POPULATION DYNAMICS OF GREATER SNOW GEESE: DEMOGRAPHIC AND HABITAT MONITORING DURING A PERIOD OF INCREASED HARVEST

2021 - A PROGRESS REPORT

Marie-Christine Cadieux Département de biologie & Centre d’études nordiques
Université Laval, Québec

Gilles Gauthier Département de biologie & Centre d'études nordiques
Université Laval, Québec

Éliane Duchesne Département de biologie & Centre d’études nordiques
Université du Québec à Rimouski

Catherine Villeneuve Département d'informatique et de génie logiciel
Université Laval, Québec

Matthieu Weiss-Blais Département de biologie & Centre d’étudesd'études
nordiques Université Laval, Québec

Joël Bêty Département de biologie & Centre d’études nordiques
Université du Québec à Rimouski

Pierre Legagneux Département de biologie & Centre d’études nordiques
Université Laval, Québec

30 May 2022

INTRODUCTION

Like many other goose populations worldwide, Greater Snow Geese (*Anser caerulescens atlanticus*) have increased considerably during the late 20th century. The exploding population has imposed considerable stress on its breeding habitat, while extensive use of agriculture lands provides an unlimited source of food during winter and migratory stopovers for them. Remedial management actions during autumn, winter and spring have been undertaken since 1999 in Canada and 2009 in the United States to curb the growth of this population. A synthesis report produced in 2007 evaluated the initial success of these special conservation measures. However, both the Avian Monitoring Review Steering Committee Final Report and the Greater Snow Goose Action Plan released in 2012 by the Canadian Wildlife Service called for a continued monitoring of the dynamic of this population and of its habitats. In response to those needs, the long-term goals of this project are to (1) monitor changes in the demographic parameters of the Greater Snow Goose population, and especially the effects of the spring conservation harvest on those parameters, (2) determine the role of food availability and predation in limiting annual production of geese, and (3) monitor the impact of grazing on the Arctic vegetation.

Original activities planned for this project in 2021 included studying of goose migration and reproduction, goose banding, monitoring of lemming abdundance, monitoring of avian predators and fox reproduction, sampling plant production in wetlands and monitoring weather and snow melt on Bylot Island, Nunavut. However, in 2021 all Arctic fieldwork was canceled in Nunavut until 31 July because of the COVID-19 pandemic. Hence, we were able to collect data in the field only during a short 3-week field season in August. Continuing the project initiated last year, we also relied on biologging and remote sensing technologies to infer some of the key parameters related to the population dynamic of Greater Snow Geese and thus achieve some of our initial objectives.

OBJECTIVES

Our specific goals for 2021 are listed as follow:

1) Measure the snowmelt on Bylot Island, an important determinant of goose reproductive effort in the Arctic.
2) Study the migration phenology of Greater Snow Geese and its impact on reproductive success.
3) Estimate the breeding phenology, nesting density and nesting success of Greater Snow Geese.
4) Develop a deep learning algorithm that can automatically detect snow geese on satellite images.
5) Estimate the breeding activity of Snowy Owls (*Bubo scandiacus*) in the current year and validate the number of Snowy Owl nests detected on the 2020 satellite image, which was used to infer lemming abundance.
6) Monitor the abundance of lemmings.
7) Band goslings and adults, and neck-collar adult females at the end of the summer to continue the long-term study of demographic parameters such as survival and breeding propensity.

STUDY SITES

Our main field research activities are conducted primarily at two sites on Bylot Island, Nunavut: the Qarlikturvik Valley, which is the largest glacial valley on the island and a prime brood-rearing area (73°08' N, 80°00' W), and the Camp-2 area, located in a narrow valley 30 km south of the Qarlirturvik Valley at the center of the main goose nesting colony (72°53' N, 79°54' W). Our field work and analyses using remote sensing data in 2021 focused on the same sites. Fieldwork was also conducted in spring 2021 at Île-aux-Oies (47°08' N, 70°28' W), a site located in the heart of the goose staging area in southern Quebec, where adult female Greater Snow Geese were equipped with GPS transmistters.

METHODS

Environmental and weather data. **—** Environmental and weather data continued to be recorded at our four automated stations. All automated stations were visited during in August to download data and were found to be operating normally. We studied the snowmelt in the lowlands of the Qarlikturvik Valley (the site of our long-term field monitoring, Fig. 1) using data recorded by MODIS (Moderate Resolution Imaging Spectroradiometer), an instrument on board the Terra satellite that collects the reflectivity of the earth surface daily with a 500-m spatial resolution. We used the MOD10A1 product (version 6), a dataset containing fractional snow cover from 0 to 100% for each 500-m pixel (search.earthdata.nasa.gov/search). Data was downloaded for the period of 15 May to 30 June 2021 and provided a daily value of fractional snow cover for each pixel covering the Qarlikturvik Valley. Pixels with a fractional snow cover >40% were identified as 'snow' pixels while pixels with a fractional snow cover ≤40% were considered 'snow-free'. The ratio between the number of snow pixels and the total number of pixels covering our study area provided us with a snow cover for the valley. We discarded days where <30% of the study area was visible to the MODIS sensors due to cloud cover. To approximate snow cover for days with missing data, we performed a linear interpolation between days with valid MODIS data.

Tracking of GPS-marked geese. **—** Since 2019, we have equipped with GPS/GSM transmitters 75 adult female Greater Snow Geese captured during spring staging in Quebec. Two of the 17 transmitters deployed in 2019 and 2020 were still working in spring 2021 and we equipped an additional 58 females with the same type of transmitters (OrniTrack-N44 – solar powered neck collar GPS-GSM tracker).

Nesting attempt and laying date were determined by analyzing the movements of GPS-marked birds once they had reached the Arctic. Geese usually wander around when feeding during the pre-laying period. When the goose movements started to be clustered (within a radius of ~75 m) around one location (presumed to be the nest location), this date was chosen as the laying date. When the bird movements started to be even more concentrated around this location (within a radius of ~25 m), this date was used as an estimation of the start of incubation. When the locations suddenly started to be spread over a wide area again, this date was considered as the departure date from the nest. If the inferred duration of the incubation period (difference between the departure and incubation start dates) was close to the average length of the incubation period of snow geese (i.e., 23 days), the breeding attempt was deemed to be successful, and if shorter it was considered a failure. Considering that parents leave the nest with their young about 24 hours after hatching,

hatching date was estimated as the day before the inferred departure date in successful nests considered. Clutch size was estimated using the following equation: hatch date – incubation length (23 d) – laying date.

Monitoring of goose nesting activity. **—** Since no field activity occured during the breeding period on Bylot Island this year, we inferred nesting abundance and activity through remote sensing. A validation study conducted on a satellite image taken in 2015 showed that high resolution satellite images could be used to identify nesting Greater Snow Geese (see Appendix 1 in Cadieux et al. 2021). This method was applied in 2020 and again in 2021. We acquired two high-resolution (30 cm with an HD treatment to obtain a 15-cm resolution), orthorectified and georeferenced WorldView-3 images of portions of Bylot Island on two different dates: 20 June and 9 July 2021. Both images covered the main snow goose colony at the beginning and the end of the incubation period in a typical year. The second image also covered the Qarlikturvik Valley and nearby areas, which is the main study area for monitoring avian predators and lemmings.

Goose detection was carried out on both images over the same two areas where goose nesting activity was monitored in the field in previous years. The first one is a 20-ha area located in the centre of the colony and is intensively studied every year. The second area is composed of a variable number of 1 and 2-ha plots randomly located throughout the colony. However, presence of some clouds over the 20-ha area located in the center of the colony on the image taken on 9 July forced us to reduce the size of the area over which goose detection was carried out on that date. Detection of geese was carried out manually on enlargement of these images by one observer, and each white dot was digitized in a GIS software. In addition, detection was done using a deep learning algorithm that automatically detects geese on the satellite images (Appendix 1).

To determine goose pairs, we adapted the method developed in 2020 (for details, see Appendix 2 in Cadieux et al. 2021) by performing a cluster analyse on the white dots detected in June only (see Appendix 2). Two white dots ≤15 m from each other were considered a nesting pair. Assuming that each of those pairs was associated with a nest, we calculated nest density over the 20-ha area monitored every year and random plots located throughout the colony. We ignored the second image taken on 9 July for the determination of the nest density for two reasons. First, because of the presence of clouds on some portions of this image (see above). Second, due to a persistent cloud cover in July, the image was taken too late, when hatching was well underway as peak hatch was estimated at 10 July (see results). Thus, many geese had already left their nest on that date, which was confirmed by the presence of several goose family groups on that image. The unreliability of the second satellite image obtained in July prevented us from determining nesting success. Indeed, determination of the number of nests that failed can only be achieved by comparing the number of active nests between the beginning and the end of incubation, before any significant hatching occurs, which was unfortunately not possible in 2021.

Monitoring Snowy Owl nesting activity. **—** The search for potential Snowy Owls nests was carried out on the WorldView-3 image taken in July 2021 within a 56-km^2 area of the Qarlikturvik Valley traditionally searched for the presence of Snowy Owls in the field over the period 1993-2019. It is not possible to differentiate owls from geese on the image due to their similar body size. However, we take advantage from the fact that when Snowy Owls are nesting on Bylot Island, their nests are almost always surrounded by an aggregation of snow goose nests. Using the same approach as in the goose colony, one observer manually digitized white dots (geese) detected of the image in a GIS software. We also applied the deep learning algorithm that we developed (see above) to this portion of the satellite image to detect geese automatically. We performed a cluster analysis on the white dots detected to identify potential goose nesting pairs (see Appendix 3, section3.1). We performed a second cluster analysis on these goose pairs to identify aggregations of goose nests that could be associated with Snowy Owl nests (for details, see Appendix3, sections3.2 and 3.3).

In August 2021, we visited the area of the Qarlikturvik Valley where potential Snowy Owl nesting sites were identified on the satellite images to confirm the presence of nest remains (for sites identified in 2020) or active nests (for sites identified in the 2021 image). Due to time constraints, only the southern portion of the Qarlikturvik Valley, where most presumed nests were located in 2020, could be searched. Two teams of four persons walked along a river and small streams checking all sites suitable for owl nesting (i.e. ridges, small mounds on gentle slopes or along ravines gullies). All potential nests (e.g. old cup with prey remains or pellets around) were recorded with a GPS.

Small mammals. — We sampled lemming abundance and demography using live traps. We trapped on 2 grids (330 × 330 m) in the Qarlikturvik Valley (one in wet meadow habitat and one in mesic habitat) with 144 traps per grid and on a 3rd grid (200 × 340 m; 96 traps) in mesic habitat where a predator exclosure experiment was set up in 2012-2013 (the grid is surrounded by a chicken wire fence and covered by criss-crossing fishing line on top). We used Longworth traps set at each grid intersection every 30-m. We trapped for 3 consecutive days in mid-August. All trapped animals were identified, sexed, weighed and marked with electronic PIT tags or ear-tags (or checked for the presence of such tags).

Goose banding. — From 6 to 15 August, we banded geese with the assistance of a helicopter. Goose flocks of a few hundred birds were rounded up and driven by people on foot into a holding pen made of plastic netting. All captured geese were sexed and banded with a metal band, and all recaptures (web-tagged or leg-banded birds) were recorded. A sample of young and adults was measured (body mass and length of culmen, head, tarsus and 9th primary) and some adult females were fitted with coded yellow plastic neck-collars.

PRELIMINARY RESULTS

Environmental and weather data. — Temperatures in spring 2021 were near normal on Bylot Island and similar to 2020. Air temperature averaged -3.3°C (1.0°C lower than normal) between 20 May and 5 June, the period of goose arrival, and 3.3°C (0.8°C higher than normal) during 5-20 June, which is the most critical period for egg formation and egg-laying (Fig. 2). An almost complete snow cover persisted in the Qarlikturvik Valley until early June (snow cover was >95% until 8 June; Fig. 3). Although snowmelt initiation was slightly delayed, it was very rapid once initiated and earlier than in 2020, a late year, by about 4 days.

Spring migration phenology of geese. — Adult females equipped with a GPS/GSM transmitter reached North (55th parallele) around 8 juin 2021 (n = 54). Ten of these females arrived on Bylot Island around 10 June which is near the normal arrival date of geese in the Qarlikturvik Valley (peak arrival is typically around 7 June).

Goose nesting activity. **—** Among the ten geese equipped with a GPS/GSM transmitter that reached Bylot Island, we estimated that four attempted nesting in 2021. Their median egg-laying date was 13 June, which is close to the long-term average (12 June; Table 1) and similar to the value estimated in 2020. All four birds had a successful breeding attempt and their clutch hatched around 10 July (long-term average: 9 July). Based on the laying and hatching dates of these birds and goose incubation period (23 days), it was estimated that average clutch size was 2.8, which is lower than the long-term average (Table 1) and lower than the value estimated in 2020. However, one must consider that these parameters are based on a very small sample size compared to the data obtained from field monitoring in previous years and that clutch size is probably the parameter estimated with the lowest accuracy, especially because no field validation was conducted on nesting females equipped with GPS collars.

Based on the analyses of the satellite image, nest density estimated in the center of the colony was higher than last year (9.1 vs 8.4 nests/ha in 2020) and above the long-term average (Table 1). In the random plots distributed throughout the colony, nest density was similar to last year (4.2 vs. 4.4 nests/ha in 2020) and also above the long-term average (Table 1). A moderate number of goose nests (194) was also found in the Qarlikturvik Valley (predominantly a brood-rearing area), a value lower than in 2020 (489). However, it is possible that the actual number of geese that nested in that area was higher in 2021 since the estimate is based on an image that was likely acquired near the peak hatch date. The presence of nesting geese in the Qarlikturvik Valley was likely due to the presence of nesting Snowy Owls in the area for the second year in a row (see below).

Validation of the deep learning algorithm. **—** This algorithm was validated using the detection made by observers in the 2020 and 2021 images. Comparison of the number of geese detected on the satellite images manually and automatically by the deep learning algorithm suggests a very good performance of the algorithm. Overall, there was a 93% correspondence between geese detected manually by observers and automatically by the deep learning technology that we developed (see Appendix 1 for details across years and sites). However, the number of geese detected by the deep learning algorithm was generally higher than manual detection, with an overestimation of 14% on average. Since the discrepancy between manual and automated detection is significantly higher during the month of June (where patches of snow or ice are more likely to confuse the algorithm) than during the month of July, this suggests that the additionnal geese detected by the deep learning are likely made up of several false positives. Further improvements to our algorithm (see Appendix 1) will be needed to reduce the prevalence of these false positives.

Monitoring of Snowy Owls. **—** We detected the presence of agregations of goose nesting pairs in the portion of the Qarlikturvik Valley suitable for nesting Snowy Owls (see details of the analysis in Appendix 2). Therefore, we had strong evidence that Snow Owls nested for a second year in a row on Bylot Island. Based on the number of aggregations of goose nesting pairs detected, we estimated that 5 Snowy Owl nests were present in the Qarlikturvik Valley area in 2021 compared to 10 in 2020 over the same area. This yields a density of 0.09 owl nest/km^2 compared to the long-term average of 0.13 nests/km^2 in years when nesting Snowy Owls were detected.

During our ground searches in August 2021, we located 5 old snowy owl nests but due to the period of the year when we could access the site, it was difficult to determine if the nests were from 2021 or 2020. In one case we observed large owl chicks in the neighborhood, which confirms the presence of nesting owls at this site. The analysis is still underway to determine if the potential owl nesting sites determined by the analysis of satellite images could correspond to the position of the owl nest sites found in the field in 2021.

Small mammals. **—** The number of lemmings captured during our live trapping, from 9 to 18 August, was very high with 486 Brown Lemmings and 4 Collared Lemming caught in total. A formal estimation of density using capture-recapture methods yielded an average of 15.5 lemmings/ha (excluding the predator exclosure grid), which is the highest value ever recorded (second highest value is 9.3 lemmings/ha in 2000; Fig. 4). In comparison, densities were 1.4 lemmings/ha in 2019 and 6.9 lemmings/ha in 2020 (inferred from the density of Snowy Owl nests in the latter case). This confirmed that we had a very high lemming peak in 2021.

Goose banding. **—** The banding operation was difficult this year due to bad weather in August. We conducted 10 drives between the Qarlikturvik Valley and the Camp 2 area. We banded 2160 geese, including 131 adult females marked with neck collars. In addition, we recaptured 98 adults that were banded in previous years. The young:adult ratio among geese captured at banding (1.02:1) was similar to the long-term average (1.03:1). Mean brood size toward the end of brood-rearing was 2.51 young (n = 104; counts conducted between 5 and 18 August) which is close the long-term average (2.49 young). By combining information on brood size and young:adult ratio at banding, we estimated that 81% of the adults captured were accompanied by young, a value near the long-term average (Table 1). Overall, these results are indicative of an average production of young on Bylot Island by the end of the summer.

CONCLUSION

For a second year in a row, access to the Bylot Island field site was not possible except for a brief 3-week peiod in August 2021. Although this allowed us to conduct some field work such as goose banding or the last session of lemming live-trappping, all field work that normally takes place from May to July such as monitoring of the nesting activities of geese and predatory birds, the breeding of foxes at dens or the goose grazing impact with exclosures could not be carried out. Therefore, we again had to rely on alternative methods to monitor the reproductive activity of Greater Snow Geese. The presence of some birds marked with GPS/GSM transmitters during their spring staging in southern Quebec allowed us to again track their migration to the Arctic and to infer reproductive parameters for a few of them that nested on Bylot Island although sample size was very small. The detailed analysis of a high-resolution satellite image enabled us to again estimate the nesting density of geese in some portions of the colony using the method that we developed in 2020. Moreover, we were able to develop a deep learning algorithm to automatically detect and position geese on the satellite images, thereby bypassing the time-consuming step of manually identifying individual geese on the image. We showed that the algorithm was very good in accurately detecting geese, which will allow us to quickly determine goose nesting density or total pair numbers across the whole colony if needed in the future. Future developments, such as applying filters to remove white rocks that are confounded with geese, should further improve its accuracy. Nonetheless, this approach also has its limitations as shown in 2021. The presence of a persistent cloud cover for sevreral days prevented us from acquiring a second, hi-quality satellite image of the goose colony near the end of incubation. The image that we finally obtained still had a few clouds over parts of the colony and was taken when goose nests had started to hatch, which made it impossible to assess goose nesting success by comparing the number of nesting pairs present in early and late incubation in the core of the colony.

The indicators of goose reproduction that we could estimate on Bylot Island yielded mixed signals for 2021. Snow melt was near average, a few days ahead from last year, and nesting density in the colony was high, suggesting a high breeding effort. Nesting phenology of radio-marked geese was near normal but clutch size was low. However, this was based on a small sample size of radio-marked birds and presence of a transmitter has been shown in the past to delay nesting or reduce clutch size in geese. Therefore these results must be interpreted with great care. Lemming density was high and snowy owls nested, conditions that are generally associated with a high nesting success of geese. When lemmings are high, predators like Arctic Foxes divert their attention from goose eggs to that prey and high nesting density can dilute the impact of predators at the population level. Nesting associations of geese with Snow Owls provide a refuge from predators and also favour high nesting success. However, the lack of a suitable satellite image near the end of goose incubation did not allow us to determine nesting success.

Despite the high breeding effort and high lemming density, the proportion of young recorded in our catches at banding shows that production of geese on Bylot Island was near average in 2021. As lemmings were already high in 2020, we can expect that production of foxes was also high that year and that winter survival was also high considering that lemming density remained high in 2021. It is therefore possible that a high density of foxes on the island in 2021 increased predation rate on goose eggs and goslings, thereby reducing the production of young. Moreover, we have no information of food conditions for growing goslings during the summer as we were not able to sample plant production in wetlands of Bylot Island for a second year in a row.

Based on the young:adult ratio recorded at banding, we predicted a percentage of young in the fall flock of 21%. This turned out to be an accurate prediction as the percentage of young measured during juvenile counts conducted by the Canadian Wildlife Service in southern Quebec in fall 2021 was precisely 21% (n = 24,476). This production is higher than in 2020 (16%) and near the long-term average since the inception of the spring harvest in Quebec in 1999 (20%). The average brood size recorded during the fall counts was also higher in 2021 (2.50 young per family) than in 2020 (2.28) or than the loing term average (2.24; J. Lefebvre, pers. comm.). This suggests that overall breeding conditions for Greater Snow Geese on Bylot Island were representative of those experienced throughout their breeding range in 2021 and its confirms that production of young was relatively good.

In conclusion, we believe that the combination of remote sensing tools and late season field work yielded satisfactory results in 2021. Remote sensing tools appear efficient to estimate goose nesting density, including at a large spatial scale thanks to our deep learning algorithm which allows automating the goose detection process on satellite images. However, remote sensing tools proved to be less reliable to estimate other parameters such as goose nesting success due to the difficulty of obtaining two cloud-free images at very precise dates (beginning and end of incubation). Nonetheless, we believe that additional field validation of goose nesting parameters and presence of nesting owls inferred from the analysis of satellite images is advisable and we hope to achieve that in 2022 if we have a full field season on Bylot Island.

PLANS FOR 2022

The long-term objectives of our work are to study the population dynamics of Greater Snow Geese, and the interactions between geese, plants, and their predators on Bylot Island. A major focus of the project is to monitor changes in demographic parameters (such as survival rate, hunting mortality, breeding propensity, reproductive success, and recruitment) and habitat (annual plant production and grazing impact) in response to the spring conservation harvest and other special management actions implemented since 1999 in Canada and since 2009 in the United States. Other aspects of the project include *i*) understanding better the links between events occurring during the spring migration and the subsequent reproduction of geese; *ii*) studying indirect interactions between snow geese and lemmings via shared predators; *iii*) studying the ecology of the main predator of geese, the Arctic Fox; and *iv*) assessing the impact of climate change on goose reproduction and the carrying capacity of the habitat for geese. In 2022, we will resume field work in order to:

1) Monitor productivity (egg laying date, clutch size and nesting success) and nesting distribution of Greater Snow Geese on Bylot Island.
2) Study the migration phenology of geese and its impact on reproductive success.
3) Mark goslings in the nest to provide a sample of known-age individuals to assess the growth and pre-fledging survival of goslings by their recapture in late summer.
4) Band goslings and adults at the end of the summer to continue the long-term study of demographic parameters such as survival and breeding propensity.
5) Monitor the abundance of lemmings and study their demography in relationship with snow conditions and the impact of predation on their cyclic fluctuations of abundance.
6) Monitor the breeding activity of other bird species, in particular avian predators (Snowy Owls, jaegers, Glaucous Gulls and Rough-legged Hawks).
7) Monitor the breeding activity of foxes at dens.
8) Capture and mark adult foxes and their pups to study their movements, demography and foraging activity.
9) Sample plants in exclosures to assess annual production and the impact of goose and lemming grazing on plant abundance in wet meadows.
10) Maintain our automated environmental and weather monitoring system.

In 2022, 6 graduate students will be involved in the Bylot Island snow goose project. **Frédéric LeTourneux** (PhD) will complete his study of the impact of recent management actions on the survival and population dynamics of snow geese. **Mathilde Poirier** (PhD) will complete her study on the population dynamics of lemmings and the interaction between lemmings and snow. **Gabriel Bergeron** (PhD) will start his study on seasonal Arctic food-web modeling. **Thierry Grandmont** (MSc) will complete his study on the timing of snow goose migration and its effect on reproduction. **Ilona Grentzmann** (PhD) will continue her study on the effect of senescence on the population dynamics and physiology of snow geese. Finally, **David Bolduc** (MSc) will continue his study on the impact of the ermine on lemmings.

