is our go-to person for all things Snow Bunting up here. She and her family have seen Snow Buntings pass through their yard in large numbers for years now. Birders tend to find one another at some point, especially in a small town such as this, and we got together to form our banding team.

We have been in Moosonee for five years and we teach science at Northern Lights Secondary School. Moosonee is part of the James Bay Lowlands and it truly is a unique place. This area serves as an important stopover for migratory waterfowl and shorebirds. At certain times of the year we get to see all sorts of birds passing through. This also includes flocks of Snow Buntings. This past spring the first Snow Bunting sightings occurred at the beginning of April and we managed to band our first two birds on April 6th 2014. By the 20th of April most birds had left and banding came to a halt. We put in a lot of banding effort and we managed to band 62 birds in total. We had a terrific experience and were thrilled to have contributed to this project. We hope to increase our numbers for the upcoming banding season and we are eagerly awaiting the moment we catch a previously banded bird.

It is great being a part of a widespread group of dedicated individuals whose shared goal is to assist in data collection and research that will help answer questions relating to the decline of Snow Buntings. We hope that our data can help connect the dots with respect to population dynamics and migration patterns. By collaborating with others and making meaningful contributions, it’s easy to see the importance of citizen science and how it can play an important role in and furthering science.

As a teacher I’m in a unique position to encourage students to get involved. Joanne Goddard’s posts on the CSBN blog and her students’ enthusiastic involvement inspired me to introduce my students to this project. This helps to teach our youth the importance of understanding our connection to nature, why it’s imperative for them to care, and to share these positive experiences with others. A special thanks goes to all of those who have assisted us in our banding efforts. It has been very exciting for everyone involved and we are pleased to have expanded the CSBN banding locations to the James Bay Lowlands.
Several recaptures made by a new banding team!

By Theresa Mackenzie, King City, Ontario

Following a February 2013 visit to Temiskaming to experience Snow Bunting banding with Bruce Murphy and Joanne Goddard, we were looking forward to trying it out in our area, on the Oak Ridges Moraine, near King City, Ontario. We regularly see small flocks of Snow Buntings, often accompanied by a few Lapland Longspurs and Horned Larks, and occasionally larger flocks of 200 plus. Recent years have had shorter periods of snow cover, however, so our expectations for capture were not very high. We hoped there would be enough snow in 2013-2014 to make the effort worthwhile, and expected that we would have short periods of banding with long breaks in between. Best laid plans....

We obtained permission to band on several agricultural fields, starting baiting in early December, made the traps and waited for snow. A snowfall on Dec 14th stayed for a while and within a few days buntings were attracted to the cracked corn, but, just as we had been forewarned, they were extremely wary of the traps. There were no captures until Dec 21st when the, now infamous, ice storm began. The power outage lasted a couple more days in our area, while the ice cover remained the entire winter.

Throughout the season, banding was best on the absolutely worst weather days. We started hoping for blizzards. Luckily for us, the closest site, which quickly became our only site, was less than 10 minutes from home. Glenn started trying to figure out better ways to stay warm, and made a carrying box we call the "Snow Bunting jail". It was much faster to transfer birds from a full trap to the jail, than to individual bags. He also set up a little snowbreak with packed snow and a couple of two by fours. That saved a little on bait as the blowing snow covered it less often. Following David Okine's advice, he added a little millet, then nyger seed on top of the corn. When he started doing that, a preference for those food items immediately showed in the crops of the captured birds.

On January 4th we were surprised and excited to get our first foreign recovery, of a bird banded December 21st in Mirabel, Quebec by Liette Fortier. Additional exchanges between Mirabel and ourselves through the season made us wonder if the winter range of an individual bird might actually encompass an area that included both of our stations. We captured another of Liette's birds on February 6th, just 5 days after she had banded it 476 km away! Perhaps these birds remain along the upper St. Lawrence as long as conditions are good, moving west and south into Ontario when access to food deteriorates?

Other within-season recaptures occurred between ourselves and David Lamble 73 km west of us, and Rick Ludkin/Nancy Furber 115 km to the southwest. We had four captures of birds banded by others in previous years, including two January 2011 birds, banded by Bill Read, 100 km to the southwest and Rick Ludkin in a similar direction. Two January 2013 birds were from banders David Lamble, and Joanne Goddard/ Bruce Murphy. This last bird was banded in Temiskaming, 407 km north of us.
In total we had eight of our birds recaptured by others, six of them, not surprisingly, by the closest bander, David Lamble, while we recaptured eight birds from other banders. In the end, we banded 1228 Snow Buntings, 42 Horned Larks, 2 Lapland Longspurs and a Northern Shrike. We find this species absolutely fascinating, and incredible. Our own difficulty in managing to stay warm for 3 days without hydro following the ice storm, even when we could still cook food on our camp stove and barbecue, reminded us just how much better at this they are than we, in spite of a tiny body mass, and short duration for survival without food. They may not have been able to survive in an environment where all food sources were rather suddenly coated in a thick layer of ice, and where it was not possible to bivouac in snow overnight, as they would normally, but they could leave, and travel long distances in a very short period of time. We are looking forward to seeing these cool little birds back again this year!