REFERENCES

Cadieux, M.C., G. Gauthier, E. Duchesne, M Belke-Brea, T. Grandmont, J. Bêty & P. Legagneux 2021. Population dynamics of greater snow geese: demographic and habitat monitoring during a period of increased harvest – 2020 progress report. Rapport soumis à Environnement Canada, QC. 55 pp. https://www.cen.ulaval.ca/bylot/document/report_bylot_2020.pdf

Table 1. Productivity data of Greater Snow Geese nesting on Bylot Island over the past decade.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	**2021**	Average[2]
Number of nests monitored	375	451	491	347	337	342	277	422	580	**487**	--
Nest density in the core of the colony (n/ha)	5.24	8.85	7.89	9.26	5.50	8.14	3.46	5.70	8.35	**9.09**	4.93
Nest density in random plots (n/ha)	1.62	3.39	3.39	2.73	3.70	3.41	3.35	4.38	4.41	**4.15**	2.54
Median date of egg-laying	12 June	13 June	11 June	12 June	13 June	11 June	14 June	7 June	12 June[3]	**13 June**[3]	12 June
Clutch size	3.80	3.58	3.85	3.48	3.36	3.53	3.50	4.04	3.67[3]	2.75[3]	3.71
Nesting success[1]	54%	67%	91%	77%	73%	56%	50%	82%	64%	--	67%
Median date of hatching	9 July	10 July	8 July	9 July	9 July	8 July	11 July	4 July	11 July[3]	**10 July**[3]	9 July
Ratio young:adult at banding	0.92:1	1.10:1	1.19:1	0.99:1	0.91:1	0.88:1	0.94:1	1.20:1	--	**1.02:1**	1.03:1
Brood size at banding	2.54	2.51	2.58	2.08	2.35	2.14	2.34	2.65	--	**2.51**	2.49
Proportion of adults with young at banding	73%	88%	92%	95%	78%	83%	81%	91%	--	**81%**	83%

[1] Mayfield estimate.
[2] Period 1989-2019. Data from 2020 and 2021 are not included in the long-term average because different protocols were used.
[3] These values are only based on the GPS-tracking of 4 females that nested on Bylot Island.

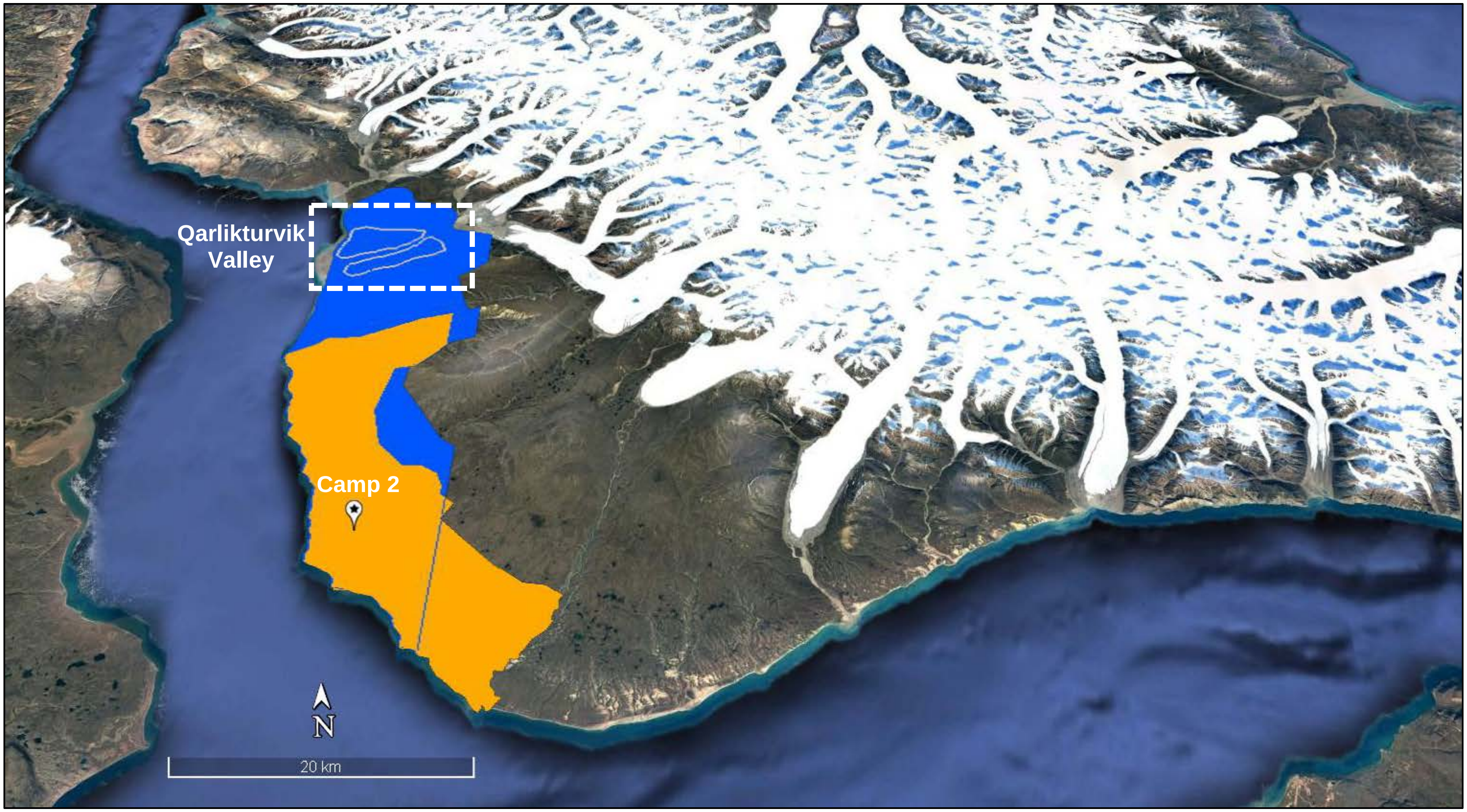

Figure 1. Location and coverage of the two high-resolution (30 cm with an HD treatment to obtain a 15-cm resolution) images acquired from the WorldView-3 satellite on Bylot Island. The orange polygon represents the image taken on 20 June 2021 and the blue polygon the image taken on 9 July 2021. The MODIS images (500-m resolution) were obtained for the Qarlikturvik Valley and the polygons used for the analyses are outlined in white.

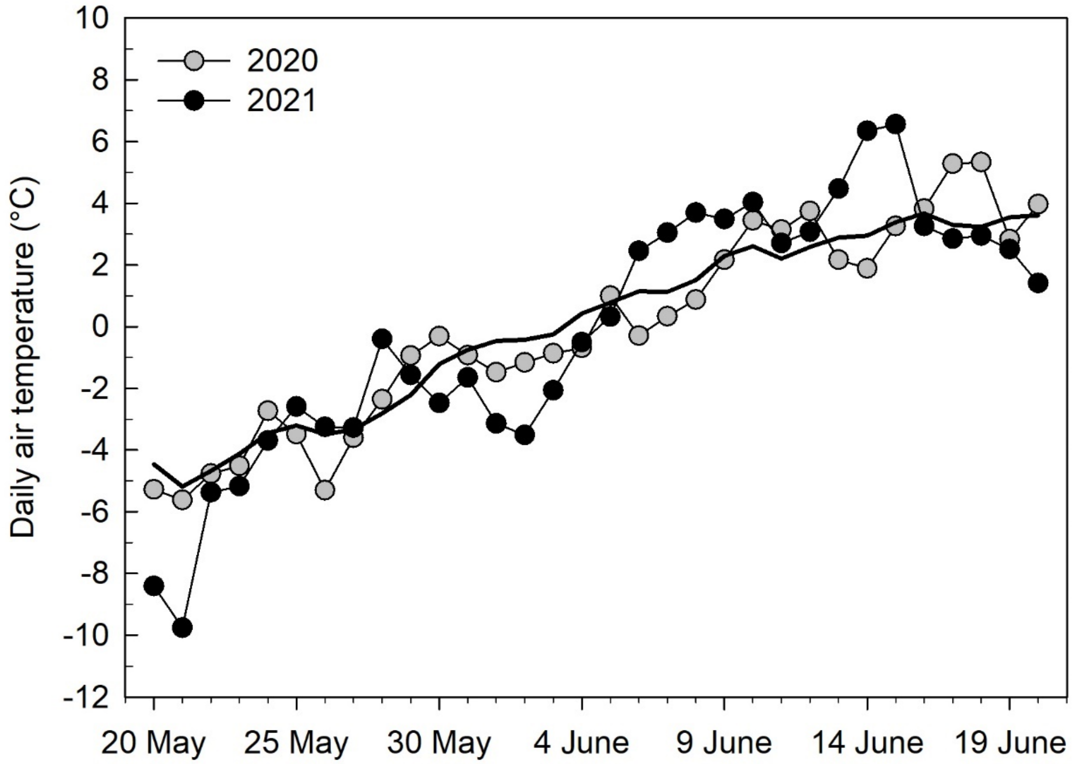

Figure 2. Daily air temperature recorded in the Qarlikturvik Valley of Bylot Island during spring. The thick solid black line represents the mean air temperature since 1994.

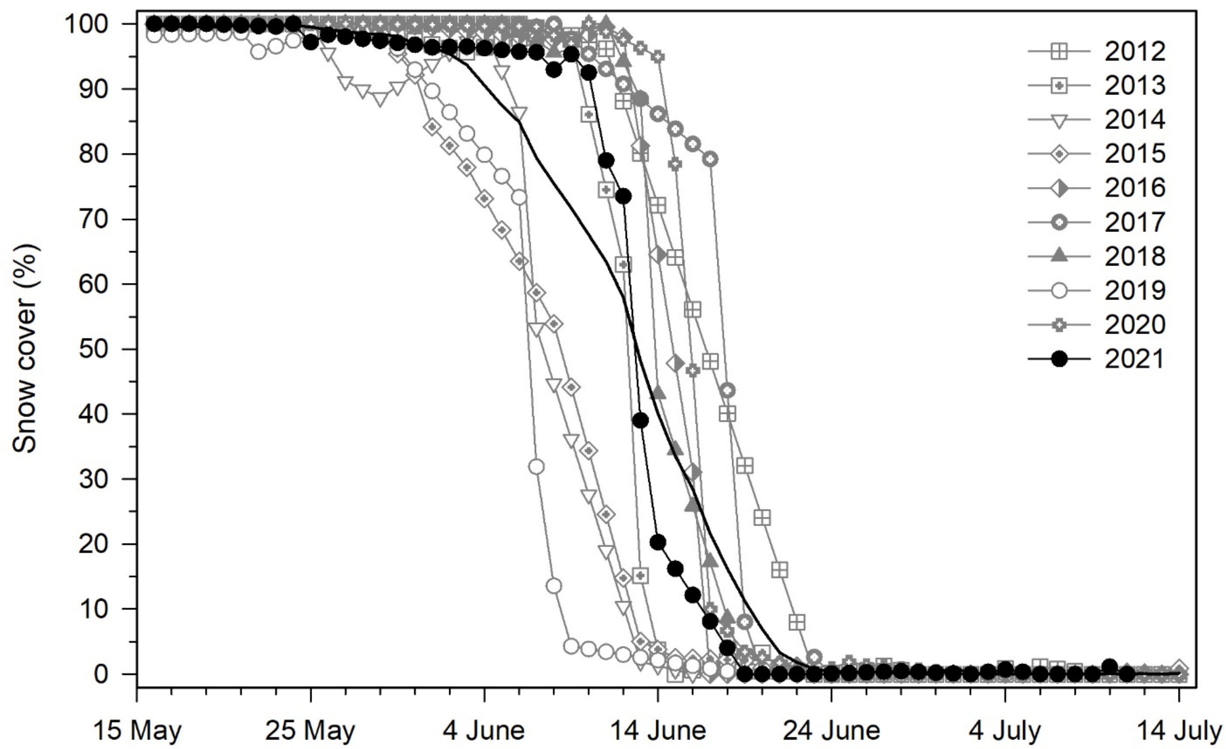

Figure 3. Annual daily snow cover of the lowlands of the Qarlikturvik Valley of Bylot Island estimated from the MODIS satellite data during the snow-melt season for the period 2011 to 2021. The thick solid black line represents the average snow cover since 2000.

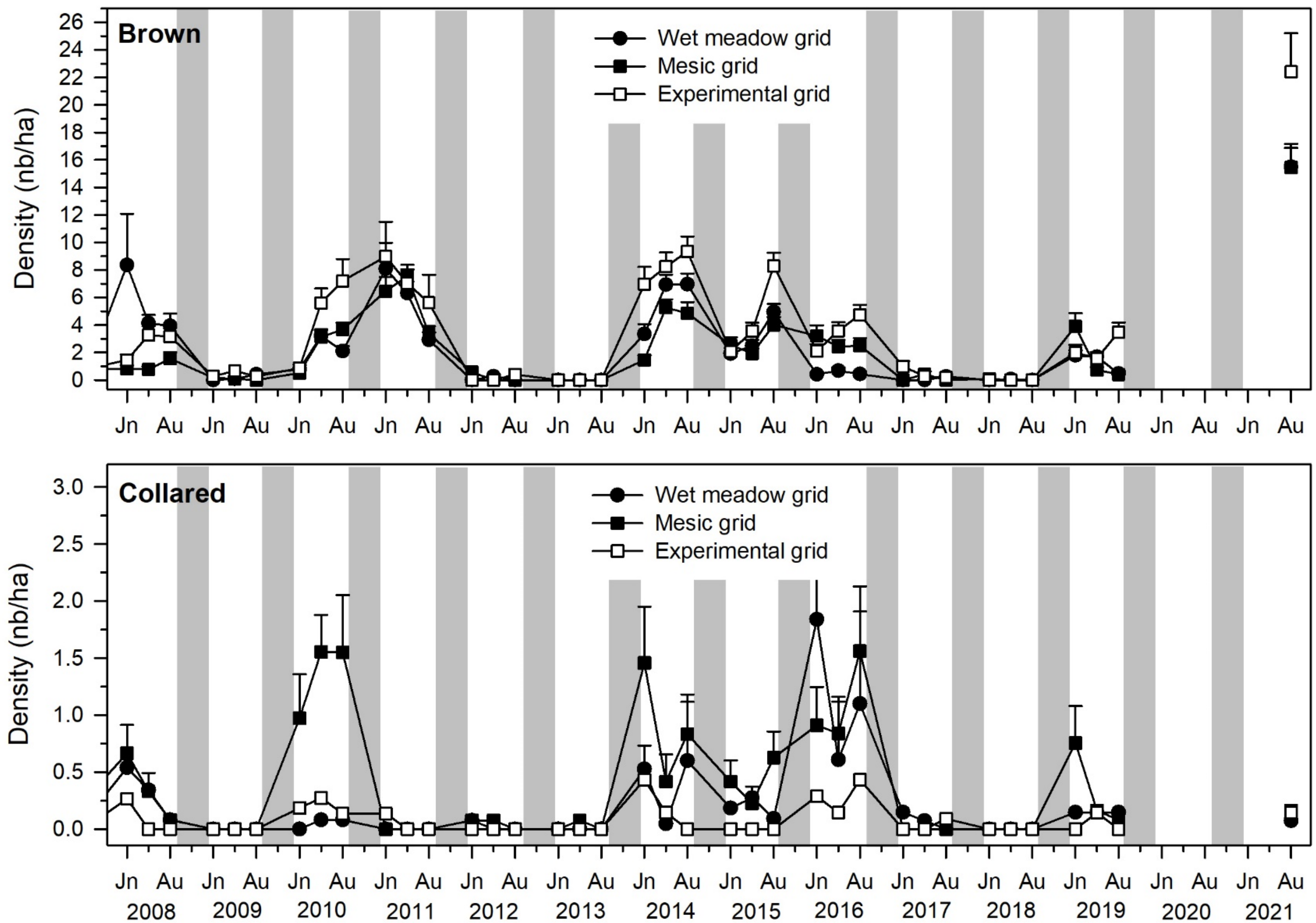

Figure 4. Annual summer density (+ SE) of Brown and Collared Lemmings on 3 trapping grids located in the Qarlikturvik Valley of Bylot Island over the past 14 years (snow cover was increased from 2008 to 2011 and predators were excluded from 2012 to 2021 on the experimental grid). The gray area indicates winter. Jn = mid-June, Au = mid-August.

APPENDIX 1
VALIDATION STUDY CONDUCTED USING A DEEP LEARNING ALGORITHM TO AUTOMATICALLY DETECT GEESE ON SATELLITE IMAGES

1.1 Dataset generation and image pre-processing

We developed a deep learning algorithm to automate the detection of Greater Snow Geese on high-resolution satellite images of Bylot Island. We used four Worldview-3 satellite images (30-cm resolution) taken in June and July 2020 and 2021. The Maxar HD synthetic super-resolution technology was applied to each image to increase the resolution to 15 centimeters because it is known to increase the performance of deep learning algorithms for small object detection (Shermeyer & Van Etten 2019).

A total of 4,680 geese were manually identified by observers on the satellite images, and 2,314 of them were used to train our algorithm. The spatial distribution of these geese is shown in Figure A1.1a and and a sample of the July 2021 satellite map is shown in Figure A1.1b.

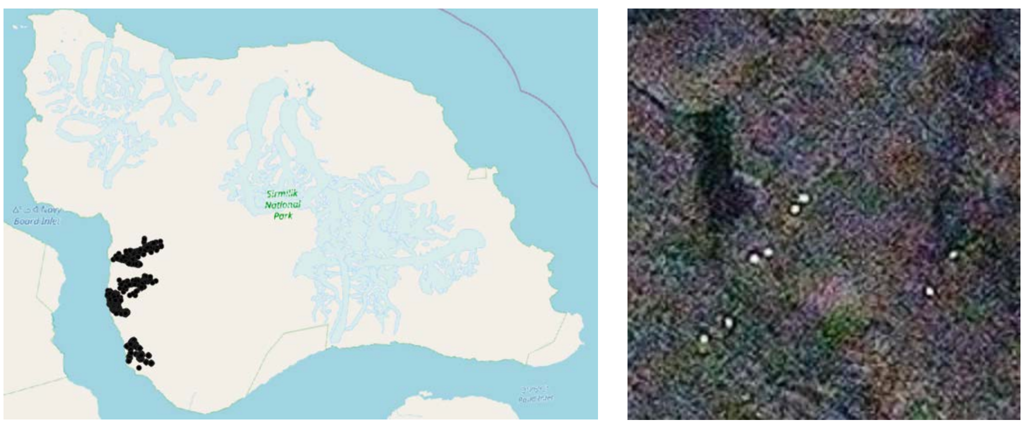

Figure A1.1. (a) Geographical coordinates (black dots) of geese manually identified by observers on Bylot Island and (b) Sample of the July 2021 satellite image. Each white dot on the right image corresponds to a goose.

Geese have an average signature of 3 x 3 pixels and can be easily identified depending on the nature of the landscape on which they are found (see Figure A1.2). Using the geospatial coordinates of the manually identified geese, we constructed a training dataset by randomly generating 4 images of size 200 x 200 pixels in the 20 x 180-pixel neighborhood of each of goose, for a total of 9,256 images. This data augmentation technique, called *random cropping* in the field of machine learning, facilitates the training of a deep learning algorithm in a low-data regime and can improve its accuracy (Shorten & Khoshgoftaar 2019). The size of the image was also chosen after a sensitivity study in which we tested numerous image dimensions to determine at which input size the performance of the algorithm started to decrease. Since it started to decrease rapidly beyond 200 pixels, we chose this dimension to optimize both the performance and the runtime of our algorithm.

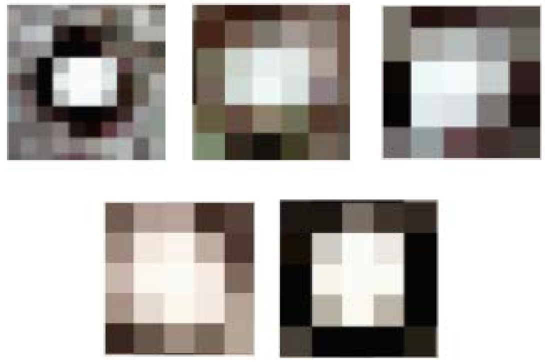

Figure A1.2. Examples of what a snow goose looks like on a satellite image at the level of individual pixels.

1.2 Algorithm architecture and training procedure

The architecture of our detection algorithm is called Faster R-CNN (Shaoqing et al. 2015). This state-of-the-art neural network procedure is made of two parts and accepts as input an image of 200 x 200 pixels, which is first processed by a block that extracts its main features. These features correspond to a representation of the image synthesized by the algorithm. Once extracted, these features are then analyzed by a second block, whose role is to detect snow geeese on the input and determine bounding boxes around them. Our algorithm produces as an output a list of bounding boxes, which are also associated with a confidence level between 0 and 1. Each bounding box therefore corresponds to a potential goose. For the validation study of our algorithm, we chose to consider only the bounding boxes for which the confidence level of the algorithm was greater or equal to 0.80. Examples of bounding boxes produced by our algorithm are shown in Figure A1.3.

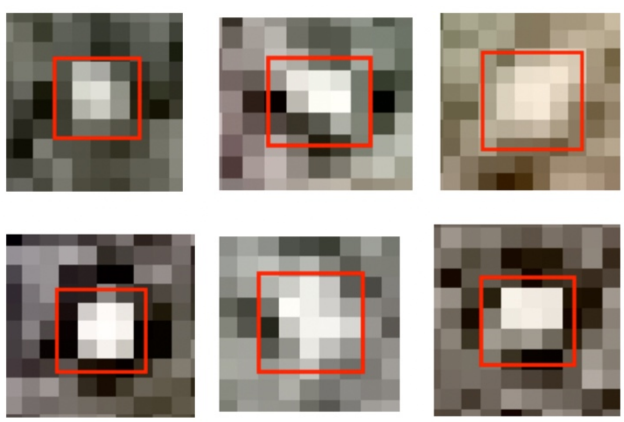

Figure A1.3. Bounding boxes determined by the neural network for six geese in our dataset

When used for object detection tasks, the neurons of a deep learning algorithm are usually initialized with values learned on datasets containing multiple natural images. In our case, we initialized the values of the neurons in the first block of our algorithm with those learned on the ImageNet dataset (Deng et al. 2009) and the ones in the second block with those learned on the Microsoft COCO dataset (Lin et al. 2014). The numerical values of the neurons of the neural network are then adjusted to specific detection tasks during training. This pre-training that is commonly used for computer vision tasks is essential to accelerate training and improve accuracy.

1.3 Results

We scanned the entirety of the four satellite images acquired with our trained algorithm to detect snow geese over the entire study area. Table A1.1 and A1.2 respectively compare the number of geese detected with manual and automated detection for the month of June and July of the years 2020 and 2021.

Table A1.1. Comparison of goose detection on satellite images between manual observers and the deep learning algorithm for the month of June.

Study year	Nesting area	Number of geese detected		Match (%)	Overestimation (%)
		Manual detection	Deep learning algorithm		
2020	Colony	436	546	92	20
	Random plots	318	471	89	32
2021	Colony	544	602	95	10
	Random plots	229	229	93	0

Table A1.2. Comparison of goose detection on satellite images between manual observers and the deep learning algorithm for the month of July.

Study year	Nesting area	Number of geese detected		Match (%)	Overestimation (%)
		Manual detection	Deep learning algorithm		
2020	Colony	407	447	94	9
	Random plots	335	360	92	7
	Qarlikturvik Valley	633	721	97	12
2021	Colony	237	220	90	-7
	Random plots	143	129	88	-10
	Qarlikturvik Valley	292	812	100	64

We can see that the algorithm is able to match the manual detection by more than 90% in almost all cases. However, the number of geese detected by our deep learning algorithm is generally higher than the one obtained by manual detections. Indeed, because the difference is most pronounced in June, when the presence of snow and ice is likely to confuse the algorithm more often, this suggests that the additional number of geese detected by our algorithm are probably made up of several false positives.

White rocks on Bylot Island are also often mistaken for geese, which can explain the high number of false positives in the Qarliktuvik Valley in 2021. In 2021, the 2020 and 2021 images were compared during manual detection to remove rocks from the count. The number of geese detected manually in the Qarliktuvik Valley is therefore much higher in 2020, possibly because several white rocks were incorporated in the goose counts that year. A similar approach could be undertaken with the deep learning algorithm to significantly reduce the number of false positives caused by white rocks. We could superpose geese detected by our algorithm in 2020 and 2021 and remove from the count the white dots detected at the exact same location for both years. Because the visual appearance of a goose and a white rock are nearly the same on a satellite image, this would likely be one of the the most rigorous way to remove these false positives.

A preliminary analysis has also shown that false positives are predominantly found in habitats where geese do not usually nest (riversides, water, mountains, etc.). Restricting the detection of snow geese on favorable areas only would also significantly reduce the number of false positives.

In the coming year, we plan to improve our algorithm through the integration of both white rock removal and habitat-specific detection. Once the knowledge of our biological system will be better integrated into our algorithm, we should be able to accurately obtain the abundance of snow geese over the entire study area. We should be able to validate the accuracy of our improved algorithm in 2022 by conducting simultaneously goose population monitoring in the field and goose detection on new WorldView satellite images of Bylot Island. This comparison should allow us to determine whether the developed methodology can truly constitute a reliable alternative to field work-based population monitoring.

1.4 References

Deng, J., W. Dong, R. Socher, L.-J. Li, K. Li & L. Fei-Fei. 2009. ImageNet: a large-scale hierarchical image database. Pages 248-255 *in* **2009 IEEE Conference on Computer Vision and Pattern Recognition**. https://doi.org/10.1109/CVPR.2009.5206848

Lin, T.-Y., M. Maire, S. Belongie, J. Hays, P. Perona, D. Ramanan, P. Dollar & C.L. Zitnik. 2014. Microsoft COCO: Common Objects in Context. Pages 740-755 *in* D. Fleet, T. Pajdla, B. Schiele and T. Tuytelaars, editors. European Conference on Computer Vision 2014. **Lecture Notes in Computer Science**, vol 8693. https://doi.org/10.1007/978-3-319-10602-1_48

Shaoqing R, S. He, R. Girshick. & J. Sun. 2015. Faster R-CNN: towards real-time object detection with region proposal networks. Pages 91-99 *in* C. Cortes, D.D. Lee, R. Garnett, N.D. Lawrence and M. Sugiyama, editors. 29th Annual Conference on Neural Information Processing Systems 2015. **Advances in Neural Information Processing Systems 28**.

Shermeyer, J. & A. Van Etten. 2019. The effects of super-resolution on object detection performance in satellite imagery. **Proceedings of the EarthVision Workshop at 2019 Conference on Computer Vision and Pattern Recognition**.

Shorten, C. & T.M. Khoshgoftaar. 2019. A Survey on image data augmentation for deep learning. **Journal of Big Data** 6:1. https://doi.org/10.1186/s40537-019-0197-0

APPENDIX 2
METHOD USED TO PAIRING GEESE DETECTED ON A SATELLITE IMAGE

The satellite image was imported in a GIS software and divided into 100 × 100 m cells. Geese were clearly visible as white dots on enlargement of the images (Fig. A2.1) although we could not exclude the possibility that sometimes two geese side-by-side could appear as a single dot. In a first step, one observer (MCC) identified all the white dots (i.e., geese) manually and digitized their position (Fig. A2.2A). The distance between all geese detected was calculated (Fig. A2.2B) and these distances were used to compute a cluster tree. The cluster was cut at 15 m to determine goose pairs (Fig. A2.2C and A2.2D). This meant that two geese detected on the satellite images that were ≤15 meters from each other were considered a nesting pair, otherwise, we assumed that only one individual of the pair was detected or that both individuals were too close to each other to be detect as separate geese. This threshold distance was based on an analysis of the nearest neighbor of nests monitored in the goose colony between 2016 and 2019 (n = 611) which indicated that 75% of goose nests were separated by ≥15m.

Figure A2.1. Close-up of a portion of the satellite images acquired on 20 June 2021 showing geese as white dots in the Bylot Island goose colony.

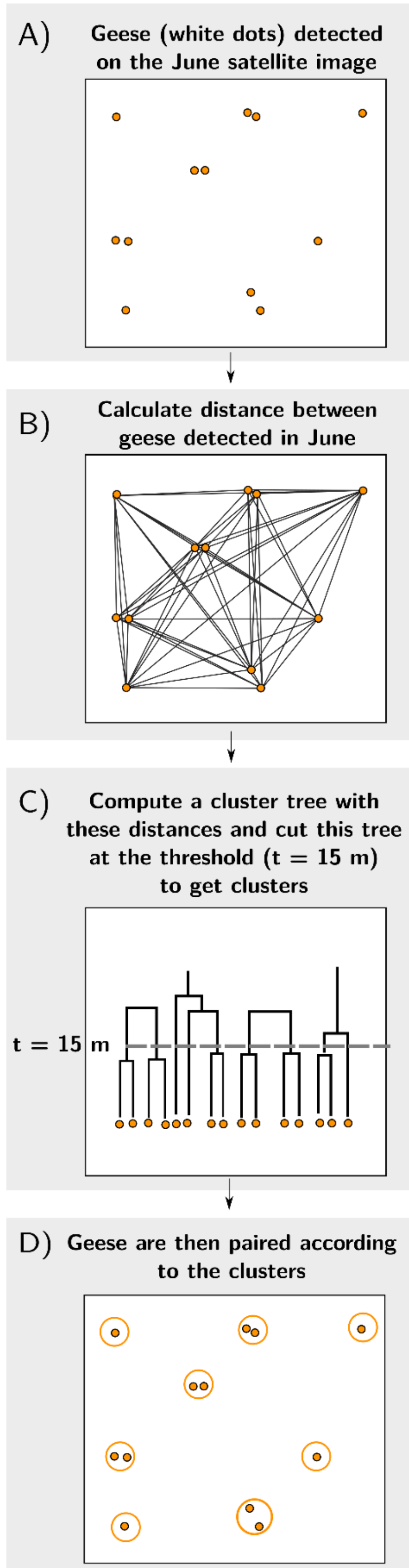

Figure A2.2. Diagram illustrating the method used to pair geese (or white dots) detected on the satellite image.

APPENDIX 3
DETAILED METHOD USED TO ESTIMATE THE NUMBER OF SNOWY OWL NESTS

3.1. Analysis of the satellite image

The search for potential Snowy Owl nests was carried out by one observer (ED) on the satellite image of the Qarlikturvik Valley taken on 9 July 2021 (see Fig. 1). A search for nesting owls was conducted over a 56-km^2 area, which has been searched every year in the field for presence of this species since 1993. Within this area, 24 km^2 of highquality habitat for owls were systematically searched, paying special attention to nesting sites previously used by owls over the period 1993-2019 and other suitable sites such as ridges. To maximize the coverage of the whole area, a number of 500 × 500 m cells were also systematically distributed in low quality nesting areas for owls and searched (Fig. A3.1). It was not possible to differentiate owls from geese on the image due to their similar body size. However, we took advantage from the fact that when Snowy Owls are nesting on Bylot Island, their nests are almost always surrounded by an aggregation of snow goose nests, which benefit from a predator exclusion area created by owls within a few hundred meters of their nest (Tremblay et al. 1997, Bêty et al. 2001). Using the same approach as in the goose colony (see Appendix 2), the observer manually digitized white dots (geese) detected on the image in a GIS software. We performed a cluster analysis on the white dots detected to identify potential goose nesting pairs as in the analysis done in the goose colony (see Appendix 2).

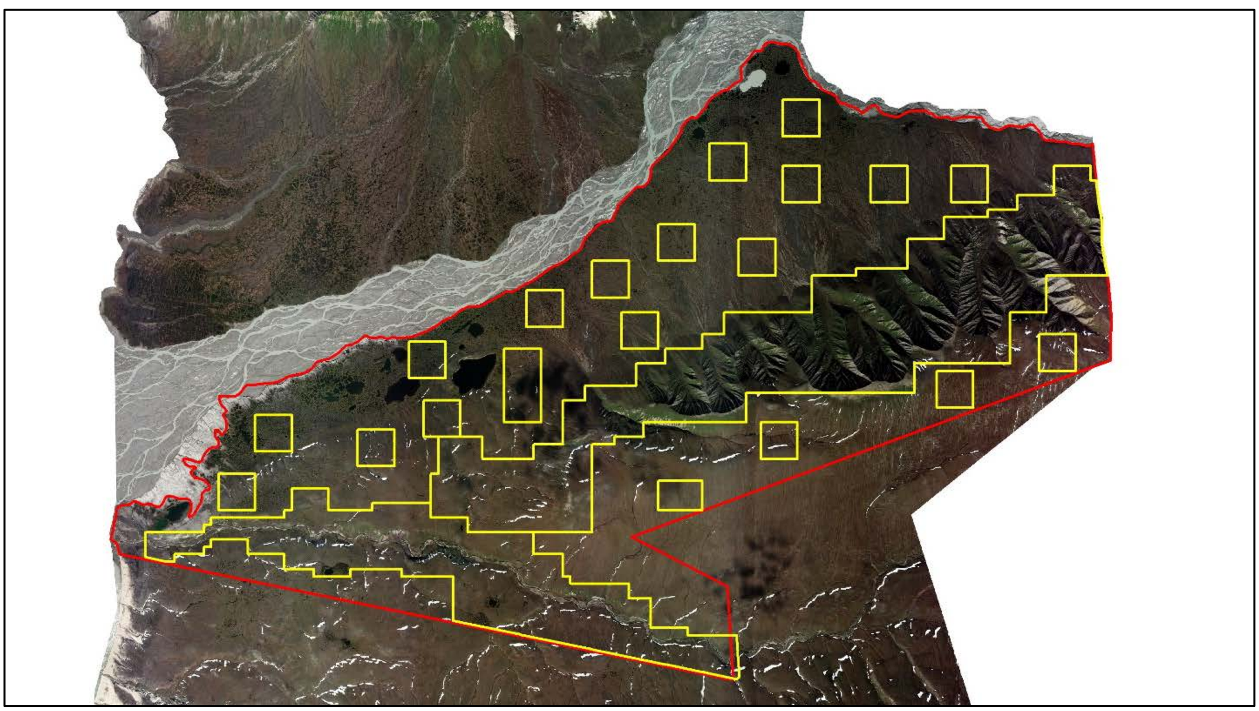

Figure A3.1. Portion of the satellite image taken on 9 July 2021 (see Fig. 1) showing the Qarlikturvik Valley where a search for potential Snow Owls nests was carried out. The yellow lines enclosed areas that were systematically searched by the observer and the red line delimits the 56-km^2 search area.

3.2. Parametrization of the cluster analysis of nesting aggregations of snow geese

We performed a second cluster analysis on goose pairs detected on the satellite image to identify nesting aggregations that could be associated with Snowy Owl nests. We used historic data on the spatial distribution of goose nests in the Qarlikturvik Valley during seven years with presence of owls between 1993 and 2014 to determine patterns of goose nest agregations around Snowy Owl nests that were closely monitored in the field.

We ran a separate cluster analysis in each year to identify goose nest aggregations. Identification of aggregations critically depends on the distance threshold used as cut-off point in this analysis. The distance threshold is the maximum possible distance between two nests belonging to the same cluster. Based on analyses performed in 2020, we determined that the best match between the number of goose nest aggregations detected by this method and the number of real snow owl nests censused in the field in those years was obtained when the threshold value varied from 1250 to 1750 m (further details can be found in Appendix 3 of Cadieux et al. 2021). These thereshold values were thus retained here.

3.3. Estimating the number of Snowy Owl nests

We applied the same cluster analysis that we ran on the historic data (see above) to the goose nesting pairs identified on the satellite image of the Qarlikturvik Valley in 2021. However, we increased the minimum number of goose nesting pairs required to identify an aggregation of nests. We had retained aggregations of >3 goose nests in the historic data because in some years, search of goose nests around owl nests was not exhaustive. In contrast, the search of goose nesting pairs on the satellite images was very thorough and likely more exhaustive than in the field. Therefore, to avoid detecting an unrealistic high number of aggregations of goose nesting pairs in 2021, we increased this minimum value to 8 because, in the historic data, most owl nests censused were surrounded by 8 or more goose nests. We evaluated the sensitivity of our estimation of the number of goose nest aggregations to the distance threshold specified in the cluster analyses by using three values with the range previously identified (1250, 1500 and 1750 m), and to the minimum number of goose nesting pairs in an aggregation by varying this number from 7 to 9. Based on these criteria, we estimated between 5 and 7 potential Snowy Owl nests over the 56 km^2 monitoring area (Table A3.1). We chose to report the value associated with the midpoint of the parameter values used in the sensitivy analysis (distance threshold of 1500 m and aggregations with a minimum of 8 nesting pairs), which is 5 owl nests. The spatial distribution of the aggregations of goose nesting pairs identified in 2021 by the cluster analysis based on these parameter values is shown in Fig. A3.2.

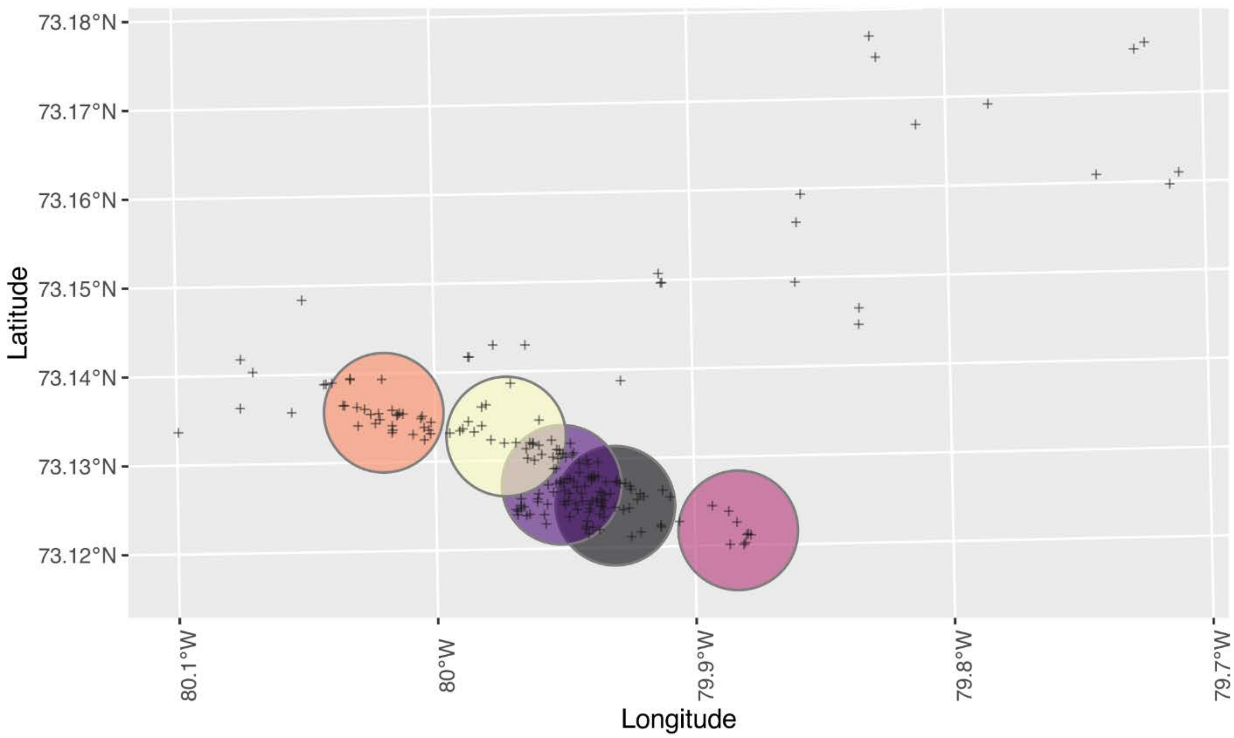

Figure A3.2. Aggregations of goose nesting pairs (colored circles) identified in the Qarlikturvik Valley area in 2021 by the cluster analysis when using a distance threshold of 1500 m and a minium of 8 goose pairs by aggregations. Grey + represents individual nesting pair identified on the satellite image.

Table A3.1. Number of potential Snowy Owl nests present in the Qarlikturvik Valley of Bylot Island in 2021 according to two sets of parameter values retained for the analysis.

Minimum number of goose nests in an aggregation	Maximum possible distance between nesting pairs belonging to the same cluster		
	1250 m	1500 m	1750 m
7	7	5	5
8	7	5	5
9	7	5	5

APPENDIX 4
PUBLICATIONS FROM OUR WORK ON BYLOT ISLAND (1990-2022)

Papers in refereed journals

J.228. Beardsell, A., D. Gravel, J. Clermont, D. Berteaux, G. Gauthier, & J. Bêty. 2022. A mechanistic model of functional response provides new insights into indirect interactions among arctic tundra prey. **Ecology** (*in press*). https://doi.org/10.1002/ecy.3734

J.227. Barrio, I.C., D. Ehrich, E.M. Soininen, V.T. Ravolainen, C.G. Bueno, O. Gilg, A.M. Koltz, J. Bêty et al. 2022. Developing common protocols to measure tundra herbivory across spatial scales. **Arctic Science** (*in press*). https://doi.org/10.1139/as-2020-0020

J.226. Gignac, C., L. Rochefort, G. Gauthier, E. Lévesque, V. Maire, L. Deschamps, R. Pouliot, M. Marchand-Roy. 2022. N/P addition is more likely than N addition alone to promote a transition from moss-dominated to graminoid-dominated tundra in the High-Arctic. **Atmosphere** 13:676. https://doi.org/10.3390/atmos13050676

J.225. McCabe, R., J.-F. Therrien, K. Wiebe, G. Gauthier, D. Brinker, S. Weidensaul, D. Reid, F. Doyle, K.O. Jacobsen, T. Aarvak, I.J. Øien, R. Solheim, G. Fitzgérald, N. Smith, K. Bates, M. Fuller, E. Miller & K. H. Elliott. 2022. Density-dependent winter survival of immatures in an irruptive raptor with pulsed breeding. **Oecologia** 198:295-306. https://doi.org/10.1007/s00442-021-05057-9.

J.224. Clermont, J., S. Woodward-Gagné & D. Berteaux. 2021. Digging into the behaviour of an active hunting predator: arctic fox prey caching events revealed by accelerometry. **Movement Ecology** 9:58. https://doi.org/10.1186/s40462-021-00295-1

J.223. Clermont, J., A. Grenier-Potvin, É. Duchesne, C. Couchoux, F. Dulude-de Broin, A. Beardsell, J. Bêty & D. Berteaux. 2021. The predator activity landscape predicts the anti-predator behavior and distribution of prey in a tundra community. **Ecosphere** 12:e03858. https://doi.org/10.1002/ecs2.3858

J.222. Kalhor, D., M. Poirier, A. Pusenkova, X. Maldague, G. Gauthier & T. Galstian. 2021. A camera trap to reveal the obscure world of the arctic subnivean ecology. **IEEE Sensors Journal** 21:28025-28036. https://doi.org/10.1109/JSEN.2021.3122203

J.221. Lamarre, J.-F. G. Gauthier, R. Lanctot, S.T. Saalfeld, O.P. Love, E. Reed, O.W. Johnson, J. Liebezeit, R.L. McGuire, M. Russell, E. Nol, L. Kolosky, F. Sanders, L. Mckinnon, S. Flemming, N. Lecomte, M.A. Giroux, S. Bauer, T. Emmenegger & J. Bêty. 2021. Timing of breeding site availability across the North-American Arctic partly determines spring migration schedule in a long-distance Neotropical migrant. **Frontiers in Ecology and Evolution** 9:710007. https://doi.org/10.3389/fevo.2021.710007

J.220. Poirier, M., D. Fauteux, G. Gauthier, F. Dominé & J.F. Lamarre. 2021. Snow hardness impacts intranivean locomotion of arctic small mammals. **Ecosphere** 12(11):e03835. https://doi.org/10.1002/ecs2.3835

J.219. Duchesne, E., J.F. Lamarre, G. Gauthier, D. Berteaux, D. Gravel, & J. Bety. 2021. Variable strength of predator-mediated effects on species occurrence in an arctic terrestrial vertebrate community. **Ecography** 44: 1236–1248. https://doi.org/10.1111/ecog.05760

J.218. Bates, A.E., R.B. Primack & PAN-Environment Working Group (350 authors including G. Gauthier, P. Legagneux, J. Bêty, F. Letourneux, F. Dulude de-Broin & T. Grandmont). 2021. Global COVID-19 lockdown highlights humans as both threats and custodians of the environment. **Biological Conservation** 263:109175. https://doi.org/10.1016/j.biocon.2021.109175

J.217. Brown, A., R. McCabe, J.-F. Therrien, K. Wiebe, S. Weidensaul, D. Brinker, G. Gauthier & K.H. Elliott. 2021. Nomadic breeders Snowy Owls (Bubo scandiacus) do not use stopovers to sample the summer environment. **Ibis** 163:1271–1281. https://doi.org/10.1111/ibi.12950

J.216. Domine, F., G. Lackner, D. Sarrazin, M. Poirier & M. Belke-Brea. 2021. Meteorological, snow and soil data (2013–2019) from a herb tundra permafrost site at Bylot Island, Canadian high Arctic, for driving and testing snow and land surface models. **Earth System Science Data** 13:4331–4348. https://doi.org/10.5194/essd-13-4331-2021