**Snow Buntings that speak French!**

*By Simon Duval, Coordinator of the McGill Bird Observatory, QC*

It all started in the winter 2011-2012 in Southern Québec. After seeing that the CSBN was looking to expand its banding coverage, Gay Gruner, bander-in-charge at the McGill Observatory (MBO) and myself thought it would be great to be involved in this project. We therefore seek help from COMIR (the local bird club) to help us maintain a baiting site in Mirabel, one of Quebec’s hot spots for wintering Snow Buntings.

It was a busy first season! In 8 banding days in January 2012, we managed to band 321 Snow Buntings, including 94 on January 19th, a single-day record that still holds today! The following season (2012-2013), we trained Liette Fortier and she then became the new bander at Mirabel. Unfortunately, that season was not very good in terms of snow cover, so only 204 Snow Buntings were banded.

Last winter, we expanded our banding effort and added two new sites. Thanks to several MBO volunteers and le Club d’Ornithologie de la Région des Moulins (another bird club) who help us to bait the sites, Gay and I have been able to each run a station in Coteau-du-Lac and Saint-Roch-Ouest. In January, there was a lot of action at the three sites already! We had a few interesting within-season recaptures in between the three stations. There were also some interesting exchanges between Mirabel and Ontario’s banding stations. Last year was a really productive season overall. Mirabel, St-Roch and Coteau-du-Lac respectively banded 1122, 502 and 433 Snow Buntings, for a grand total of 2057 birds banded in 2013-2014. We also had a strong sex bias with an average of 95 % males at all stations. The beginning of the spring migration was a busy time and we banded half of our season’s total during the month of March (1065 birds).

There was a definite peak in the second half of March, when we banded 719 individuals in an 11-day period.

This winter, we are operating our three sites again. Mirabel got a particularly early start this year; 66 Snow Buntings were banded between November 19-22 2014, when a little snowstorm hit the area.
In 2013, personnel involved in David Hussell’s long-term field study of the Northern Wheatear in Iqaluit, NU, turned their attention to Snow Buntings. That year, Rick Ludkin came to Iqaluit to put geolocating “loggers” on buntings, in hopes of learning where this breeding population spends the winter. However, it turned out to be a late season (it snowed on 3 July), and Rick had to leave after loggering only 4 birds. Fortunately David’s field crew of wife and son offered to step in and continue the work. Jeremy Hussell found most of the nests—thanks to young eyes and abundant energy—while Ricky Dunn did most of the trapping. Birds feeding nestlings were easily caught using spring-loaded “tent” traps (http://www.moudry.cz/) baited with live mealworms, and by the end of the season, a total of 22 buntings had been fitted with loggers.

The original plan for 2014 was for someone to trap buntings at feeding stations during the pre-breeding period, but this plan came to nought and the Wheatear crew stepped in once more. Again we searched for Snow Bunting nests, this time looking for adults with colour bands that indicated they carried loggers.

We found 33 nests, of which only one was tended by a loggered bird. That nest was behind a rock on a steep bank, such that baited traps could not be placed near the nest entrance. Hours of trapping proved fruitless, and a persistent weasel which seemed interested in the nest led to some panic and a lot of stone-throwing. It was at this point that David came to the rescue with a walk-in trap, which is placed in the main nest entrance after all other openings have been blocked. He was able to catch the target bird in under an hour. Phew!

Meanwhile, Jeremy had found a second loggered bird, this time a male. It seemed to be unmated, spending most of its time singing atop a phone pole. He came fairly readily, though rarely, to a ground trap baited with cracked corn. Over 5 days of attempted trapping, during which he escaped a Peregrine attack, this bird usually managed to find stray bits of corn without entering the trap. When he finally did go in, he walked right out a different entrance (We should have been using Dave Lamble’s design...). Then the male obtained a mate, and his use of the baited site dwindled to nothing.

Right: Female with recovered logger
Above left: Loggered male that we never caught
Above right: Persistent weasel in question
But wait – another opportunity arose. We had contacted a local couple who regularly feed birds at their home, Patrick Nagle and Suzanne Evaloardjuk. Not only were they willing to let us trap there, but they had actually seen—and photographed—our loggered male. They invited us to run our operations from their living room and plied us with hospitality. The highlight had to be smoked arctic char on toasted bagels with cream cheese— that’s the way to do field work!

Although we never caught the loggered male, we did trap 23 Snow Buntings at the feeder, including 3 juveniles, and put loggers on 16 adults. By this stage of the breeding season there were no longer territorial chases at the feeder, and the ease of capturing numerous buntings suggests this may be a good time to efficiently trap (and later recapture) Snow Buntings in a relatively short period. Our two seasons of work, then, resulted in a single recovered logger. What did it tell us? Previous work reported in the 2013 newsletter by Christie Macdonald showed that buntings breeding on East Bay Island (northern Hudson Bay) wintered in southern Saskatchewan (N=11) and North Dakota (N=2). Band recoveries indicate that wintering birds in southern Ontario breed in Greenland. The betting was that Iqaluit birds might winter somewhere east of the East Bay birds – possibly even in Ontario. As the map shows, however, our bird appears to have wintered close to the East Bay birds.