J.215. Seyer, Y., G. Gauthier, J.-F. Therrien & N. Lecomte. 2021. Seasonal variations in migration strategy of a long-distance Arctic-breeding seabird. **Marine Ecology Progress Series** 677:1-16. https://doi.org/10.3354/meps13905
J.214. Therrien, J.-F., G. Gauthier, T. McDonald, N. Smith, S. Weidensaul, D. Brinker, R. McCabe, A. Robillard, J. Bêty & N. Lecomte. 2021. The irruptive nature of Snowy Owls: an overview of some of the recent empirical evidence. **AIRO** 29:527-534.
J.213. Frederick, C., C. Girard, G. Wong, M. Lemire, A. Langwieder, M.-C. Martin & P. Legagneux. 2021. Communicating with Northerners on the absence of SARS-CoV-2 in migratory snow geese. **Ecoscience** 28:217-223. https://doi.org/10.1080/11956860.2021.1885803
J.212. Meyer, N., L. Bollache, M. Galipaud, J. Moreau, F.X. Dechaume-Moncharmont, E. Afonso, A. Angerbjörn, J. Bêty et al. 2021. Behavioural responses of breeding arctic sandpipers to ground-surface temperature and primary productivity. **The Science of the Total Environment** 755:142485.
J.211. Nishizawa, K., L. Deschamps, V. Maire, J. Bêty, E. Lévesque, R. Kitagawa, S. Masumoto, I. Gosselin, A. Morneault, L. Rochefort, G. Gauthier, Y. Tanabe, M. Uchida & A.S. Mori. 2021. Long-term consequences of goose exclusion on nutrient cycles and plant communities in the High-Arctic. **Polar Science** 27 :100631. https://doi.org/10.1016/j.polar.2020.100631
J.210. Beardsell, A., D. Gravel, D. Berteaux, G. Gauthier, J. Clermont, V. Careau, N. Lecomte, C.-C. Juhasz, P. Royer-Boutin & J. Bêty. 2021. Derivation of predator functional responses using a mechanistic approach in a natural system. **Frontiers in Ecology and Evolution** 9:630944. https://doi.org/10.3389/fevo.2021.630944
J.209. Grenier-Potvin, A., J. Clermont, G. Gauthier & D. Berteaux. 2021. Prey and habitat distribution are not enough to explain predator habitat selection: addressing intraspecific interactions, behavioural state and time. **Movement Ecology** 9:12. https://doi.org/10.1186/s40462-021-00250-0
J.208. Poulin, M.-P., J. Clermont & D. Berteaux. 2021. Extensive daily movement rates measured in territorial arctic foxes. **Ecology and Evolution** 11:2503-2514.
J.207. LeTourneux, F., T. Grandmont, F. Dulude-de Broin, M.C. Martin, J. Lefebvre, A. Kato, J. Bêty, G. Gauthier & P. Legagneux. 2021. COVID19-induced reduction in human disturbance enhances fattening rate of an overabundant goose species. **Biological Conservation** 255:108968. https://doi.org/10.1016/j.biocon.2021.108968
J.206. McCabe, R.A., J.-F. Therrien, K. L. Wiebe, G. Gauthier, D. Brinker, S. Weidensaul & K. Elliott. 2021. Landscape cover type, not social dominance, is associated with the winter movement patterns of snowy owls in temperate areas. **Ornothology** 138:1-12. https://doi.org/10.1093/ornithology/ukaa082
J.205. Robillard, A., G. Gauthier, J.F. Therrien & J. Bêty. 2021. Linking winter habitat use, diet and reproduction in snowy owls using satellite tracking and stable isotope analyses. **Isotopes in Environmental & Health Studies** 57:166-182. https://doi.org/10.1080/10256016.2020.1835888
J.204. Meyer N., L. Bollache, F.X. Dechaume-Moncharmont, J. Moreau, E. Afonso, A. Angerbjörn, J. Bêty et al. 2020. Nest attentiveness drives nest predation in arctic sandpipers. **Oikos**. 129:1481-1492.
J.203. Reséndiz-Infante, C. & G. Gauthier. 2020. Temporal changes in reproductive success and optimal breeding decisions in a long-distance migratory bird. **Scientific Reports** 10:22067.
J.202. Davidson, S.C., G. Bohrer, E. Gurarie, S. LaPoint, P.J. Mahoney, N.T. Boelman, J.U.H. Eitel, L.R. Prugh, L.A. Vierling, J. Jennewein, E. Grier, O. Couriot, A.P. Kelly, A.J.H. Meddens, R.Y. Oliver, R. Kays, M. Wikelski, T. Aarvak, J.T. Ackerman, J.A. Alves, E. Bayne, B. Bedrosian, J.L. Belant, A.M. Berdahl, A.M. Berlin, D. Berteaux, J. Bêty, G. Gauthier et al. 2020. New ecological insights from the Arctic Animal Movement Archive (AAMA). **Science** 370:712-715.
J.201. Seyer, Y., G. Gauthier, D. Fauteux & J.F. Therrien. 2020. Resource partitioning among avian predators of the Arctic tundra. **Journal of Animal Ecology** 89:2934-2945.
J.200. Berner, L.T., R. Massey, P. Jantz, B. Forbes, M. Macias-Fauria, I. Myers-Smith, T. Kumpula, G. Gauthier, L. Andreu-Hayles, B.V. Gaglioti, P. Burns, P. Zetterberg, R. D'Arrigo & S.J. Goetz. 2020. Summer warming drives widespread but not uniform greening in the Arctic tundra biome. **Nature Communications** 11:4621.

J.199. Kankaanpää T., E. Vesterinen, B. Hardwick, N.M. Schmidt, T. Andersson, P.E. Aspholm, I. Barrio, N. Beckers, J. Bêty et al. 2020. Parasitoids indicate major climate-induced shifts in Arctic communities. **Global Change Biology** 26:6276-6295.

J.198. Chevallier, C., G. Gauthier, S. Lai & D. Berteaux. 2020. Pulsed food resources affect reproduction but not adult apparent survival in arctic foxes of the High Arctic. **Oecologia** 193:557-569.

J.197. Hutchison, C., F. Guichard, P. Legagneux, G. Gauthier, J. Bêty, D. Berteaux, D. Fauteux & D. Gravel. 2020. Seasonal food webs with migrations: Multi-season models reveal indirect species interactions in the Canadian Arctic tundra. **Philosophical Transactions of the Royal Society A – Physical Sciences A** 20190354.

J.196. Curk, T., I. Pokrovsky, N. Lecomte, T. Aarvak, D.F. Brinker, K. Burnham, A. Dietz, A. Dixon, A. Franke, G. Gauthier, K.-O. Jacobsen, J. Kidd, S.B. Lewis, I.J. Øien, A. Sokolov, V. Sokolov, R. Solheim, S. Weidensaul, K. Wiebe, M. Wikelski, J.F. Therrien & K. Safi. 2020. Arctic avian predators synchronise their spring migration with the northern progression of snowmelt. **Scientific Reports** 10:7220.

J.195. Reséndiz-Infante, C., G. Gauthier, & G. Souchay. 2020. Consequences of a changing environment on the breeding phenology and reproductive success components in a long-distance migratory bird. **Population Ecology** 62:284-296.

J.194. Weiser, E.L., R.B. Lanctot, S.C. Brown, H.R. Gates, J. Bêty et al. 2020. Annual adult survival drives trends in Arctic-breeding shorebirds but knowledge gaps in other vital rates remain. **Condor**. 122:1-14.

J.193. Schmidt, E., D. Fauteux, J.F. Therrien, G. Gauthier & Y. Seyer. 2020. Improving diet assessment of Arctic terrestrial predators with the size of rodent mandibles. **Journal of Zoology** 311:23-32.

J.192. Léandri-Breton, D.-J., Bêty, J. 2020. Vulnerability to predation may affect species distribution: plovers with broader arctic breeding range nest in safer habitat. **Scientific Reports** 10: 5032.

J.191. Ehrich, D., N.M. Schmidt, G. Gauthier, R. Alisauskas, A. Angerbjörn, K. Clark, F. Ecke et al. 2020. Documenting lemming population change in the Arctic: Can we detect trends? **Ambio** 49:786-800.

J.190. Gallant, D., N. Lecomte & D. Berteaux. 2020. Disentangling the relative influences of global drivers of change in biodiversity: A study of the twentieth-century red fox expansion into the Canadian Arctic. **Journal of Animal Ecology** 89: 565–576.

J.189. Léandri-Breton, D.-J., J.-F. Lamarre & J. Bêty. 2019. Seasonal variation in migration strategies used to cross ecological barriers in a Nearctic migrant wintering in Africa. **Journal of Avian Biology** 50: e02101.

J.188. Juhasz, C.-C., B. Shipley, G. Gauthier, D. Berteaux & N. Lecomte. 2019. Direct and indirect effects of regional and local climatic factors on trophic interactions in the Arctic tundra. **Journal of Animal Ecology** 89:704-715.

J.187. Larsson, P., J. von Seth, I.J. Hagen, A. Götherström, S. Androsov, M. Germonpré, N. Bergfeldt, S. Fedorov, N.E. Eide, N. Sokolova, D. Berteaux et al. 2019. Consequences of past climate change and recent human persecution on mitogenomic diversity in the arctic fox. **Philosophical Transaction of the Royal Society – Biological Sciences** 374: 20190212.

J.186. Seyer, Y., G. Gauthier, L. Bernatchez & J.-F. Therrien. 2019. Sexing a monomorphic plumage seabird using morphometrics and assortative mating. **Waterbirds** 42:380-392.

J.185. Rheubottom S.I., I.C. Barrio, M.V. Kozlov, S. Sokovnina, J.M. Alatalo, T. Andersson, A.L. Asmus, C. Baubin, F.Q. Brearley, D.D. Egelkraut, D. Ehrich, G. Gauthier et al. 2019. Hiding in the background: community-level patterns in invertebrate herbivory across the tundra biome. **Polar Biology** 42:1881-1897.

J184. Poirier, M., G. Gauthier & F. Domine. 2019. What guides lemming movements through the snowpack? **Journal of Mammalogy** 100:1416–1426.

J.183. Weiser E.L., R.B. Lanctot, S.C. Brown, H.R. Gates, R.L. Bentzen, J. Bêty et al. 2018. Environmental and ecological conditions at Arctic breeding sites have limited effects on true survival rates of adult shorebirds. **Auk** 135:29-43.

J.182. Weiser E.L., S.C. Brown, R.B. Lanctot, H.R. Gates, K. Abraham, R.L. Bentzen, J. Bêty et al. 2018. Effects of environmental conditions on reproductive effort and nest success of Arctic-breeding shorebirds. **Ibis** 160:608-623.
J.181. Weiser E.L., S.C. Brown, R.B. Lanctot, H.R. Gates, K. Abraham, R.L. Bentzen, J. Bêty et al. 2018. Life-history tradeoffs revealed by seasonal declines in reproductive traits of Arctic-breeding shorebirds. **Journal Avian Biology** 49:e01531.
J.180. Dominé, F., G. Gauthier, V. Vionnet, D. Fauteux, M. Dumont & M. Barrère. 2018. Snow physical properties may be a significant determinant of lemming population dynamics in the high Arctic. **Arctic Science** 4:813-826.
J.179. Juhasz, C.C., A. Lycke, V. Careau, G. Gauthier, J.-F. Giroux & N. Lecomte. 2018 Picking the right cache: Caching-site selection for egg predators in the Arctic. **Polar Biology** 41:2233-2238.
J.178. Fauteux, D., G. Gauthier, D. Berteaux, R. Palme & R. Boonstra. 2018. Predator-induced stress does not reduce fecundity in High Arctic lemmings. **Oecologia** 187:657-666.
J.177. Robillard, A., G. Gauthier, J.F. Therrien & J. Bêty. 2018. Wintering space use and site fidelity in a nomadic species, the snowy owl. **Journal of Avian Biology** 49(5):e01707.
J.176. Fauteux, D., G. Gauthier, M. Mazerolle, N. Coallier, J. Bêty & D. Berteaux. 2018. Evaluation of invasive and non-invasive methods to monitor rodent abundance in the Arctic. **Ecosphere** 9(2):e02124.
J.175. Fauteux, D., G. Gauthier, G. Slevan-Tremblay & D. Berteaux. 2018. Life in the fast lane: learning from the rare multi-year recaptures of brown lemmings in the High Arctic. **Arctic Science** 4:146-151.
J.174. Fauteux, D., G. Slevan-Tremblay, G. Gauthier & D. Berteaux. 2017. Feeding preference of brown lemmings for plant parts of Arctic willow. **Polar Biology** 40:2329-2334.
J.173. Léandri-Breton, D.-J., M. Jaffré & J. Bêty. 2017. A rare dark morph in the Canadian Arctic raises questions about molting and polymorphism in Long-tailed Jaeger. **Wilson Journal of Ornithology** 130: 337-340.
J.172. Lamarre, J.-F., P. Legagneux, G. Gauthier, E.T. Reed & J. Bêty. 2017. Predator-mediated negative effects of overabundant snow geese on arctic-nesting shorebirds. **Ecosphere** 8(5):e01788.
J.171. Lai S., A. Quiles, J. Lambourdière, D. Berteaux & A. Lalis. 2017. Fine-scale population genetic structure of arctic foxes (*Vulpes lagopus*) in the High Arctic. **BMC Research Notes** 10: 663-671.
J.170. Robillard, A., G. Gauthier, J.F. Therrien, G. Fitzgerald, J.F. Provencher & J. Bêty. 2017. Variability in stable isotopes of snowy owl feathers and contribution of marine resources to their winter diet. **Journal of Avian Biology** 48:759-769.
J.169. Beardsell, A., G. Gauthier, D. Fortier, J.-F. Therrien & J. Bêty. 2017. Vulnerability to geomorphological hazards of an arctic cliff-nesting raptor, the rough-legged hawk. **Arctic Science** 3:203-219.
J.168. Rioux, M.-J., S. Lai, N. Casajus, J. Bêty & D. Berteaux. 2017. Winter home range fidelity and extraterritorial movements of Arctic fox pairs in the Canadian High Arctic. **Polar Research** 36 (Sup1):11.
J.167. Lai, S., J. Bêty & D. Berteaux. 2017. Movement tactics of a mobile predator in a meta-ecosystem with fluctuating resources: the arctic fox in the High Arctic. **Oikos** 126:937-947.
J.166. Norén, K., L. Dalén, Ø. Flagstad, D. Berteaux, J. Wallén & Angerbjörn, A. 2017. Evolution, ecology and conservation – revisiting three decades of arctic fox population genetic research. **Polar Research** 36 (Sup1):4.
J.165. Elmhagen, B., D. Berteaux, R.M. Burgess, D. Ehrich, D. Gallant, H. Henttonen, R.A. Ims et al. 2017. Homage to Hersteinsson and Macdonald: climate warming and resource subsidies cause red fox range expansion and Arctic fox decline. **Polar Research** 36 (sup1): 3.
J.164. Berteaux, D., A.-M. Thierry, R. Alisauskas, A. Angerbjörn, E. Buchel, L. Doronina, D. Ehrich, N.E. Eide, R. Erlandsson, Ø. Flagstad et al. 2017. Harmonizing circumpolar monitoring of Arctic fox: benefits, opportunities, challenges, and recommendations. **Polar Research** 36 (sup1):2.
J.163. Berteaux D., N. Casajus, A. Angerbjörn & E. Fuglei. 2017. Foreword to Supplement 1: research on a polar species - the Arctic fox. **Polar Research** 36 (sup1):1.

J.162. Berteaux, D., G. Gauthier, F. Dominé, R.A. Ims, S.F. Lamoureux, E. Lévesque & N. Yoccoz. 2017. Effects of changing permafrost and snow conditions on tundra wildlife: critical places and times. **Arctic Science**, 3:65-90.

J.161. Fauteux, D., G. Gauthier, D. Berteaux, C. Bosson, R. Palme & R. Boonstra. 2017. Assessing stress in Arctic lemmings: fecal metabolite levels reflect plasma free corticosterone levels. **Physiological and Biochemical Zoology** 90:370-382.

J160. Lefebvre, J., G. Gauthier, J.-F. Giroux, A. Reed, E.T. Reed & L. Bélanger. 2017. The greater snow goose, a case study of managing an overabundant population in North America. **Ambio** 46 (Suppl. 2):S262–S274.

J.159. Chevallier, C., G. Gauthier & D. Berteaux. 2017. Age estimation of live arctic foxes *Vulpes lagopus* based on teeth condition. **Wildlife Biology**, wlb.00304.

J.158. Chevallier, C., S. Lai & D. Berteaux. 2016. Predation of arctic fox pups by common ravens. **Polar Biology** 39:1335-1341.

J.157. Gauthier, G., G. Péron, J.-D. Lebreton, P. Grenier & L. van Oudenhove. 2016. Partitioning prediction uncertainty in climate-dependent population models. **Proceedings of the Royal Society B Biological Sciences** 283:20162353.

J.156. Domine, F., M. Barrere, & S. Morin. 2016. The growth of shrubs on high Arctic tundra at Bylot Island: impact on snow physical properties and permafrost thermal regime. **Biogeosciences**, 13:6471-6486.

J.155. Domine, F., M. Barrere, M. & D. Sarrazin. 2016. Seasonal evolution of the effective thermal conductivity of the snow and the soil in high Arctic herb tundra at Bylot Island, Canada. **The Cryosphere** 10:2573-2588.

J.154. Fauteux, D., G. Gauthier & D. Berteaux. 2016. Top-down limitation of lemmings revealed by experimental reduction of predators. **Ecology** 97: 3231-3241.

J.153. Beardsell A., G. Gauthier, J.-F. Therrien & J. Bêty. 2016. Nest site characteristics, patterns of nest reuse and reproductive success in an arctic nesting raptor, the Rough-legged Hawk. **Auk** 133:718-732.

J.152. Robillard, A., J.-F. Therrien, G. Gauthier, J. Bêty & K.M. Clark. 2016. Pulsed resources at tundra breeding sites affect winter irruptions at temperate latitudes of a top predator, the snowy owl. **Oecologia** 181:423–433.

J.151. Marmillot, V., G. Gauthier, M.-C. Cadieux & P. Legagneux. 2016. Plasticity in molt speed and timing in an arctic-nesting goose species. **Journal of Avian Biology** 47:650-658.

J.150. Perreault, N., E. Lévesque, D. Fortier & L.J. Lamarque. 2016. Thermo-erosion gullies boost the transition from wet to mesic vegetation. **Biogeosciences** 13: 1237-1253.

J.149. Lai, S., J. Bêty & D. Berteaux. 2015. Spatio–temporal hotspots of satellite–tracked arctic foxes reveal a large detection range in a mammalian predator. **Movement Ecology** 3:37

J.148. Christin, S., M-H. St-Laurent & D. Berteaux. 2015. Evaluation of Argos telemetry accuracy in the High-Arctic and implications for the estimation of home-range size. **Plos One** 10:e0141999.

J.147. Doiron, M., G. Gauthier & E. Lévesque. 2015. Trophic mismatch and its effects on the growth of young in an Arctic herbivore. **Global Change Biology** 21:4364-4376.

J.146. Fauteux, D., G. Gauthier & D. Berteaux. 2015. Seasonal demography of a cyclic lemming population in the Canadian Arctic. **Journal of Animal Ecology** 84:1412-1422.

J.145. Gauthier, G., P. Legagneux, M.-A. Valiquette, M.-C. Cadieux & J.-F. Therrien. 2015. Diet and reproductive success of an Arctic generalist predator: Interplay between variations in prey abundance, nest site location and intraguild predation. **The Auk** 132:735-747.

J.144. Berteaux, D., D. Gallant, B. N. Sacks & M.J. Statham. 2015. Red foxes (*Vulpes vulpes*) at their expanding front in the Canadian Arctic have indigenous maternal ancestry. **Polar Biology** 38:913-917.

J.143. Souchay, G., G. Gauthier, J. Lefebvre & R. Pradel. 2015. Absence of difference in survival between two distant breeding sites of greater snow geese. **Journal of Wildlife Management** 79:570-578.

J.142. Therrien, J.-F., D. Pinaud, G. Gauthier, N. Lecomte, K. L. Bildstein & J. Bêty. 2015. Is pre-breeding prospecting behaviour affected by snow cover in the irruptive snowy owl? A test using state-space modelling and environmental data annotated via Movebank. **Movement Ecology** 3:1-8.
J.141. Soininen, E.M., G. Gauthier, F. Bilodeau, D. Berteaux, P. Taberlet, L. Gielly, G. Gussarova, E. Bellemain, K. Hassel, H.K. Stenøien, L. Epp, A. Schrøder-Nielsen, C. Brochmann, N.G. Yoccoz. 2015. Highly overlapping winter diet in two sympatric lemming species revealed by DNA metabarcoding. **Plos One** 10:e0115335.
J.140. Therrien, J.-F., G. Gauthier, A. Robillard, N. Lecomte & J. Bêty. 2015. Écologie de la reproduction du harfang des neiges dans l'Arctique canadien. **Le Naturaliste Canadien** 139:17-23.
J.139. Souchay, G., G. Gauthier & R. Pradel. 2014. To breed or not: a novel approach to estimate breeding propensity and potential reproductive trade-offs in an Arctic-nesting species. **Ecology** 95:2745-2756.
J.138. van Oudenhove, L., G. Gauthier & J.D. Lebreton. 2014. Year-round effects of climate on demographic parameters of an arctic nesting goose species. **Journal of Animal Ecology** 83:1322-1333.
J.137. Therrien, J.-F., G. Gauthier, D. Pinaud & J. Bêty. 2014. Irruptive movements and breeding dispersal of snowy owls: a specialised predator exploiting a pulsed resource. **Journal of Avian Biology** 45:536-544.
J.136. Lewis, L.R., E. Behling, H. Gousse, E. Qian, C.S. Elphick, J.-F. Lamarre, J. Bêty, J. Liebezeit & B. Goffinet. 2014. First evidence of bryophite diaspores in the plumage of transequatorial migrant birds. **PeerJ** 2:e424.
J.135. McKinnon, L., D. Berteaux, and J. Bêty. 2014. Predator-mediated interactions between lemmings and shorebirds: a test of the alternative prey hypothesis. **The Auk** 131:619-628.
J.134. Bilodeau, F., G. Gauthier, D. Fauteux & D. Berteaux. 2014. Does lemming winter grazing impact vegetation in the Canadian Arctic? **Polar Biology** 37:845–857.
J.133. Soininen, E.M., D. Ehrich, N. Lecomte, N.G. Yoccoz, A. Tarroux, D. Berteaux, G. Gauthier, L. Gielly, C. Brochmann, G. Gussarova & R.A. Ims. 2014. Sources of variation in small rodent trophic niche: new insights from DNA metabarcoding and stable isotope analysis. **Isotopes in Environmental & Health Studies** 50:361-381.
J.132. Legagneux, P., G. Gauthier, N. Lecomte, N.M. Schmidt, D. Reid, M-C. Cadieux, D. Berteaux, J. Bêty, C.J. Krebs, R.A. Ims, N.G. Yoccoz, R.I.G. Morrison, S.J. Leroux, M. Loreau, & D. Gravel. 2014. Arctic ecosystem structure and functioning shaped by climate and herbivore body size. **Nature Climate Change** 4:379-383.
J.131. Doiron, M., G. Gauthier & E. Lévesque. 2014. Effects of experimental warming on forage quality and availability for an Arctic herbivore. **Journal of Ecology** 102:508-517.
J.130. Souchay, G., O. Gimenez, G. Gauthier & R. Pradel. 2014. Variations in band reporting rate and implications for kill rate in greater snow geese. **Avian Conservation Ecology** 9:1 (www.ace-eco.org/vol9/iss1/ art1/).
J.129. Bêty, J., M. Graham-Sauvé, P. Legagneux, M.-C. Cadieux & G. Gauthier. 2014. Fading indirect effects in a warming Arctic tundra. **Current Zoology** 60:189-202.
J.128. Therrien, J.-F., G. Gauthier, E. Korpimäki & J. Bêty. 2013. Predation pressure imposed by avian predators suggests summer limitation of small mammal populations in the Canadian Arctic. **Ecology** 95:56-67.
J.127. Gauthier, G., J. Bêty, M.-C. Cadieux, P. Legagneux, M. Doiron, C. Chevallier, S. Lai, A. Tarroux & D. Berteaux. 2013. Long-term monitoring at multiple trophic levels suggests heterogeneity in responses to climate change in the Canadian Arctic tundra. **Philosophical Transaction of the Royal Society – Biological Sciences** 368:20120482.
J.126. Bilodeau, F., G. Gauthier & D. Berteaux. 2013. Effect of snow cover on the vulnerability of lemmings to mammalian predators in the Canadian Arctic. **Journal of Mammalogy** 94:813-819.
J.125. Souchay, G., G. Gauthier & R. Pradel. 2013. Temporal variation of juvenile survival in a long-lived species: the role of parasites and body condition. **Oecologia** 173:151-160.
J.124. Bolduc, E., N. Casajus, P. Legagneux, McKinnon L., H. G. Gilchrist, M. Leung, Morrison R.I.G., Reid D., Smith P.A., Buddle C.M. & J. Bêty. 2013. Terrestrial arthropod abundance and phenology

in the Canadian Arctic: modeling resource availability for arctic-nesting insectivorous birds. **Canadian Entomologist** 145:155-170.

J.123. Bilodeau, F., G. Gauthier & D. Berteaux. 2013. The effect of snow cover on lemming population cycles in the Canadian High Arctic. **Oecologia** 172:1007-1016.

J.122. Bilodeau, F., D. Reid, G. Gauthier, C.J. Krebs, D. Berteaux & A. Kenney. 2013. Demographic response of tundra small mammals to a snow fencing experiment. **Oikos** 122:1167-1176.

J.121. Bilodeau, F., A. Kenney, S. Gilbert, E. Hofer, G. Gauthier, D. Reid, D. Berteaux & C.J. Krebs. 2013. Evaluation of a technique to trap lemmings under the snow. **Arctic** 66:32-36.

J.120. Ferguson, S., D. Berteaux, A. Gaston, J. Higdon, N. Lecomte, N. Lunn, M. Mallory, J. Reist, D. Russell, N. Yoccoz & X. Zhu. 2012. Time series data for Canadian arctic vertebrates: IPY contributions to science, management, and policy. **Climatic Change** 115:235-258.

J.119. McKinnon, L., D. Berteaux, G. Gauthier & J. Bêty. 2012. Predator-mediated interactions between preferred, alternative and incidental prey in the arctic tundra. **Oikos** 122:1042-1048.

J.118. Juillet, C., R. Choquet, G. Gauthier & R. Pradel. 2012. Carry-over effects of spring hunt and climate on recruitment to the natal colony in a migratory species. **Journal of Applied Ecology** 49:1237-1246.

J.117. Doiron, M., P. Legagneux, G. Gauthier & E. Lévesque. 2012. Broad-scale satellite Normalized Difference Vegetation Index data predict plant biomass and peak date of nitrogen concentration in Arctic tundra vegetation. **Applied Vegetation Science** 16:343-351.

J.116. McLennan, D.S., T. Bell, D. Berteaux, W. Chen, L. Copland, R. Fraser, D. Gallant, G. Gauthier, D. Hik, C.J. Krebs, I. Myers-Smith, I. Olthof, D. Reid, W. Sladen, C. Tarnocai, W. Vincent & Y. Zhang. 2012. Recent climate-related terrestrial biodiversity research in Canada's Arctic national parks: review, summary and management implications. Biodiversity 13:157-173.

J.115. Tarroux, A., J. Bêty, G. Gauthier & D. Berteaux. 2012. The marine side of a terrestrial carnivore: intra-population variation in use of allochthonous resources by arctic foxes. **Plos One** 7:e42427.

J.114. Desnoyers, M., G. Gauthier & J. Lefebvre. 2013. Stable associations within greater snow goose flocks: do they exist beyond family bonds? **The Auk** 129:611-622.

J.113. Therrien, J.-F., G. Gauthier & J. Bêty. 2012. Survival and reproduction of adult snowy owls tracked by satellite. **Journal of Wildlife Management** 76: 1562-1567.

J.112. Legagneux, P., G. Gauthier, D. Berteaux, J. Bêty, M.-C. Cadieux, F. Bilodeau, E. Bolduc, L. McKinnon, A. Tarroux, J.-F. Therrien, L. Morissette & C.J. Krebs. 2012. Disentangling trophic relationships in a high arctic tundra ecosystem through food web modeling. **Ecology** 93:1707-1716.

J.111. McKinnon, L., M. Picotin, E. Bolduc, C. Juillet & J. Bety. 2012. Timing of breeding, peak food availability, and effects of mismatch on chick growth in birds nesting in the High Arctic. **Canadian Journal of Zoology** 90:961-971.

J.110. Giroux, M.-A., D. Berteaux, N. Lecomte, G. Gauthier, G. Szor & J. Bêty. 2012. Benefiting from a migratory prey: spatio-temporal patterns in subsidization of an arctic predator. **Journal of Animal Ecology** 81: 533-542.

J.109. Reid, D., F. Bilodeau, C.J. Krebs, G. Gauthier, A.J. Kenney, B. S. Gilbert, M.C.Y. Leung, D. Duchesne & E. Hofer. 2012. Lemming winter habitat choice: a snow-fencing experiment. **Oecologia** 168:935-946.

J.108. Krebs, C.J., F. Bilodeau, D. Reid, G. Gauthier, A.J. Kenney, S. Gilbert, D. Duchesne & D.J. Wilson. 2012. Are lemming winter nest counts a good index of population density? **Journal of Mammalogy** 93:87-92.

J.107. Cameron, C., D. Berteaux & F. Dufresne. 2011. Spatial variation in food availability predicts extrapair paternity in the arctic fox. **Behavioral Ecology** 22: 1364-1373.

J.106. Duchesne, D., G. Gauthier & D. Berteaux. 2011. Habitat selection, reproduction and predation of wintering lemmings in the Arctic. **Oecologia** 167:967-980.

J.105. Ehrich, D., A. Tarroux, J. Stien, N. Lecomte, S. Killengreen, D. Berteaux & N.G. Yoccoz. 2011. Stable isotope analysis: modelling lipid normalization for muscle and eggs from arctic mammals and birds. **Methods in Ecology and Evolution** 2:66-76.

J.104. Gauthier, G., D. Berteaux, J. Bêty, A. Tarroux, J.-F. Therrien, L. Mckinnon., P. Legagneux & M.-C. Cadieux. 2011. The tundra food web in a changing climate and the role of exchanges between ecosystems. **EcoScience** 18:223-235.
J.103. Legagneux, P., P.L.F. Fast, G. Gauthier & J. Bêty. 2011. Manipulating individual state during migration provides evidence for carry-over effects modulated by environmental conditions. **Proceedings of The Royal Society B** 279:876-883.
J.102. Therrien, J.-F., G. Gauthier & J. Bêty. 2011. An avian terrestrial predator of the Arctic relies on the marine ecosystem during winter. **Journal of Avian Biology** 42:363-369.
J.101. Therrien, J.-F., G. Fitzgerald, G. Gauthier & J. Bêty. 2011. Diet-tissue discrimination factors of carbon and nitrogen stable isotopes in snowy owl blood. **Canadian Journal of Zoology** 89:343-347.
J.100. Duchesne, D., G. Gautier & D. Berteaux. 2011. Evaluation of a method to determine the breeding activity of lemmings in their winter nests. **Journal of Mammalogy** 92:511-516.
J.99. Therrien, J.-F. 2010. Territorial behavior of Short-eared Owls, *Asio flammeus*, at more than 1000 km north of their current breeding range in north-eastern Canada: evidence of range expansion. **Canadian Field-Naturalist** 124:58-60.
J.98. Juillet, C., R. Choquet, G. Gauthier & R. Pradel. 2010. A capture-recapture model with double-marking, live and dead encounters, and heterogeneity of reporting due to auxiliary mark loss. **Journal of Agricultural, Biological and Environmental Statistics** 16:88-104.
J.97. Côté, G., R. Pienitz, G. Velle & X. Wang. 2010. Impact of geese on the limnology of lakes and ponds from Bylot Island (Nunavut, Canada). **International Review of Hydrobiology** 95:105-129.
J.96. Tarroux, A., D. Berteaux & J. Bêty. 2010. Northern nomads: ability for extensive movements in adult arctic foxes. **Polar Biology** 33:1021-1026.
J.95. Tarroux, A., D. Ehrich, N. Lecomte, T.D. Jardine, J. Bêty & D. Berteaux. 2010. Sensitivity of stable isotope mixing models to variation in isotopic ratios: evaluating consequences of lipid extraction. **Methods in Ecology and Evolution** 1:231-241.
J.94. Pouliot R., M. Marchand-Roy, L. Rochefort & G. Gauthier. 2010. Estimating moss growth in arctic conditions: a comparison of three methods. **The Bryologist** 113:322-332.
J.93. Béchet, A., J.-F. Giroux, G. Gauthier & M. Belisle. 2010. Why roost at the same place? Exploring short-term fidelity in staging snow geese. **Condor** 112:294-303.
J.92. Valéry, L., M.-C. Cadieux & G. Gauthier. 2010. Spatial heterogeneity of primary production as both cause and consequence of foraging patterns of an expanding Greater Snow Goose colony. **Ecoscience** 17:9-19.
J.91. Morrissette, M., J. Bêty, G. Gauthier, A. Reed & J. Lefebvre. 2010. Climate, indirect trophic interactions, carry-over and density-dependent effects: which factors drive high arctic snow goose productivity? **Oikos** 119:1181-1191.
J.90. Gruyer, N., G. Gauthier & D. Berteaux. 2010. Demography of two lemming species on Bylot Island, Nunavut, Canada. **Polar Biology** 33:725-736.
J.89. Pouliot R., L. Rochefort, and G. Gauthier. 2009. Moss carpets constrain the fertilizing effects of herbivores on graminoid plants in arctic polygon fens. **Botany** 87:1209-1222.
J.88. Gagnon, C.A. & D. Berteaux. 2009. Integrating Traditional Ecological Knowledge and Ecological Science: a question of scale. **Ecology and Society** 14, article 19.
J.87. Gauthier, G., C.J. Krebs, D. Berteaux & D. Reid. 2009. Arctic lemmings are not simply food limited – a reply to Oksanen et al. **Evolutionary Ecology Research** 11: 483-484.
J.86. Lecomte, N., G. Gauthier, J.-F. Giroux, E. Milot & L. Bernatchez. 2009. Tug of war between continental gene flow and rearing site philopatry in a migratory bird: the sex-biased dispersal paradigm reconsidered. **Molecular Ecology** 18:593-602.
J.85. Lecomte, N., G. Gauthier, & J.-F. Giroux. 2009. A link between water availability and nesting success mediated by predator-prey interactions in the Arctic. **Ecology** 90:465-475.
J.84. Ellis, C.J., L. Rochefort, G. Gauthier & R. Pienitz. 2008. Paleoecological evidence for transitions between contrasting land-forms in a polygon-patterned High Arctic wetland. **Arctic, Antarctic and Alpine Research** 40:624-637.

J.83. Careau, V., J.-F. Giroux, G. Gauthier & D. Berteaux. 2008. Surviving on cached food – the energetics of egg-caching by arctic foxes. **Canadian Journal of Zology** 86:1217-1223.

J.82. Jasmin, J.N., L. Rochefort & G. Gauthier. 2008. Goose grazing influences the fine-scale structure of an arctic wetland bryophyte community. **Polar Biology** 31:1043-1049.

J.81. Dickey M.-H., G. Gauthier, & M.-C. Cadieux. 2008. Climatic effects on the breeding phenology and reproductive success of an arctic-nesting goose species. **Global Change Biology** 14:1973-1985.

J.80. Gruyer, N., G. Gauthier & D. Berteaux. 2008. Cyclic dynamics of sympatric lemming populations on Bylot Island, Nunavut, Canada. **Canadian Journal of Zoology** 86:910-917.

J.79. Careau, V., N. Lecomte, J. Bêty, J.-F. Giroux, G. Gauthier & D. Berteaux. 2008. Food hoarding of pulsed resources: temporal variations in egg-caching behaviour of arctic fox. **Ecoscience** 15:268-273.

J.78. Lecomte, N., V. Careau, G. Gauthier, & J.-F. Giroux. 2008. Predator behaviour and predation risk in the heterogeneous Arctic environment. **Journal of Animal Ecology** 77:439-447.

J.77. Gauthier G. & J.-D. Lebreton. 2008. Analysis of band-recovery data in a multisate capture-recapture framework. **Canadian Journal of Statistics** 36:1-15.

J.76. Szor, G., D. Berteaux & G. Gauthier. 2008. Finding the right home: distribution of food resources and terrain characteristics influence selection of denning sites and reproductive dens in arctic foxes. **Polar Biology** 31:351-362.

J.75. Lecomte, N., G. Gauthier, & J.-F. Giroux. 2008. Breeding dispersal in a heterogeneous landscape: the influence of habitat and nesting success in greater snow geese. **Oecologia** 155:33-41.

J.74. Carmichael, L.E., G. Szor, D. Berteaux, M.-A. Giroux, C. Cameron & C. Strobeck. 2007. Free love in the far North: plural breeding and polyandry of arctic foxes (*Alopex lagopus*) on Bylot Island, Nunavut. **Canadian Journal of Zoology** 85:338-343.

J.73. Gauthier, G., P. Besbeas, J.-D. Lebreton & B.J.T. Morgan 2007. Population growth in snow geese: A modeling approach integrating demographic and survey information. **Ecology** 88:1420-1429.

J.72. Audet, B., E. Lévesque & G. Gauthier. 2007. Seasonal variation in plant nutritive quality for greater snow goose goslings in mesic tundra. **Canadian Journal of Botany** 85:457-462.

J.71. Audet, B., G. Gauthier & E. Lévesque. 2007. Feeding ecology of greater snow goose goslings in mesic tundra on Bylot Island, Nunavut, Canada. **Condor** 109:361-376.

J.70. Careau, V., J.F. Giroux, & D. Berteaux. 2007. Cache and carry: hoarding behaviour of arctic fox. **Behavioral Ecology and Sociobiology** 62 :87-96.

J.68. Careau, V., N. Lecomte, J.F. Giroux, & D. Berteaux. 2007. Common ravens raid arctic fox food caches. **Journal of Ethology** 25:79-82.

J.68. Mainguy, J., G. Gauthier, J.-F. Giroux & I. Duclos. 2006. Habitat use and behaviour of greater snow geese during movements from nesting to brood-rearing areas. **Canadian Journal of Zoology** 84:1096-1103.

J.67. Mainguy, J., G. Gauthier, J.-F. Giroux & J. Bêty. 2006. Gosling growth and survival in relation to brood movements in Greater Snow Geese (*Chen caerulescens atlantica*). **The Auk** 123:1077-1089.

J.66. Lecomte, N., G. Gauthier, L. Bernatchez & J.-F. Giroux. 2006. A new non-damaging blood sampling technique of waterfowl embryos. **Journal of Field Ornithology** 77:24-27.

J.65. Gauthier, G., F. Fournier & J. Larochelle. 2006. The effect of environmental conditions on early growth in geese. **Acta Zoologica Sinica** 52(supplement):670-674.

J.64. Gauthier, G., J.-F. Giroux & L. Rochefort. 2006. The impact of goose grazing on arctic and temperate wetlands. **Acta Zoologica Sinica** 52(supplement):108-111.

J.63. Féret M., J. Bety, G. Gauthier, J.-F. Giroux & G. Picard. 2005. Are abdominal profiles useful to assess body condition of spring staging Greater Snow Geese? **Condor** 107:694-702.

J.62. Gauthier, G., J.-F. Giroux, A. Reed, A. Béchet & L. Bélanger. 2005. Interactions between land use, habitat use, and population increase in greater snow geese: what are the consequences for natural wetlands? **Global Change Biology** 11:856-868.

J.61. Calvert, A.M. & G. Gauthier. 2005. Effects of exceptional conservation measures on survival and seasonal hunting mortality in greater snow geese. **Journal of Applied Ecology** 42:442-452.

J.60. Menu, S., G. Gauthier & A. Reed. 2005. Survival of young greater snow geese during the fall migration. **The Auk** 122:479-496.

J.59. Calvert, A.M., G. Gauthier & A. Reed. 2005. Spatiotemporal heterogeneity of greater snow goose harvest and implications for hunting regulations. **Journal of Wildlife Management** 69:561-573.
J.58. Reed, E.T., G. Gauthier & R. Pradel. 2005. Effects of neck bands on reproduction and survival of female greater snow geese. **Journal of Wildlife Management** 69:91-100.
J.57. Bêty, J., J.-F. Giroux, & G. Gauthier. 2004. Individual variation in timing of migration: causes and reproductive consequences in greater snow geese (*Anser caerulescens atlanticus*). **Behavioural Ecology and Sociobiology** 57:1-8.
J.56. Gauthier, G. & J.-D. Lebreton. 2004. Population models in greater snow geese: a comparison of different approaches. **Animal Biodiversity and Conservation** 27:503-514.
J.55. Reed, E.T., G. Gauthier & J.-F. Giroux. 2004. Effects of spring conditions on breeding propensity of greater snow goose females. **Animal Biodiversity and Conservation** 27:35-46.
J.54. Béchet, A., J.-F. Giroux, & G. Gauthier. 2004. The effects of disturbance on behaviour, habitat use and energy of spring staging snow geese. **Journal of Applied Ecology** 41:689-700.
J.53. Béchet, A., A. Reed, N. Plante, J.-F. Giroux & G. Gauthier. 2004. Estimating the size of large bird populations: the case of the greater snow goose. **Journal of Wildlife Management** 68:639-649.
J.52. Gauthier, G., J.-F. Giroux, J. Bêty & L. Rochefort. 2004. Trophic interactions in a High Arctic Snow Goose colony. **Integrative and Comparative Biology** 44:119-129.
J.51. Gauthier, G., J. Bêty & K. Hobson. 2003. Are greater snow geese capital breeders? new evidence from a stable isotope model. **Ecology** 84:3250–3264.
J.50. Demers, F., J.-F. Giroux, G. Gauthier & J. Bêty. 2003. Effects of collar-attached transmitters on behavior, pair bond, and breeding success of snow geese. **Wildlife Biology** 9:161-170.
J.49. Féret, M., G. Gauthier, A. Béchet, J.-F. Giroux & K. Hobson. 2003. Effect of a spring hunt on nutrient storage by greater snow geese in southern Québec. **Journal of Wildlife Management** 67:796-807.
J.48. Béchet, A., J.-F. Giroux, G. Gauthier, J.D. Nichols & J. Hines. 2003. Spring hunting changes the regional movements of migrating greater snow geese. **Journal of Applied Ecology** 40:553-564.
J.47. Bêty, J., G. Gauthier, & J.-F. Giroux. 2003. Body condition, migration and timing of reproduction in snow geese: a test of the condition-dependent model of optimal clutch size. **American Naturalist** 162:110-121.
J.46. Cooch, E.G., G. Gauthier & R. Rockwell. 2003. Apparent differences in stochastic growth rates based on timing of census: a cautionary note. **Ecological Modelling** 159:133-143.
J.45. Reed, E.T., J. Bêty, J. Mainguy, G. Gauthier & J.-F. Giroux. 2003. Molt migration in relation to breeding success in greater snow geese. **Arctic** 56:76-81.
J.44. Reed, E.T., G. Gauthier, R. Pradel, & J.-D. Lebreton. 2003. Age and environmental conditions affect recruitment in greater snow geese. **Ecology** 84:219-230.
J.43. Fournier, F. & G. Gauthier. 2002. The effect of food quality on developmental plasticity and digestive efficiency in greater snow goose goslings. **Integrative and Comparative Biology** 42:1231-1231.
J.42. Reed, A., R.J. Hughes, & H. Boyd. 2002. Patterns of distribution and abundance of Greater Snow Geese on Bylot Island, Nunavut, Canada 1983-1998. **Wildfowl** 53:53-65.
J.41. Righi, M. & G. Gauthier. 2002. Natural infection by intestinal cestodes: variability and effect on growth in greater snow goose goslings. **Canadian Journal of Zoology** 80:1077-1083.
J.40. Bêty, J., G. Gauthier, E. Korpimäki & J.-F. Giroux. 2002. Shared predators and indirect trophic interactions: lemming cycles and arctic-nesting geese. **Journal of Animal Ecology** 71:88-98.
J.39. Mainguy, J., J. Bêty, G. Gauthier & J.-F. Giroux. 2002. Are body condition and reproductive effort of laying greater snow geese affected by the spring hunt? **Condor** 104:156-162.
J.38. Menu, S., G. Gauthier & A. Reed. 2002. Changes in survival rates and population dynamics of greater snow geese over a 30-year period: Implications for hunting regulations. **Journal of Applied Ecology** 39:91-102.
J.37. Gauthier, G., R. Pradel, S. Menu & J.-D. Lebreton. 2001. Seasonal survival of greater snow geese and effect of hunting under dependence in sighting probability. **Ecology** 82:3105-3119.
J.36. Bêty, J. & G. Gauthier. 2001. Effects of nest visits on predators activity and predation rate in a snow goose colony. **Journal of Field Ornithology** 72:573-586.

J.35. Bêty, J., G. Gauthier, J.-F. Giroux & E. Korpimäki. 2001. Is goose nesting success and lemming cycles linked? Interplay between nest density and predators. **Oikos** 93:388-400.
J.34. Poussart, C., G. Gauthier & J. Larochelle. 2001. Incubation behavior of greater snow geese in relation to weather conditions. **Canadian Journal of Zoology** 79:671-678.
J.33. Massé, H., Rochefort, L. & G. Gauthier. 2001. Carrying capacity of wetland habitats used by breeding greater snow geese. **Journal of Wildlife Management** 65:271-281.
J.32. Menu, S., G. Gauthier & A. Reed. 2001. Survival of juvenile greater snow geese immediately after banding. **Journal of Field Ornithology** 72:282-290.
J.31. Morez, V., G. Gauthier & A. Reed. 2000. Effect of body condition on the vulnerability of greater snow geese to hunting and capture. **Journal of Wildlife Management** 64:875-886.
J.30. Fortin, D., & G. Gauthier. 2000. The effect of postural adjustment on the thermal environment of greater snow goose goslings. **Canadian Journal of Zoology** 78:817-821.
J.29. Poussart, C., J. Larochelle & G. Gauthier. 2000. The thermal regime of eggs during laying and incubation in Greater Snow Geese. **Condor** 102:292-300.
J.28. Lepage, D., G. Gauthier & S. Menu. 2000. Reproductive consequences of egg-laying decisions in snow geese. **Journal of Animal Ecology** 69:414-427.
J.27. Menu, S., J.B. Hestbeck, G. Gauthier & A. Reed. 2000. Effects of neck bands on survival of greater snow geese. **Journal of Wildlife Management** 64:544-552.
J.26. Fortin, D., G. Gauthier & J. Larochelle. 2000. Body temperature and resting behavior of greater snow goose goslings in the High Arctic. **Condor** 102:163-171.
J.25. Fortin, D., J. Larochelle & G. Gauthier. 2000. The effect of wind, radiation and body orientation on the thermal environment of greater snow goose goslings. **Journal of Thermal Biology** 25:227-238.
J.24. Piedboeuf, N. & G. Gauthier. 1999. Nutritive quality of forage plants for greater snow goose goslings: when is it advantageous to feed on grazed plants? **Canadian Journal of Zoology** 77:1908-1918.
J.23. Blouin, F., J.-F. Giroux, J. Ferron, G. Gauthier, & J. Doucet. 1999. The use of satellite telemetry to track greater snow geese. **Journal of Field Ornithology** 70:187-199.
J.22. Lepage, D., A. Desrochers & G. Gauthier. 1999. Seasonal decline of growth and fledging success in snow geese *Anser caerulescens*: an effect of date or parental quality? **Journal of Avian Biology** 30:72-78.
J.21. Lepage, D., D. N. Nettleship, and A. Reed. 1998. Birds of Bylot Island and adjacent Baffin Island, Northwest Territories, Canada, 1979 to 1997. **Arctic** 51:125-141.
J.20. Lesage, L. & G. Gauthier. 1998. Effect of hatching date on body and organ development in greater snow goose goslings. **Condor** 100:316-325.
J.19. Lepage, D., G. Gauthier & A. Desrochers. 1998. Larger clutch size increases fledging success and offspring quality in a precocial species. **Journal of Animal Ecology** 67:210-216.
J.18. Lepage, D., G. Gauthier & A. Reed. 1998. Seasonal variation in growth of greater snow goose goslings: the role of food supply. **Oecologia** 114:226-235.
J.17. Tremblay, J.-P., G. Gauthier, D. Lepage, & A. Desrochers. 1997. Factors affecting nesting success in greater snow geese: effects of habitat and association with snowy owls. **Wilson Bulletin** 109:449-461.
J.16. Lesage, L. & G. Gauthier. 1997. Growth and organ development in greater snow goose goslings. **The Auk** 114:229-241.
J.15. Gauthier, G., L. Rochefort & A. Reed. 1996. The exploitation of wetland ecosystems by herbivores on Bylot Island. **Geoscience Canada** 23:253-259.
J.14. Lepage, D., G. Gauthier & A. Reed. 1996. Breeding site infidelity in greater snow goose: a consequence of constraints on laying dates? **Canadian Journal of Zoology** 74:1866-1875.
J.13. Beaulieu, J., G. Gauthier & L. Rochefort. 1996. The growth response of graminoid plants to goose grazing in a High arctic environment. **Journal of Ecology** 84:905-914.
J.12. Reed, A., R.J. Hughes & G. Gauthier. 1995. Incubation behavior and body mass of female greater snow geese. **Condor** 97:993-1001.
J.11. Gauthier, G. & R.J. Hughes. 1995. The palatability of arctic willow for greater snow geese: the role of nutrients and deterring factors. **Oecologia** 103:390-392.