The more remarkable finding was that while the bird came south along the west of Hudson Bay, it made the return journey in spring along the eastern side, a previously undocumented route. While this single data point adds to the picture of annual movements being built up by the Snow Bunting Network, it would be great to have more results from Iqaluit. The Hussell crew may not be going back next summer, but we hope someone will be able to search for the birds we loggered in 2013.

*Migration routes and wintering area of the Iqaluit Snow Buntings* (courtesy Christie Macdonald)
Norwegian Snow Bunting Project

By Frode Fossøy, Bård G. Stokke & Arne Moksnes, researchers at the University of Science and Technology, Trondheim, Norway

We would first of all like to thank The Canadian Snow Bunting Network for inviting us to write about the Norwegian Snow Bunting project. For many years the Canadian and Norwegian projects have worked in parallel on similar topics independently of each other, but with a new joint proposal in review we aim to merge forces and strengthen the collaboration between our two groups. We hope for a long and fruitful companionship that will provide new and novel knowledge about the fascinating life of the Snow Bunting.

The focus of our research has shifted over the years from behavioural studies looking at mate guarding, song performance and parental care to the ecological effects of weather and climate change.

We recently completed an analysis on local and regional effects of climate on reproductive success using a time-series of 15 years. Here, we found a strong relationship between the regional Arctic Oscillations (AO) index, averaged across the four months of December-March preceding the breeding season, and several breeding parameters. In particular, this AO index was strongly related to fledgling success the following summer, suggesting that regional climate during the winter could have strong effects on local spring phenology and indirectly influencing the fledgling success of snow buntings. Spring phenology may thus be a key parameter for the reproductive success of Snow Buntings and we will therefore focus more on this in the years to come.

The Norwegian project on snow buntings started on the Arctic island of Svalbard in 1997, after artificial nest boxes had been mounted on the trestles supporting the old coal mining cableway. The old cableway has since long been replaced by more modern technology but it is protected as a cultural heritage of the mining industry in Svalbard.

About half of our nests are found in artificial nestboxes placed on the old trestles previously

We also search for natural nests every year and normally half of our nests are in nest boxes and the other half in natural nesting sites in the terrain. Typically, we obtain data on approximately 80 nests per year.

The artificial nestboxes are divided in two compartments with one open entrance compartment and a more concealed nesting chamber.
Despite banding thousands of birds since the start of the project, the migration pathway and wintering locality for the Svalbard Snow Buntings is still poorly documented. We therefore fitted 17 geolocators on adult birds last summer. With the great success of using geolocators on Snow Buntings in Canada, we hope that this project will reveal novel findings on the whereabouts of our birds.

Snow buntings from Greenland have been reported to winter in the dry steppes north of the Caspian Sea, and we assume that this likely is the goal for the Svalbard birds as well. We therefore look forward to the next field season with great anticipation, with the hope that some of our geolocator birds have made it all the way to their wintering areas and back to Svalbard with their valuable backpack.


**Cold Acclimatization in Snow Buntings**

*Audrey Lepogam, PhD candidate, Université du Québec à Rimouski, Ecophysiology Lab*

Although the Snow Bunting is as a specialist of cold environments, it is nevertheless exposed to relatively harsh winter conditions. Such conditions are known to require significant increases in cold endurance and physiological maintenance costs in resident species wintering at the same latitudes such as chickadees for example. From November 2013 to April 2014, a first series of measurements were carried out in outdoor captive Snow Buntings at the Université du Québec à Rimouski. Once a month, twenty males’ Snow Buntings had their body mass, muscle size, fat score and metabolic performance measured. The first results indicated that birds increased fat reserves and muscles size during the coldest months, as would be expected in resident species having to support cold conditions through shivering heat production. Yet changes in metabolic performance were not those expected. Basal metabolic rate did not change significantly over the course of the winter, suggesting little influence of temperature on physiological maintenance costs. Thermogenic capacity (the indicator of cold endurance) changed between months but did not show a seasonal increase culminating at the peak of cold as expected, perhaps as a result of good thermal insulation from the plumage. In October 2014, we started a second series of measurements at a finer time scale (biweekly) to confirm and improve the results observed in the first year. Moreover, thanks to a magnetic resonance device borrowed from Dr. Oliver Love at the University of Windsor, we are now also able to determine how the size of energy (fat) reserves and energy consuming tissues (mainly muscles) change over the winter. We this experiment, we hope to improve our understanding of how Snow Buntings adjust their physiology during their winter stay.
Special thanks goes out to...

...all the banders that have contributed observations and data to this ongoing research and collaborative conservation program. Thanks also to the James L. Baillie Memorial Fund of Bird Studies Canada, the Wassefall Fund of the Ontario Bird Banding Association, Environment Canada, the University of Windsor, the Nunavut Research Institute, and the Nunavut Arctic College for their funding and logistical support.

Good luck to everyone this winter!