J.10. Choinière, L. & G. Gauthier. 1995. Energetics of reproduction in female and male greater snow geese. **Oecologia** 103:379-389.
J.9. Gauthier, G., R.J. Hughes, A. Reed, J. Beaulieu & L. Rochefort. 1995. Effect of grazing by greater snow geese on the production of graminoids at an arctic site (Bylot Island, NWT, Canada). **Journal of Ecology** 83:653-664.
J.8. Lindholm, A., G. Gauthier & A. Desrochers. 1994. Effects of hatch date and food supply on gosling growth in arctic-nesting greater snow geese. **Condor** 96:898-908.
J.7. Hughes, R.J., G. Gauthier & A. Reed. 1994. Summer habitat use and behaviour of greater snow geese *Anser caerulescens atlanticus*. **Wildfowl** 45:49-64.
J.6. Hughes, R.J., A. Reed & G. Gauthier. 1994. Space and habitat use by greater snow goose broods on Bylot Island, Northwest Territories. **Journal of Wildlife Management** 58:536-545.
J.5. Manseau, M. & G. Gauthier. 1993. Interactions between greater snow geese and their rearing habitat. **Ecology** 74:2045-2055.
J.4. Gauthier, G. 1993. Feeding ecology of nesting greater snow geese. **Journal of Wildlife Management** 57:216-223.
J.3. Gauthier, G., Giroux, J.-F. & J. Bédard. 1992. Dynamics of fat and protein reserves during winter and spring migration in greater snow geese. **Canadian Journal of Zoology** 70:2077-2087.
J.2. Reed, A., H. Boyd, P. Chagnon, and J. Hawkings. 1992. The numbers and distribution of greater snow geese on Bylot Island and near Jungersen Bay, Baffin Island, in 1988 and 1983. **Arctic** 45:115-119.
J.1. Gauthier, G. & J. Tardif. 1991. Female feeding and male vigilance during nesting in greater snow geese. **Condor** 93:701-711.

Reports and other publications

R.27. Gagnon, C.-A., J. Gérin-Lajoie, J. Bêty & P. Legagneux. 2020. Sharing workshop on ecological monitoring (Mittimatalik, Nunavut, February 4-5, 2020). Centre d'études nordiques, Université Laval, Université du Québec à Rimouski and Université du Québec à Trois-Rivières, 24 pp. https://www.cen.ulaval.ca/bylot/document/report_sharing_workshop_pondinlet_2020_en.pdf
R.26. Kalhor, D., A. Pusenkova, M. Poirier, G. Gauthier, T. Galstian & X. Maldague. 2019. Using near infrared for studying lemming subnival behavior in the High Arctic. *Proceedings* 27(11) http://dx.doi.org/10.3390/proceedings2019027011
R.25. Cadieux, M.C., G. Gauthier, J.F. Therrien, Y. Seyer & A. Beardsell. 2019. Technical manual for monitoring avian predators of the Arctic tundra – Version 1. Centre d'études nordiques, Université Laval, Québec, 61 pages. http://www.cen.ulaval.ca/bylot/document/manual_avian_predator_monitoring_v1.pdf
R.24. Lai, S. & D. Berteaux. 2019. Technical manual for monitoring foxes in the Arctic – Version 1. Canada Research Chair on Northern Biodiversity, Université du Québec à Rimouski, Quebec, 25 pages. http://www.cen.ulaval.ca/bylot/document/manual_fox_monitoring_v1.pdf
R.23. Franke, A., D. Berteaux, S. Ferguson, G. Gauthier, C Hotson, M. Marcoux, Z. Martin, V. Sahatien, S. Statham, G. Szor & R. Tallman. 2018. Chapter 16. Climate change impacts on managed wildlife. Pp. 417-456 in *From* science to policy in the eastern Canadian Arctic: An Integrated Regional Impact Study (IRIS) of climate change and modernization, T. Bell & T.M. Brown eds. ArcticNet, Quebec City, 560 pp.
R.22. Gérin-Lajoie, J., G. Gauthier & J. Bêty. 2018. Consultation on ecological monitoring in the North Baffin region (Pond Inlet, Nunavut, January 22nd to February 9th, 2018). Centre d'études nordiques, Université Laval, Université du Québec à Rimouski and Université du Québec à Trois-Rivières, 38 pp. http://www.cen.ulaval.ca/bylot/document/report_consultation_pondinlet_en_2018.pdf
R.21. Fauteux, D., G. Gauthier & M.-C. Cadieux. 2018. Estimating small mammal and winter nest densities using capture-recapture and distance sampling with R – Version 1. Centre d'études nordiques, Université Laval, Quebec, 40 pp. http://www.cen.ulaval.ca/bylot/document/manual_small_mammal_analysis_r_v1.pdf

R.20. Merkel, F.R., A. Franke, F. Ugarte, S. Statham, S. Ferguson, G. Wenzel, C. Hotson, G. Gauthier, D. Lee & D. Berteaux. 2018. Chapter 6.5 Hunting. Pp 177-194 in Adaptation Actions for a Changing Arctic. Baffin Bay & Davis Strait Regional Assessment. Arctic Monitoring and Assessment Programme (AMAP), Oslo, Norway 354pp. ISBN: 978-82-7971-105-6.

R.19. Meltofte, H., C. Cuyler, A. Franke, G. Gauthier, C. Hotson, E. Lévesque & W. Loya. 2018. Chapter 6.3 Terrestrial Ecosystems. Pp 153-162 in Adaptation Actions for a Changing Arctic. Baffin Bay & Davis Strait Regional Assessment. Arctic Monitoring and Assessment Programme (AMAP), Oslo, Norway 354pp. ISBN: 978-82-7971-105-6.

R.18. Cadieux, M.-C., D. Fauteux & G. Gauthier. 2015. Technical manual for sampling small mammals in the Arctic – Version 1. Centre d'études nordiques, Université Laval, Quebec City, QC, 55 pp. http://www.cen.ulaval.ca/bylot/document/manual_small_mammal_sampling_v1.pdf

R.17. Legagneux, P., G. Gauthier, N. Lecomte, N.M. Schmidt, D. Reid, M.-C. Cadieux, D. Berteaux, J. Bêty, C.J. Krebs, R.A. Ims, N.G. Yoccoz, R.I.G. Morrison, S.J. Leroux, M. Loreau, & D. Gravel. 2014. Climate and herbivore body size determine how arctic terrestrial ecosystems work. Pp. 67-69 in Arctic Report Card: Update for 2014, M. O. Jeffries, J. Richter-Menge & J. E. Overland (eds). NOAA Report Card.

R.16. Reid, D.G., D. Berteaux, K. Laidre, and 32 other co-authors including G. Gauthier. 2013. Chapter 3. Mammals. Pp 78-141 in Arctic Biodiversity Assessment: Status and trends in Arctic biodiversity. Ed by H. Meltofte, Conservation of Arctic Flora and Fauna, Akureyri, Iceland. ISBN: 978-9935-431-22-6.

R.15. Ganter, B., A.J. Gaston, and 12 other co-authors including G. Gauthier. 2013. Chapter 4. Birds. Pp 141-181 in Arctic Biodiversity Assessment: Status and trends in Arctic biodiversity. Ed by H. Meltofte, Conservation of Arctic Flora and Fauna, Akureyri, Iceland. ISBN: 978-9935-431-22-6.

R.14. Ims, R.A., D. Ehrich, and 19 other co-authors including G. Gauthier and D. Berteaux. 2013. Chapter 12. Terrestrial ecosystems. Pp 384-440 in Arctic Biodiversity Assessment: Status and trends in Arctic biodiversity. Ed by H. Meltofte, Conservation of Arctic Flora and Fauna, Akureyri, Iceland. ISBN: 978-9935-431-22-6.

R.13. Gauthier, G. & D. Berteaux (editors). 2011. ArcticWOLVES: Arctic Wildlife Observatories Linking Vulnerable EcoSystems. Final synthesis report. Centre d'études nordiques, Université Laval, Quebec City, QC, 133 pp. http://www.cen.ulaval.ca/bylot/document/report_arcticwolves_2011.pdf

R.12. Therrien, J.-F., G. Gauthier, J. Bêty & G. Mouland. 2008. Long-distance migratory movements and habitat selection of Snowy Owls in Nunavut. Unpublished report, Centre d'études nordiques, Université Laval, Quebec City, QC, 47 pp.

R.11. Cadieux, M.-C, G. Gauthier, C. Gagnon, E. Lévesque, J. Bêty, & D. Berteaux. 2008. Monitoring the environmental and ecological impacts of climate change on Bylot Island, Sirmilik National Park – 2004-2008 final report). Unpublished report, Centre d'études nordiques, Université Laval, Quebec City, QC, 113 pp.

R.10. Calvert, A.M., G. Gauthier, E.T. Reed, L. Bélanger, J.-F. Giroux, J.-F. Gobeil, M. Huang, J. Lefebvre & A. Reed. 2007. Section I. Present status of the population and evaluation of the effects of the special conservation measures. Pp. 5-64 *in* Reed, E.T. and A.M. Calvert, eds. An evaluation of the special conservation measures for Greater snow geese: report of the Greater Snow Goose Working Group. Arctic Goose Joint Venture Special Publication. U.S. Fish and Wildlife Service, Washington D.C. and Canadian Wildlife Service, Ottawa, ON.

R.9. Gauthier, G. & E.T. Reed. 2007. Section II. Projected growth rate of the Greater Snow Goose population under alternative harvest scenario. Pp. 65-74 *in* Reed, E.T. and A.M. Calvert, eds. An evaluation of the special conservation measures for Greater snow geese: report of the Greater Snow Goose Working Group. Arctic Goose Joint Venture Special Publication. U.S. Fish and Wildlife Service, Washington D.C. and Canadian Wildlife Service, Ottawa, ON.

R.8. Bélanger, L., G. Gauthier, J.-F. Giroux, J. Lefebvre, A. Reed & E.T. Reed. 2007. Conclusion. Pp. 75-78 *in* Reed, E.T. and A.M. Calvert, eds. An evaluation of the special conservation measures for Greater snow geese: report of the Greater Snow Goose Working Group. Arctic Goose Joint Venture Special

Publication. U.S. Fish and Wildlife Service, Washington D.C. and Canadian Wildlife Service, Ottawa, ON.

R.7. Duclos, I., E. Lévesque, D. Gratton & P.A. Bordelau. 2006. Vegetation mapping of Bylot Island and Sirmilik National Park: Final report. Unpublished report, Parks Canada, Iqaluit, Nunavut.

R.6. Gagnon, C., M.-C. Cadieux, G. Gauthier, E. Lévesque, A. Reed & D. Berteaux. 2004. Analyses and reporting on 15 years of biological monitoring data from Bylot Island, Sirmilik National Park of Canada. Unpublished report, Centre d'études nordiques, Université Laval, Quebec City, QC, 115 pp.

R.5. Gauthier, G. & S. Brault. 1998. Population model of the greater snow goose: projected impacts of reduction in survival on population growth rate. Pp 65-80 *in* The Greater Snow Goose: report of the Arctic Goose Habitat Working Group, B.D.J. Batt ed. Arctic Goose Joint Venture Special Publication. U.S. Fish and Wildlife Service, Washington D.C. and Canadian Wildlife Service, Ottawa, Ont.

R.4. Giroux, J.-F., G. Gauthier, G. Costanzo & A. Reed. 1998. Impact of geese on natural habitats. Pp. 32-57 *in* The Greater Snow Goose: report of the Arctic Goose Habitat Working Group, B.D.J. Batt ed. Arctic Goose Joint Venture Special Publication. U.S. Fish and Wildlife Service, Washington D.C. and Canadian Wildlife Service, Ottawa, Ont.

R.3. Reed, A., J.-F. Giroux & G. Gauthier. 1998. Population size, productivity, harvest and distribution. Pp. 5-31 *in* The Greater Snow Goose: report of the Arctic Goose Habitat Working Group, B.D.J. Batt ed. Arctic Goose Joint Venture Special Publication. U.S. Fish and Wildlife Service, Washington D.C. and Canadian Wildlife Service, Ottawa, Ont.

R.2. Giroux, J.-F., B. Batt, S. Brault, G. Costanzo, B. Filion, G. Gauthier, D. Luszcz, & A. Reed. 1998. Conclusions and management recommendations. Pp 81-88 *in* The Greater Snow Goose: report of the Arctic Goose Habitat Working Group, B.D.J. Batt ed. Arctic Goose Joint Venture Special Publication. U.S. Fish and Wildlife Service, Washington D.C. and Canadian Wildlife Service, Ottawa, Ont.

R.1. Gauthier, G. and Menu, S. 1997. The use of capture-recapture models in greater snow geese: is there a transient effect of capture and marking on survival? *Proceed. of the Survey Methods Section, 24th Annual Meeting of the Statistical Society of Canada*, Fredericton, NB.

Presentations at national/international conferences

C.234. Landry-Ducharme, L., S. Lai, F. Vézina, A. Tam & D. Berteaux. 2021. Seasonal habitat selection in Arctic hares: explaining mass movements on Ellesmere Island. *ArcticNet Annual Scientific Meeting* (virtual).

C.233. Moisan, L., D. Gravel, D.-J. Léandri-Breton, J.-F. Lamarre & J. Bêty. 2021. Far, but highly connected: linking a tundra food web to other regions of the globe by migration. *ArcticNet Annual Scientific Meeting* (virtual).

C.232. Corbeil-Robitaille, M.-Z., É. Duchesne, J. Bêty, D. Fortier & C. Kinnard. 2021. Settling in a countless islets scenery: permafrost processes generate antipredation refuges selected by avian biodiversity. *ArcticNet Annual Scientific Meeting* (virtual).

C.231. Villeneuve, C., F. Dulude-de Broin, P. Legagneux, D. Berteaux & A. Durand. 2021. Arctic foxes movement modeling through the lens of reinforcement learning. *ArcticNet Annual Scientific Meeting* (virtual).

C.230. Dulude-de Broin, F., C. Villeneuve, P. Legagneux, D. Berteaux, J. Bêty & A. Durand. 2021. What drives bird distribution in the Arctic? Investigating the role of predation and the physical environment. *ArcticNet Annual Scientific Meeting* (virtual).

C.229. Poirier, M., D. Fauteux, G. Gauthier, F. Dominé & J.F. Lamarre. 2021. Into the snow: a lemming's journey through the snowpack. *ArcticNet Annual Scientific Meeting* (virtual).

C.228. Grentzmann, I, F. Angelier, C. Silvestri, G. Gauthier & P. Legagneux. 2021. Understanding senescence of the greater snow goose. *ArcticNet Annual Scientific Meeting* (virtual).

C.227. Dulude-de Broin, F., C. Villeneuve, A. Durand, J. Bêty, P. Legagneux. 2021. Influence of fox predation on prey distribution in the arctic tundra: approaching ecosystemic data with new modelling approaches. *Arctic Fox Conference* (virtual).

C.226. Villeneuve, C., F. Dulude-de Broin, P. Legagneux, D. Berteaux & A. Durand. 2021. Preserving the integrity of the Canadian northern ecosystems through reinforcement learning-based arctic fox movement models. *International Conference on Machine Learning - Workshop on Tackling Climate Change With Machine Learning* (virtual).

C.225. Beardsell, A., D. Gravel, D. Berteaux, G. Gauthier, V. Careau, J. Clermont, C.-C. Juhasz, N. Lecomte, P. Royer-Boutin & J. Bêty. 2021. Mechanistic insights into the role of functional response in apparent mutualism observed in tundra ecosystems. Ecological Society of America Annual Meeting (virtual).

C.224. Brown, A., R. McCabe, J.-F. Therrien, K. Wiebe, S. Weidensaul, D. Brinker, G. Gauthier & K.H. Elliott. 2021. Nomadic breeders Snowy Owls (*Bubo scandiacus*) do not use stopovers to sample the summer environment. *60th meeting of the Canadian Society of Zoologists*, Vancouver, BC.

C.223. Moisan, L., D. Gravel & J. Bêty. 2020. When Arctic migratory species connect tundra with the rest of the globe: the case of Bylot Island. *Arctic Change 2020 Conference*, Quebec City, QC.

C.222. LeTourneux, F., T. Grandmont, F. Dulude de-Broin, M.C. Martin, J. Lefebvre, A. Kato, J. Bêty, G. Gauthier & P. Legagneux. 2020. Implications of a COVID-19-induced cease-fire for the management of a harvested overabundant species. *Arctic Change 2020 Conference,* Quebec City, QC.

C.221. Hutchison, C., P. Legagneux, F. Guichard, J. Bety, D. Berteaux, G. Gauthier, D. Fauteux, A, Allard & D. Gravel. 2020. Arctic seasonal models: evidence for hierarchical temporal processes in food-webs. *Arctic Change 2020 Conference*, Quebec City, QC.

C.220. Godin, E., W.F. Vincent, G. Gauthier & C. Barrette. 2020. Merged Observatory Data for Arctic Air Temperature (MODAAT) in action: Comparison of temperature data from a High Arctic automated weather station with reanalysis estimates from the ERA5-Land model. *Arctic Change 2020 Conference*, Quebec City, QC.

C.219. Gauthier, G. & J.F. Therrien. 2020. Recent rends in snowy owl breeding and lemming populations on Bylot Island, Nunavut, Canada. *5th meeting of the International Snowy Owl Working Group*, Pasvik, Norway.

C.218. Curk, T., I. Pokrovsky, N. Lecomte, O. Kulikova, T. Aarvak, G. Gauthier, K.O. Jacobsen, I.J. Øien, R. Solheim, K. Wiebe, M. Wikelski, J.F. Therrien & K. Safi. 2020. Snowy owls with contrasting migration patterns exhibit different proximate responses to food resources. *5th meeting of the International Snowy Owl Working Group*, Pasvik, Norway.

C.217. Therrien, J.F., K. Wiebe, K.O. Jacobsen, I.J. Øien, R. Solheim, T. Aarvak, S. Weidensaul, D. Brinker, B. Sittler, O. Gilg, A. Aebischer, J. Lang, D. Holt & G. Gauthier. 2020. Fledging dispersal and survival in snowy owls. *5th meeting of the International Snowy Owl Working Group*, Pasvik, Norway.

C.216. Beardsell, A., D. Gravel, D. Berteaux, G. Gauthier, V. Careau, J. Clermont, C.C. Juhasz, N. Lecomte, P. Royer-Boutin & J. Bêty. 2020. Assessment of functional responses using a mechanistic approach in a generalist predator of the arctic tundra. *Predator-Prey Interactions meeting*, Ventura CA.

C.215. Gousy-Leblanc, M, G. Yannic, J.F. Therrien, G. Gauthier, S. Weidensaul, D. Brinker & N. Lecomte 2019. Population genetic structure of an arctic breeder, the snowy owl. *ArcticNet Scientific Meeting*, Halifax, NS.

C.214. Lamarre J.-F., G. Gauthier, O. Love, E.T. Reed, O.W. Johnson, K. Overdujin, R. Lanctot, S.T. Saalfeld, J. Liebezeit, R. McGuire, M. Russell, L. McKinnon, L. Kolosky, P.A. Smith, S. Flemming, N. Lecomte, M.-A. Giroux, S.Bauer, T. Emmenegger & J. Bêty. 2019. Timing of breeding site availability drives migration schedule in a long distance trans-hemispheric migrant. *ArcticNet Scientific Meeting*, Halifax, NS.

C.213. Gauthier, G. & J.-F. Therrien. 2019. Long-term ecological monitoring of the tundra ecosystem: role and conservation perspectives for birds of prey. *Raptor Research Foundation annual scientific conference*, Fort Collins, CO.

C.212. Lamarre, J.-F., G. Gauthier, O. Love, E. Reed, O.W. Johnson, K. Overdujin, R. Lanctot, S.T. Saalfeld, J. Liebezeit, R. Bentzen, M. Russell, L. McKinnon, L. Kolosky, P. Smith, S. Flemming,

N. Lecomte, M.-A. Giroux, S. Bauer & T.J. Emmenegger. 2019. Timing of breeding site availability drives migration schedule in a long distance trans-hemispheric migrant. *8th Western Hemisphere Shorebird Group meeting*, Panama City, Panama.

C.211. Kalhor, D., A. Pusenkova, M. Poirier, G. Gauthier, T. Galstian & X. Maldague. 2019. Using near infrared for studying lemming subnival behavior in the arctic. *15th International Workshop on Advanced Infrared Technology and Applications*, Firenze, Italy.

C.210. Fauteux, D., G. Gauthier, J. Bêty, D. Berteaux, M.J. Mazerolle, N. Coallier & M.-C. Cadieux. 2019. Evaluation of invasive and non-invasive methods to monitor lemming abundance in the Canadian Arctic. *Arctic Science Summit Week*, Arkhangelsk, Russia.

C.209. Chagnon-Lafortune A, N. Casajus, R.I.G. Morrison, P.A. Smith, N. Lecomte, I. Tulp, M.C.Y. Leung, L. McKinnon, D. Berteaux & J. Bêty. 2018. Large-scale effect of temperature on arthropod availability for birds. *ArcticNet Scientific Meeting*, Ottawa, ON.

C.208. Léandri-Breton, D.-J., J.-F. Lamarre, & J. Bêty. 2018. Daring crossing or cautious detour? Contrasting transatlantic migration strategies in a small migratory bird breeding in the Canadian Arctic and wintering in Africa. *ArcticNet Scientific Meeting*, Ottawa, ON.

C.207. Fauteux, D., E. Schmidt, J.-F. Therrien, G. Gauthier & Y. Seyer. 2018. Enhancing terrestrial predators' diet assessments with rodent mandibles. *ArcticNet Scientific Meeting*, Ottawa, ON.

C.206. Gérin-Lajoie J, G. Gauthier, J. Bêty & G. MacMillan. 2018. A visual tool in Participatory Action Research for consulting Inuit communities about their environmental concerns and research interests. *ArcticNet Scientific Meeting*, Ottawa, ON.

C.205. Berner, L. P. Jantz, R. Massey, P. Burns, G. Gauthier, B. Forbes, M. Macias-Fauria, B. Gagliote, L. Andreu-Hayles, R. D'Arrigo & S. Goetz. 2018. Rapid warming leads to greening of the tundra biome. *American Geophysical Union annual meeting*, Washington DC, USA.

C.204. Gauthier G. & J. Lefebvre. 2018. Projecting the population dynamic of greater snow geese into an uncertain future: the interplay between management actions and climate change. *Fourteenth North American Arctic Goose Conference and Workshop*, Lincoln, Nebraska, USA.

C.203. LeTourneux, F., G. Gauthier, R. Pradel & J. Lefebvre. 2018. Impact of recent changes in hunting regulation on seasonal survival of male and female greater snow geese. *Fourteenth North American Arctic Goose Conference and Workshop*, Lincoln, Nebraska, USA.

C.202. Berteaux, D. 2017. Effects of climate shifts on arctic biodiversity. *37th Annual Conference of the International Association for Impact Assessment*, Montreal, QC.

C.201. Berteaux, D. 2017. Satellite tracking of arctic foxes on the Canadian Arctic sea ice: fine-scale genetic structure of the arctic fox population of Bylot Island (Nunavut, Canada). *Arctic Change 2017 conference*, Quebec, QC.

C.200. Legagneux, P., M-A. Giroux, P. Archambault, F. Barraquand, D. Berteaux, J. Bêty, G. Gauthier, D. Ehrich, T. Hoye, R. Ims, N. Lecomte, M-J. Naud, T. Roslin, N.M. Schmidt, P. Smith, S. Sokolov, N.G. Yoccoz & D. Gravel. 2017. ArcticWEB, a pan-Arctic network to monitor and model Arctic trophic interactions. *Arctic Change 2017 conference*, Quebec, QC.

C.199. Juhasz, C.C., N. Lecomte, G. Gauthier. 2017. Direct and indirect effects of climate on a simplified trophic network in the Arctic tundra. *Arctic Change 2017 conference*, Quebec, QC.

C.198. Fauteux, D., G. Gauthier, N. Coallier, J. Bêty & D. Berteaux, 2017. Evaluation of iseveralmethods to monitor lemming abundance: simple can also be good. *Arctic Change 2017 conference*, Quebec, QC.

C.197. Chevalier, C., G. Gauthier & D. Berteaux. 2017. Weather variability has no direct impact on adult survival in a High Arctic carnivore *Arctic Change 2017 conference*, Quebec, QC.

C.196. Lamarre, J.-F., J. Bêty. E. Reed, R. Lanctot, O. Love, G. Gauthier, O.W. Johnson, J. Liebezeit, R. Bentzen, M. Russell, L. McKinnon, L. Kolosky, P. Smith, S. Flemming, N. Lecomte, M.-A. Giroux, S. Bauer & T. Emmeneger. 2017. Year-round variation in migratory connectivity in American Golden-Plover (*Pluvialis dominica)*. *Arctic Change 2017 conference*, Quebec, QC.

C.195. Poirier, M., G. Gauthier, F. Dominé & M. Barrère. 2017. Physical properties of snow guide the movements of lemmings under the snowpack. *Arctic Change Conference*, Quebec, QC.

C.194. Seyer, Yannick, G. Gauthier, J. Bêty & N. Lecomte. 2017. Connectivity between the Canadian Arctic and the west coast of Africa: the journey of the Long-tailed jaeger. *Arctic Change Conference*, Quebec, QC.

C.193. Slevan-Tremblay, G., G. Gauthier & E. Lévesque. 2017. Impact of lemming grazing on Arctic willows under experimentally reduced predation. *Arctic Change Conference*, Quebec, QC.

C.192. Juhasz, C.C., A. Lycke, V. Carreau, G. Gauthier, J.-F. Giroux & N. Lecomte. 2017. Picking the right cache: hoarding-site selection for egg predators in the Arctic. *5th International Conference in Arctic Fox Biology*. Rimouski, QC.

C.191. Therrien J.F., A. Beardsell, G. Gauthier, N. Lecomte & J Bêty. 2017. Reproductive and movement ecology of rough-legged hawks breeding in the high arctic. *Raptor Research Foundation Annual Conference*. Salt Lake City, Utah, USA.

C.190. Couchoux, C., J. Clermont, S. Lai, F. Lapierre-Poulin, C. Chevallier & D. Berteaux. 2017. Implementing measures of individual behavioural variation in the Arctic ecosystem: can we assess personality in arctic foxes? *5th International Conference in Arctic Fox Biology*. Rimouski, QC.

C.189. Darbon, C., S. Lai & D. Berteaux. 2017. Influence of the distribution of medium-sized prey species on the presence of red foxes in the south plain of Bylot Island, Nunavut, Canada. *5th International Conference in Arctic Fox Biology*. Rimouski, QC.

C.188. Thierry, A.-M., J. Bêty & D. Berteaux. 2017. Competition between Arctic and red foxes at the expanding front of the red fox in the Canadian Arctic. *5th International Conference in Arctic Fox Biology*. Rimouski, QC.

C.187. Lapierre-Poulin, F., D. Fortier & D. Berteaux. 2017. Developing a vulnerability index to climate change for arctic fox dens. *5th International Conference in Arctic Fox Biology*. Rimouski, QC.

C.186. Chevallier, C., G. Gauthier & D. Berteaux. 2017. Weather variability has no direct impact on adult survival in Arctic foxes. *5th International Conference in Arctic Fox Biology*. Rimouski, QC.

C.185. Devost, E, N. Casajus, S. Lai & D. Berteaux. 2017. FoxMask image analysis software, assisting ecologists in facing big data challenges. *5th International Conference in Arctic Fox Biology*. Rimouski, QC.

C.184. Berteaux. D. 2017. Satellite tracking of Arctic foxes on the Canadian Arctic sea ice. *5th International Conference in Arctic Fox Biology*. Rimouski, QC.

C.183. Lapierre-Poulin, F., D. Fortier & D. Berteaux. 2017. Are arctic fox reproductive dens vulnerable to climate change in the Canadian High Arctic? *5th International Conference in Arctic Fox Biology*. Rimouski, QC.

C.182. Lai, S., A. Quiles, J. Lambourdière, D. Berteaux & A. Lalis. 2017. Fine-scale genetic structure of the arctic fox population of Bylot Island (Nunavut, Canada). *5th International Conference in Arctic Fox Biology*. Rimouski, QC.

C.181. Chevallier, C., D. Berteaux & G. Gauthier. 2017. Are demographic parameters of adult Arctic foxes resource-dependent? *5th International Conference in Arctic Fox Biology*. Rimouski, QC.

C.180. Fauteux, D., G. Gauthier, R. Boonstra, R. Palme & D. Berteaux. 2017. Top-down regulation of lemmings by Arctic foxes and other predators: observations and experiments on Bylot Island. *5th International Conference in Arctic Fox Biology*. Rimouski, QC.

C.179. Gauthier G., D. Fauteux, J. Bêty, D. Berteaux, M. Mazerolle & M.-C. Cadieux. 2017. Evaluation of invasive and non-invasive methods to monitor lemming abundance in the Canadian Arctic. *5th International Conference in Arctic Fox Biology*. Rimouski, QC.

C.178. Therrien J.-F., G. Gauthier, A. Robillard, T. McDonald, N. Smith, S. Weidensaul, D. Brinker, J. Bêty & N. Lecomte. 2017. The irruptive nature of snowy owls: going full cycle. *World Owl Conference*. Évora, Portugal.

C.177. Lefebvre, J., G. Gauthier, J.-F. Giroux, A. Reed, A. Béchet & E. Reed. 2017. Managing an overabundant population: the Greater Snow Goose in North America. *Dutch scientific goose meeting*. Leeurwarden, Netherlands.

C.176. Gauthier, G. A. Robillard, J.-F. Therrien & J. Bêty. 2017. What can we learn from isotopic analyses of snowy owl feathers? *4th meeting of the International Snowy Owl Working Group*, Milton, Massachussetts, USA.

C.175. Robillard A., G. Gauthier, J.-F. Therrien & J. Bêty. 2017. Wintering strategies, habitat use and site fidelity of snowy owls in eastern North America. *4th meeting of the International Snowy Owl Working Group*. Milton, Massachussetts, USA.
C.174. Juhasz, C.-C., N. Lecomte & G. Gauthier. 2016. How predator-prey interactions can mediate effects of climate on prey nesting success: the case of an Arctic nesting bird. *ArcticNet Scientific Meeting*, Winnipeg, MB.
C.173. Resendiz, C. & G. Gauthier. 2016. Heterogeneous long-term effects of a changing environment on the reproductive success of greater snow geese. *ArcticNet Scientific Meeting*, Winnipeg, MB.
C.172. Fauteux, D., G. Gauthier, D. Berteaux, R. Palme, C. Bosson & R. Boonstra. 2016. Lethal and non-lethal effects of predation on arctic lemmings. *Fifeteenth International Conference on Rodent Biology*, Olomouc, Czech Republic.
C.171. Giroux, M.-A., N. Lecomte, D. Gravel, D. Berteaux, G. Gauthier, P. Legagneux & J. Bêty. 2015. Bridging the gap between monitoring and modeling approaches to better understand arctic food webs under global pressures. *ArcticNet Scientific Meeting*, Vancouver, BC.
C.170. Seyer, Y., G. Gauthier & J. Bêty. 2015. From the Canadian Arctic to the western coast of Africa: The trans-equatorial migration of the Long-tailed jaeger. *ArcticNet Scientific Meeting*, Vancouver, BC.
C.169. Slevan-Tremblay, G., G. Gauthier & E. Lévesque 2015. Validation of a non-destructive method to estimate grazing impact of lemmings in the Arctic tundra. *ArcticNet Scientific Meeting*, Vancouver, BC.
C.168. Resendiz, C. & G. Gauthier. 2015. To change or not to change? Variations in components of the Greater Snow Goose reproductive success over a 26-year period. *ArcticNet Scientific Meeting*, Vancouver, BC.
C.167. Giroux, M.-A., N. Lecomte, D. Gravel, J. Bêty, G. Gauthier & D. Berteaux. 2015. Can animal migration explain the dominance of top-down forces in many Arctic food webs? Insights from empirical and theoretical approaches. *100th Ecological Society of America Annual Meeting*, Baltimore, MD.
C.166. Fauteux, D., G. Gauthier & D. Berteaux. 2015. Socio-economic relationships between Inuit and lemmings and the scientific methods employed to monitor lemmings. *International workshop on small mammal population outbreaks and their consequences*, Frasne, France.
C.165. Gauthier, G. 2015. Goose, plant and predator interactions in arctic systems: how will climate change things? *Thirteenth North American Arctic Goose Conference and Workshop*, Winnipeg, MB.
C.164. Lamarre, J.-F., G. Gauthier, P. Legagneux, E.T. Reed & J. Bêty. 2015. Snow goose colony: a risky nesting area for shorebirds. *Thirteenth North American Arctic Goose Conference and Workshop*, Winnipeg, MB.
C.163. Marmillot, V., G. Gauthier, M.-C. Cadieux & P. Legagneux. 2015. Plasticity in speed and timing of flight feather molt in the greater snow goose, a high-arctic-nesting species. *Thirteenth North American Arctic Goose Conference and Workshop*, Winnipeg, MB.
C.162. Resendiz, C. & G. Gauthier. 2015. Temporal trends and spatial variation in components of reproductive success of Greater Snow Geese on Bylot Island. *Thirteenth North American Arctic Goose Conference and Workshop*, Winnipeg, MB.
C.161. Gauthier, G. & D. Berteaux. 2014. Monitoring of terrestrial wildlife on Bylot Island in a global warming context: what did we learn after 20 years? *Arctic Change 2014 conference*, Ottawa, ON.
C.160. Robillard, A., J.-F. Therrien, G. Gauthier & J. Bêty. 2014. Fall migration and winter habitat use of an Arctic top predator: the Snowy Owl. *Arctic Change 2014 Conference*, Ottawa, ON.
C.159. Fauteux, D., G. Gauthier & D. Berteaux. 2014. Seasonal demography of a cyclic lemming population in the Canadian Arctic. *Arctic Change 2014 Conference*, Ottawa, ON.
C.158. Royer-Boutin, P., D. Berteaux, G. Gauthier & J. Bêty. 2014. Effects of lemming cycles on reproductive success of arctic-nesting birds using different antipredator strategies. *Arctic Change 2014 conference*, Ottawa, ON.

C.157. Beardsell, A., G. Gauthier, D. Fortier, J.-F. Therrien & J. Bêty. 2014. Factors affecting nest occupancy and reproductive success of rough-legged hawks: a trade-off between predation risk, microclimatic conditions and nest stability? *Arctic Change 2014 conference,* Ottawa, ON.
C.156. Seyer, Y., G. Gauthier, J. Bêty & J.-F Therrien 2014. Migratory strategies and reproduction of the Long-tailed Jaeger in the Canadian Arctic. *Arctic Change 2014 conference*, Ottawa, ON.
C.155. Lapierre-Poulin, F., D. Fortier & D. Berteaux. 2014. Are arctic fox reproductive dens vulnerable to permafrost degradation? *Arctic Change 2014 conference*, Ottawa, ON.
C.154. Morin, C. & D. Berteaux. 2014. Seasonal migratory prey and cyclic variation in small mammal abundance affect Arctic fox litter size. *Arctic Change 2014 conference*, Ottawa, ON.
C.153. Chevallier, C., D. Berteaux & G. Gauthier. 2014. Estimating the age structure of an arctic carnivore population by comparing tooth wear and cementum line. *Arctic Change 2014 conference*, Ottawa, ON.
C.152. Berteaux, D. & G. Gauthier. 2014. Long-term monitoring of the Bylot Island tundra ecosystem: what did we learn? *Arctic Biodiversity Congress*, Trondheim, Norway.
C.151. Gauthier, G. 2014. Population dynamic and management of the greater snow goose population in North America. Symposium *The Changing World of the Goose*. Wageningen, Netherlands.
C.150. Gauthier, G., J.-F. Therrien & J. Bêty. 2014. Movements and breeding dispersal of Snowy Owls in eastern North America: a specialized predator exploiting a pulsed resource. *Third meeting of the International Snowy Owl Working Group*, Salekhard, Russia.
C.149. Robillard, A., J.-F. Therrien, G. Gauthier & J. Bêty. 2014. Winter ecology of Snowy Owls: post-reproductive movements and determinants of winter irruptions in North America. *Third meeting of the International Snowy Owl Working Group*, Salekhard, Russia.
C.148. Gauthier, G. 2013. Lemming population ecology on Bylot Island: Interaction between snow and predation. *Lemming and Snow Workshop*, University of Tromsø, Tromsø, Norway.
C.147. Beardsell A., G. Gauthier G., D. Fortier D. & J. Bêty. 2013. Breeding ecology of rough-legged hawks (*Buteo lagopus*) in the High Arctic: are nesting structures vulnerable to climate change? *Ninth ArcticNet Scientific Meeting*, Halifax, NS.
C.146. Robillard, A., J.-F. Therrien, G. Gauthier & J. Bêty. 2013. Multi-scale influence of small mammal summer densities on snowy owl winter irruptions in North America. *Ninth ArcticNet Scientific Meeting*, Halifax, NS.
C.145. Fauteux, D., G. Gauthier & D. Berteaux. 2013. Ten years of monitoring lemming demography in the Canadian High Arctic. *Ninth ArcticNet Scientific Meeting*, Halifax, NS.
C.144. Lamarre, J.-F., J. Bêty & G. Gauthier. 2013. Predator-mediated interactions between shorebirds and colony-nesting snow geese on Bylot Island, Nunavut. *5th Western Hemisphere Shorebird Group conference*, Santa Marta, Colombia.
C.143. Perkins, M., L. Ferguson, R.B. Lanctot, I.J. Stenhouse, D.C. Evers, N. Basu, J. Bêty, S. Brown, R. Gates, S. Kendall, J.-F. Lamarre, J. Liebezeit & B. Sandercock. 2013. Quantifying mercury exposure for multiple shorebird species across the North American Arctic using blood and feather samples. *34th Annual Meeting of the Society of Environmental Toxicology and Chemistry*, Nashville, TN.
C.142. Lai, S., J. Bêty & D. Berteaux. 2013. Where do arctic foxes go in winter? A 6-year study using satellite telemetry on Bylot Island, Canada. *Fourth International Conference in Arctic Fox Biology*. Westfjords, Iceland.
C.141. Rioux, M.-J., S. Lai, J. Bêty & D. Berteaux. 2013. Spatial winter dynamics in arctic fox pairs at Bylot Island. *Fourth International Conference in Arctic Fox Biology*, Westfjords, Iceland.
C.140. Berteaux, D. 2013. Range margins of Arctic and Red fox in a rapidly changing Arctic, *8th Annual Meeting of the Canadian Society of Ecology and Evolution*, Kelowna, BC.
C.139. Berteaux, D. 2013. État et tendances de la biodiversité arctique. *Chantier arctique français*, Paris, France.
C.138. Legagneux, P., G. Gauthier, P.L.F. Fast, N. J. Harms, H. G. Gilchrist, C. Soos & J. Bêty. 2013. Empirical and experimental evidence of carry-over effects on waterfowl reproduction. *Canadian Society of Zoologists Annual Meeting*, Guelph, ON.

C.137. Souchay, G., G. Gauthier & R. Pradel. 2013. A new approach to account for temporary emigration using a multi-event framework. *EURING analytical conference*, Athens, GA.

C.136. Van Oudenhove, L., G. Gauthier, & J.D. Lebreton. 2013 Modelling climatic effects on the population dynamic of a long-distance, arctic-nesting migrant. *EURING analytical conference*, Athens, GA.

C.135. Legagneux, P., C. Juillet, P.L.F. Fast, G. Gauthier & J. Bêty. 2013. Experimental evidence of carry-over effects on greater snow goose reproduction and its management implications. *6th North American Duck Symposium and Workshop*, Memphis, TN.

C.134. Bêty, J. 2013. Understanding individual variation in reproductive strategies: the challenge of integrating physiology, optimization model and environmental stressors. *6th North American Duck Symposium and Workshop*, Memphis, TN.

C.133. Lefebvre, J., M. Huang, J.-F. Giroux, M. Bélisle, J. Bêty & C. Dwyer. 2013. Satellite telemetry improves our understanding of habitat use patterns and population estimates of greater snow geese. *6th North American Duck Symposium and Workshop*, Memphis, TN.

C.132. Bilodeau, F., S. Lai, G. Gauthier & D. Berteaux. 2012. Are tundra lemming populations controlled from the bottom-up or the top-down? *Eighth ArcticNet Scientific Meeting*, Vancouver, BC.

C.131. Fauteux, D., G. Gauthier, D. Berteaux & R. Boonstra. 2012. Direct and indirect effects of predation on lemmings in the High Arctic. *Eighth ArcticNet Scientific Meeting*, Vancouver, BC.

C.130. Doucet, C., G. Gauthier & J. Bêty. 2012. Synchrony between breeding phenology of an arctic-nesting insectivore and its food resources: investigating the effect of mismatch on juvenile growth rate. *Eighth ArcticNet Scientific Meeting*, Vancouver, BC.

C.129. Gauthier, G. 2012. Long-term changes in the Bylot Island tundra food web: a 20-year case study in the Canadian High Arctic. *Conference Tundra Change – The ecological dimension*. Aarhus, Denmark.

C.128. Fauchald, P., D. Ehrich, J. Schmidt, K. Klokov, F. S. I. Chapin, D. Berteaux & V. Hausner. 2012. The importance, management and status of harvested animals in the Arctic tundra ecosystems. *4th International Conference EcoSummit*, Columbus, OH.

C.127. Gauthier, G., D. Berteaux, P. Legagneux, D.G. Reid, C.J. Krebs & J. Bêty. 2012. The role of predators in controlling the tundra food web: New evidence from the ArcticWOLVES project. *International Polar Year Conference: From Knowledge to Action*. Montréal, QC.

C.126. Fast, P.L.F., M. Doiron, G. Gauthier, J.A. Schmutz, D.C. Douglas, J. Madsen, J.Y. Takekawa, J. Yee & J. Bêty. 2012. Linking animal migration, spring weather and timing of breeding in an arctic herbivore. *International Polar Year Conference: From Knowledge to Action*. Montréal, QC.

C.125. McKinnon, L., C.A. Corkery, E. Bolduc, C. Juillet, J. Bêty & E. Nol. 2012. Assessing the vulnerability of Arctic-nesting shorebirds to climate induced changes in food resource peaks. *International Polar Year Conference: From Knowledge to Action*. Montréal, QC.

C.124. Juillet, C., R. Choquet, G. Gauthier, R. Pradel & J. Lefebvre. 2012. Carry-over effects of spring hunt and climate on recruitment to the natal colony in a migratory species. *International Polar Year Conference: From Knowledge to Action*. Montréal, QC.

C.123. Lai, S., D. Berteaux and J. Bêty 2012. Movement tactics and habitat selection of overwintering arctic foxes in the Canadian high Arctic. *International Polar Year Conference: From Knowledge to Action*. Montréal, QC.

C.122. Lamarre, J.-F., J. Bêty & G. Gauthier. 2012. Shorebird predation risk in the high-Arctic, do geese have a role to play? *International Polar Year Conference: From Knowledge to Action*. Montréal, QC.

C.121. Berteaux, D., G. Gauthier, J. Bêty, A. Franke & G. Gilchrist. 2012. Effects of climate change on the canadian arctic wildlife. *International Polar Year Conference: From Knowledge to Action*. Montréal, QC.

C.120. Therrien, J.-F., G. Gauthier & J. Bêty. 2011. Avian predators play a key role in population regulation and energy flux of the Arctic tundra food web. *Annual Meeting of the Raptor Research Foundation*, Duluth, MN.

C.119. Bêty, J. 2011. Sensitive Arctic birds under the spotlights: global change and recent discoveries. *Society of Canadian Ornithologists Annual Meeting*, Moncton, NB.

C.118. Legagneux, P., P. Fast, G. Gauthier & J. Bêty. 2011. Manipulating individual state during migration provides evidence for carry-over effects modulated by environmental conditions. *Society of Canadian Ornithologists Annual Meeting*, Moncton, NB.

C.117. Bêty, J. 2011. Ecology and evolution of arctic migrants: fundamental questions and recent results. *Royal Swedish Academy of Sciences and Wenner-Gren Foundations*, Sweden.

C.116. Gauthier, G. 2011. Lemmings: a keystone species of the tundra food web vulnerable to climate change. *6th Annual Meeting of the Canadian Society of Ecology and Evolution*, Banff, AB.

C.115. Tarroux, A., D. Berteaux & J. Bêty. 2011. The marine side of a terrestrial mammal: trophic niche and diet specialization of arctic foxes. *Estación Biológica de Doñana – CSIC*, Sevilla, Spain.

C.114. Gauthier, G. & M.-C. Cadieux. 2011. Goose-plant interactions on Bylot Island in the context of global warming. *Twelfth North American Arctic Goose Conference*, Portland, OR.

C.113. Legagneux, P., P. Fast, G. Gauthier & J. Bêty. 2011. Migratory connectivity in Greater Snow Geese: carry-over effects of a manipulation of spring body condition. *Twelfth North American Arctic Goose Conference*, Portland, OR.

C.112. Fast, P., C. Redjadj, G. Gauthier & J. Bêty. 2011. Using isotopes to assess the importance of stopover sites to fuel migration and reproduction in Snow Geese. *Twelfth North American Arctic Goose Conference*, Portland, OR.

C.111. Doiron, M., G. Gauthier & E. Lévesque. 2011. Climate change and the ecological mismatch between Greater Snow Goose breeding and plant phenology. *Twelfth North American Arctic Goose Conference*, Portland, OR.

C.110. Desnoyers, M. & G. Gauthier. 2011. Travelling in greater snow goose flocks: do you know with whom you're travelling? *Twelfth North American Arctic Goose Conference*, Portland, OR.

C.109. Horrigan, E., R.L. Jefferies & G. Gauthier. 2011. Vegetation responses to simulated snow goose herbivory in two arctic ecosystems. *Twelfth North American Arctic Goose Conference*, Portland, OR.

C.108. Gauthier, G. & D. Berteaux. 2010. Is the tundra food web controlled by top predators? New evidence from the ArcticWOLVES project. *Seventh ArcticNet Scientific Meeting*, Ottawa, ON.

C.107. Bilodeau, F., G. Gauthier & D. Berteaux. 2010. Life under the snow: the effect of the snow cover on lemming population dynamics. *Seventh ArcticNet Scientific Meeting*, Ottawa, ON.

C.106. Chalifour, E., J. Bêty, M. Bélisle, J. Lefebvre & J.-F. Giroux. 2010. Molt migration of Greater Snow Geese. *Seventh ArcticNet Scientific Meeting*, Ottawa, ON.

C.105. Tarroux, A., D. Berteaux & J. Bêty. 2010. Surviving the arctic winter: insights into the foraging tactics of an arctic terrestrial predator. *Seventh ArcticNet Scientific Meeting*, Ottawa, ON.

C.104. Fast, P. 2010. Studies of migratory connectivity and nest choice in Arctic waterfowl. *Max Planck Institute for Ornithology*, Seewiesen, Germany.

C.103. Gauthier, G., J.-F. Therrien, J. Bêty, F. Doyle & D. Reid. 2010. Surprising migratory movements and site fidelity unraveled by satellite-tracking of snowy owls. *25th International Ornithological Conference*, Sao Paulo, Brazil.

C.102. Legagneux, P., G. Gauthier, D. Berteaux, J. Bêty, M.-C. Cadieux, G. Szor, F. Bilodeau, E. Bolduc, L. McKinnon, A. Tarroux, J.-F. Therrien, M.-A. Valiquette, L. Morissette & C.J. Krebs. 2010. Modeling temporal trophic dynamics of a terrestrial arctic ecosystem. *IPY Oslo Conference*, Oslo, Norway.

C.101. Doiron, M., G. Gauthier & E. Lévesque. 2010. Plant-herbivore interactions and climate change: the case of the Greater Snow Goose. *IPY Oslo Conference*, Oslo, Norway.

C.100. Legagneux, P., P. Fast, G. Gauthier & J. Bêty 2010. Effect of spring condition manipulation on reproductive success in the greater snow geese *Chen caerulescens*. *5th annual meeting of the Canadian Society of Ecology and Evolution*, Quebec, QC.

C.99. Therrien, J.-F., G. Gauthier & J. Bêty. 2010. The lemming buffet: is there anything left after owls and jaegers have eaten? *5th annual meeting of the Canadian Society of Ecology and Evolution*, Quebec, QC.

C.98. Desnoyers, M. & G. Gauthier. 2010. Le voyage organisé, un aspect inconnu du comportement grégaire de la grande oie des neiges *Chen caerulescens*. *5th annual meeting of the Canadian Society of Ecology and Evolution*, Quebec, QC.

C.97. Gauthier, G., D. Berteaux, J. Bêty, P. Legagneux, L. McKinnon, J.-F. Therrien, A. Tarroux, M.-C. Cadieux, C.J. Krebs, D. Reid, & D. Morris. 2010. The role of predators in structuring the Arctic terrestrial food web: preliminary results from the ArcticWOLVES project. *IPY Canada Early Results Workshop*, Ottawa, ON.

C.96. Doiron, M., G. Gauthier, & E. Lévesque. 2010. Impacts of climate change on a High Arctic herbivore: The case of the Greater Snow Goose. *IPY Canada Early Results Workshop*, Ottawa, ON.

C.95. Therrien, J.-F., G. Gauthier, J. Bêty D. Reid and F. Doyle. 2010. Long-distance movements of two avian predators, the Snowy Owl and Long-tailed Jaeger, tracked via satellite. *IPY Canada Early Results Workshop*, Ottawa, ON.

C.94. Reid, D., C.J. Krebs, G. Gauthier, A. Kenney, S. Gilbert, E. Hofer, D. Duchesne, M. Leung & F. Bilodeau. 2010. Snow depth and small mammal winter habitat choice: a tundra fencing experiment. *IPY Canada Early Results Workshop*, Ottawa, ON.

C.93. Lai, S., D. Berteaux & J. Bêty. 2009. From land to sea ice with the arctic fox, following the movements of a terrestrial mammal in the Canadian High Arctic. *Sixth ArcticNet Scientific Meeting*, Victoria, BC.

C.92. Tarroux, A., D. Berteaux & J. Bêty. 2009. Nomades de l'Arctique: Capacité de déplacement à grande échelle chez le renard polaire. *Sixth ArcticNet Scientific Meeting*, Victoria, BC.

C.91. Tarroux, A., D. Berteaux & J. Bêty. 2009. The marine side of a terrestrial mammal: trophic niche and diet specialization in arctic foxes. *Sixth ArcticNet Scientific Meeting*, Victoria, BC.

C.90. Therrien, J.-F., G. Gauthier & J. Bêty. 2009. The lemming buffet: is there anything left after owls and jaegers have eaten? *Sixth ArcticNet Scientific Meeting*, Victoria, BC.

C.89. Fast, P., C. Redjadj, G. Gauthier & J. Bêty. 2009. Fuelling up before the flight: Assessing the importance of stopover sites in an Arctic migrant using stable isotopes. *Sixth ArcticNet Scientific Meeting*, Victoria, BC.

C.88. Gauthier, G., C. Juillet, J. Bêty & M. Morrissette. 2009. Annual productivity in Greater Snow Geese: which fecundity parameter is the best predictor and why? *Meeting of the International Society of Ecological Modelling*, Quebec City, QC.

C.87. Legagneux, P., G. Gauthier & C.J. Krebs. 2009. Spatial and temporal trophic dynamics of terrestrial arctic ecosystems. *ECOPATH conference*, Vancouver, BC.

C.86. Gauthier, G. 2009. Impact of climate change on arctic terrestrial food webs: examples from the Bylot Island long term study. *Canadian Society of Ecology and Evolution Annual Meeting*, Halifax, NS.

C.85. Gauthier, G. & D. Berteaux. 2008. Arctic Wildlife Observatories Linking Vulnerable EcoSystems (ArcticWOLVES): A study of the impact of climate change on tundra food webs. *Arctic Change Conference*, Quebec City, QC.

C.84. Gauthier, G. & M.C. Cadieux. 2008. Impact of climate change on arctic terrestrial food webs: examples from the Bylot Island long term study. *Arctic Change Conference*, Quebec City, QC.

C.83. Doiron, M., G. Gauthier & E. Lévesque. 2008. Plant-herbivore interactions and climate change: The Case of the Greater Snow Goose. *Arctic Change Conference*, Quebec City, QC.

C.82. Therrien, J.-F., G. Gauthier & J. Bêty. 2008. Reproductive success and long-distance movements of Snowy Owls: is this top arctic predator vulnerable to climate change? *Arctic Change Conference*, Quebec City, QC.

C.81. Valiquette, M.A. & G. Gauthier. 2008. Numerical and functional responses of a generalist avian predator, the glaucous gull, to variations in lemming abundance in the Arctic. *Arctic Change Conference*, Quebec City, QC.

C.80. Juillet, C., M. Doiron, G. Gauthier & M.C. Cadieux. 2008. Importance of local and regional climatic effects on the reproduction of a migratory species, the Greater Snow Goose. *Arctic Change Conference*, Quebec City, QC.

C.79. Côté, G., R. Pienitz, G. Gauthier, D. Muir & B. Wolfe. 2008. Impacts of present-day and past animal populations on the nutrient and contamination status of freshwater lakes on Bylot Island, Nunavut (Canada). *Arctic Change Conference*, Quebec City, QC.

C.78. Pouliot, R., L. Rochefort, M. Marchand-Roy & G. Gauthier. 2008. Polygon fens and trophic interactions: 15 years of research on Bylot Island. 4th International Meeting on the Biology of Sphagnum, Juneau, Alaska.
C.77. Gauthier, G. & D. Berteaux. 2008. ArcticWOLVES: a study of the tundra food web. *International IPY conference on the Dynamics of Lemmings and Arctic foxes in the Circumpolar Tundra*, Salekhard, Russie.
C.76. Berteaux, D. & Gauthier, G. 2008. Dynamics of lemmings and arctic foxes on Bylot Island, Nunavut, Canada. *International IPY conference on the Dynamics of Lemmings and Arctic foxes in the Circumpolar Tundra*, Salekhard, Russie.
C.75. Duchesne, D., G. Gauthier & D. Berteaux. 2007. Characterization of the winter environment of lemmings in relation to the snow cover in the Arctic. *Fourth ArcticNet Scientific Meeting*, Collingwood, ON.
C.74. Doiron, M., G. Gauthier & E. Lévesque. 2007. Impacts of climate change on plant-herbivore interactions in the High Arctic. *Fourth ArcticNet Scientific Meeting*, Collingwood, ON.
C.73. Juillet, C., G. Gauthier, R. Pradel & Rémi Choquet. 2007. Use of mixture of information models to evaluate the effect of special conservation measures on survival in a hunted species, the Greater Snow Goose. *EURING-2007 meeting*, Otago, New Zealand.
C.72. Gauthier, G., K. Hobson & J. Bêty. 2006. Diet change inferred from stable-isotopes in spring-staging Greater Snow Geese. *XXIVth International Ornithological Congress*, Hamburg, Germany.
C.71. Gauthier, G. 2006. Application of capture-recapture methods to demographic analyses of bird populations: case studies with an emphasis on multistate models. Colloque *Capture 2006*, Université Laval, Québec, QC.
C.70. Dickey, M.-H. & G. Gauthier. 2005. Effect of climate variables on the phenology and reproductive success of Greater Snow Geese (*Chen caerulescens atlantica*). *Eleventh North American Arctic Goose Conference*, Reno, NV.
C.69. Lecomte, N., G. Gauthier, L. Bernatchez & J.-F. Giroux. 2005. Population structure of a Greater Snow Goose colony. *Eleventh North American Arctic Goose Conference*, Reno, NV.
C.68. Gauthier, G., A.M. Calvert & E.T. Reed. 2005. Impacts of special conservation measures on demographic parameters in Greater Snow Geese (*Chen caerulescens atlantica*). *Eleventh North American Arctic Goose Conference*, Reno, NV.
C.67. Mainguy, J., G. Gauthier, J.-F. Giroux & J. Bêty. 2005. Long distance brood movements in Greater Snow Geese: effects on goslings growth and survival. *Eleventh North American Arctic Goose Conference*, Reno, NV.
C.66. Ouellet, N., J. Larochelle & G. Gauthier. 2005. Effect of locomotion on growth in Greater Snow Goose goslings (*Chen caerulescens atlantica*). *Eleventh North American Arctic Goose Conference*, Reno, NV.
C.65. Lecomte, N., G. Gauthier & J.-F. Giroux. 2005. Habitat effects on nest predation risks: the case of the Greater Snow Goose. *Eleventh North American Arctic Goose Conference*, Reno, NV.
C.64. Audet, B., G. Gauthier & E. Lévesque. 2005. Feeding ecology of Greater Snow Goose (*Chen caerulescens atlantica*) goslings in upland tundra on Bylot Island, Nunavut. *Eleventh North American Arctic Goose Conference*, Reno, Nevada.
C.63. Bêty, J., J.-F. Giroux, & G. Gauthier. 2004 Individual variation in timing of migration: causes and reproductive consequences in greater snow geese. *122nd American Ornithologist Union Meeting*, Québec, Canada.
C.62. Calvert, A.M. & G. Gauthier. 2004. Exceptional conservation measures: how have they affected survival and hunting mortality in greater snow geese. *122nd American Ornithologist Union Meeting*, Québec, Canada.
C.61. Audet, B., G. Gauthier & E. Lévesque. 2004. Feeding ecology of Greater Snow Goose (*Chen caerulescens atlantica*) goslings in upland tundra on Bylot Island, Nunavut. *122nd American Ornithologist Union Meeting*, Québec, Canada.
C.60. Lecomte, N., G. Gauthier & J.F. Giroux. 2004. Habitat effects on nest predation risks: the case of the Greater Snow Goose. *122nd American Ornithologist Union Meeting*, Québec, Canada.

C.59. Gauthier, G., J.-F. Giroux, A. Reed, A. Béchet & L. Bélanger. 2004. Interactions between land use, habitat use and population increase in greater snow geese: what are the consequences for natural wetlands? Intecol 7th Interational Wetlands conference, Utrecth, Netherlands.

C.58. Giroux, J.-F., G. Gauthier, A. Béchet, M. Féret, J. Mainguy, J. Bêty & V. Lemoine. 2003. Controling overabundant bird populations: the case of the greater snow goose. Third International Wildlife Management Congress, 1-5 December 2003, Christchurch, New Zealand.

C.57. Gauthier, G. & J.D. Lebreton. 2003. Population models in Greater Snow Geese: a comparison of different approaches. *EURING-2003 meeting*, Radolfzell, Germany.

C.56. Reed, E., G. Gauthier & J.-F. Giroux. 2003. Effects of spring conditions on breeding propensity of greater snow goose females. *EURING-2003 meeting*, Radolfzell, Germany.

C.55. Calvert, A.M. & G. Gauthier. 2003. Applying band recovery models to an evaluation of the demographic impacts of exceptional conservation measures. *EURING-2003 meeting*, Radolfzell, Germany.

C.54. Gauthier, G., J. Bêty, J.-F. Giroux & L. Rochefort. 2003. Trophic interactions in a High Arctic Snow Goose colony. *Annual Meeting of the Society for Integrative and Comparative Biology*, Toronto, ON.

C.53. Fournier, F., G. Gauthier & J. Larochelle. 2003. The effect of food quality on developmental plasticity and digestive efficiency in Greater Snow Goose goslings. *Annual Meeting of the Society of integrative and comparative biology*, Toronto, ON.

C.52. Gauthier, G. 2002. Are Greater Snow Geese overabundant? A review of population Dynamics and management actions on this population in North America. *7th Annual Meeting of the Goose Specialist Group of Wetlands International*, El Rocio, Spain.

C.51. Gauthier, G., F. Fournier & J. Larochelle. 2002. The effect of environmental conditions on early growth in geese. *XXIIIrd International Ornithological Congress*, Beijing, China

C.50. Gauthier, G., J.-F. Giroux & L. Rochefort. 2002. The impact of goose grazing on Arctic and temperate wetlands. *XXIIIrd International Ornithological Congress*, Beijing, China.

C.49. Bêty, J., G. Gauthier, E. Korpimäki & J.-F. Giroux. 2001. Shared predators and indirect trophic interactions: lemming cycles and arctic-nesting geese. *119th American Ornithologist Union Meeting*, Seattle, WA.

C.48. Bourguelat, G., G. Gauthier & R. Pradel. 2001. New analytical tools to study stopover length in birds : what can we learn from the greater snow goose example? *119th American Ornithologist Union Meeting*, Seattle, WA.

C.47. Gauthier, G. 2001. The effects of management actions on populations: greater snow goose. *Tenth North American Arctic Goose Conference*, Québec, QC.

C.46. Gauthier, G. & J.D. Lebreton. 2001. Population models in greater snow geese: a comparison of different approaches. *Tenth North American Arctic Goose Conference*, Québec, QC.

C.45. Gauthier, G., K. Hobson & J. Bêty. 2001. The role of nutrient reserves in egg formation in greater snow geese: a reply to Ankney (1995). *Tenth North American Arctic Goose Conference*, Québec, QC.

C.44. Mainguy, J., J. Bêty & G. Gauthier. 2001. Is body condition of laying greater snow geese affected by the Québec spring conservation hunt? *Tenth North American Arctic Goose Conference*, Québec, QC.

C.43. Bêty, J., G. Gauthier, E. Korpimäki & J.-F. Giroux. 2001. Cyclic lemmings and greater snow geese: direct observations of an indirect trophic interaction. *Tenth North American Arctic Goose Conference*, Québec, QC.

C.42. Reed, E. & G. Gauthier. 2001. The costs of raising a family in greater snow geese *Chen caerulescens atlantica*. *Tenth North American Arctic Goose Conference*, Québec, QC.

C.41. Righi, M. & G. Gauthier. 2001. Abundance and distribution of intestinal helminths in greater snow geese on the breeding colony, and during their fall and spring migration. *Tenth North American Arctic Goose Conference*, Québec, QC.

C.40. Renaud, M., G. Gauthier & J. Larochelle. 2001. Energetic cost of thermoregulation for greater snow goose goslings growing in a natural environment. *Tenth North American Arctic Goose Conference*, Québec, QC.

C.39. Féret M., G. Gauthier, J.-F. Giroux & K. Hobson. 2001. Impact of spring conservation hunt on nutrient storage of greater snow geese staging in Québec. *Tenth North American Arctic Goose Conference*, Québec, QC.

C.38. Bourguelat, G., G. Gauthier & R. Pradel. 2001. Estimation of the fall stopover length of the greater snow goose in the St. Lawrence estuary using capture-recapture methods. *Tenth North American Arctic Goose Conference*, Québec, QC.

C.37. Béchet, A. J.-F. Giroux & G. Gauthier. 2001. Impact of a spring hunt on the regional movements of staging greater snow geese. *Tenth North American Arctic Goose Conference*, Québec, QC.

C.36. Demers, F. J.-F. Giroux, G. Gauthier & J. Bêty. 2001. Effect of collar-attached transmitters on pair bond, breeding success and behavior of greater snow geese. *Tenth North American Arctic Goose Conference*, Québec, QC.

C.35. Otis, P., J. Larochelle & G. Gauthier. 2001. Energy cost of locomotion in greater snow goose goslings. *Tenth North American Arctic Goose Conference*, Québec, QC.

C.34. Duclos, I., E. Lévesque & L. Rochefort. 2001. Mesic habitats of the Greater Snow Goose (*Chen caerulescens atlantica*) on Bylot Island (Nunavut): characterization and feeding potential. *Tenth North American Arctic Goose Conference*, Québec, QC.

C.33. Gauthier, G., R. Pradel, S. Menu & J.D. Lebreton. 2000. Modelling seasonal survival rate of greater snow geese in presence of trap-dependence. *EURING-2000 meeting*, Point Reyes, CA.

C.32. Gauthier, G., R. Pradel, S. Menu & J.D. Lebreton. 2000. Seasonal variations in survival rate of a migratory and hunted species, the greater snow goose. *118th American Ornithologist Union Meeting*, St. John's, NF.

C.31. Gauthier, G., L. Rochefort, & A. Reed. 2000. Short- and long-term impact of snow goose herbivory on wetland ecosystems of Bylot Island. *Weltand-2000 international meeting*, Quebec City, QC.

C.30. Lévesque, E., C. Pineau, L. Rochefort & G. Gauthier. 1999. Combined influence of grazing and warming in a high arctic wet meadow. Abstract in *Plant response to climate change*, R.D. Hollister (ed), Proceedings from the *9th International Tundra Experiment Meeting*, East Lansing, MI.

C.29. Bêty, J, G. Gauthier & J.-F. Giroux. 1998. Factors affecting nesting success in greater snow geese: the interplay between nest density, lemming abundance and association with snowy owls. *Ninth North American Arctic Goose Conference*, Victoria, BC.

C.28. Massé, H., L. Rochefort & G. Gauthier. 1998. Estimating the carrying capacity of wetland habitats used by breeding greater snow geese on Bylot island (N.W.T, Canada). *Ninth North American Arctic Goose Conference*, Victoria, BC.

C.27. Demers, F., J.-F. Giroux & G. Gauthier. 1998. How faithful to their mate are radio-marked greater snow geese? *Ninth North American Arctic Goose Conference*, Victoria, BC.

C.26. Giroux, J.-F., F. Blouin, J. Ferron, G. Gauthier & J. Doucet. 1998. The fall migration of greater snow geese tracked by satellite. *Ninth North American Arctic Goose Conference*, Victoria, BC.

C.25. Menu S., G. Gauthier & A. Reed. 1998. Survival of young greater snow geese during the fall migration. *Ninth North American Arctic Goose Conference*, Victoria, BC.

C.24. Poussart, C., G. Gauthier & J. Larochelle. 1998. Incubation behavior of greater snow geese in relation to weather conditions. *Ninth North American Arctic Goose Conference*, Victoria, BC.

C.23. Gauthier, G. 1998. The role of food and timing of nesting in greater snow goose reproduction. *Ninth North American Arctic Goose Conference*, Victoria, BC.

C.22. Gauthier, G. 1997. Population regulation in Greater Snow Geese. *Symposium on how to manage thriving goose populations*, Zwolle, Netherlands.

C.21. Reed, A. & G. Gauthier. 1997. Changes in demographic and physical parameters of greater snow geese during an extended population growth phase. *Symposium on Over-abundant goose population: an emerging challenge in wildlife conservation, Wildlife Society 4th annual conference,* Snowmass, Colorado.

C.20. Gauthier, G. 1997. The use of capture-recapture models to estimate survival and movements in Greater Snow Geese *Session on biostatistics and survey methods in wildlife management, Annual meeting of the statistical society of Canada*, Fredericton, New-Brunswick.

C.19. Menu, S., G. Gauthier, A. Reed & J. Hestbeck. 1997. Effects of neck band on the survival of adult female greater snow geese. *Large-scale studies of marked birds, EURING 97*, Norwich, United Kingdom.

C.18. Gauthier, G. 1996. Energetics of reproduction in greater snow geese: the female condition model revisited. *International workshop on energetics of reproduction in birds, mammals and reptiles: exploring new technologies*, Chizé, France.

C.17. Giroux, J.-F., F. Blouin, J. Ferron, G. Gauthier, & J. Doucet. 1996. The use of satellite telemetry to track the fall migration of greater snow geese. *5th European conference on wildlife telemetry*, Strasbourg, France.

C.16. Piedboeuf, N. & G. Gauthier, G. 1996. Nutritional quality of feeding sites in Greater Snow Goose goslings: is it advantageous to use grazed sites? *Comparative Nutrition Society Symposium*, Washington, DC.

C.15. Lepage, D., G. Gauthier, & A. Desrochers. 1996. Le rôle des parents dans la variation de croissance et de survie chez la Grande Oie des neiges (*Chen caerulescens atlantica*). *Congrès international francophone sur le comportement animal*, Québec, QC.

C.14. Gauthier, G., R. J. Hughes, A. Reed, J. Beaulieu & L. Rochefort. 1995. Effect of grazing by greater snow geese on the production of graminoids at an arctic site (Bylot Island, NWT, Canada). *25th Arctic Workshop*, Québec, QC.

C.13. Gauthier, G., D. Lepage & A. Reed. 1995. Site infidelity in nesting Greater Snow Geese (*Chen caerulescens atlantica*). *Eighth North American Arctic Goose Conference*, Albuquerque, NM.

C.12. Beaulieu, J., G. Gauthier & L. Rochefort. 1995. Growth responses of plants to goose grazing in a High Arctic environment. *Eighth North American Arctic Goose Conference*, Albuquerque, NM.

C.11. Lepage, D., A. Desrochers & G. Gauthier. 1995. Clutch manipulation in Greater Snow Geese: the causal relationship between hatch date, brood size and pre-fledging growth. *Eighth North American Arctic Goose Conference*, Albuquerque, NM.

C.10. Lesage, L. & G. Gauthier. 1995. Effect of hatch date and brood-rearing site on growth pattern and organ development in Greater Snow Geese. *Eighth North American Arctic Goose Conference*, Albuquerque, NM.

C.9. Tremblay, J.-P., G. Gauthier, D. Lepage, A. Desrochers. 1995. Relationship between nest site characteristics and nesting success in greater snow geese. *Eighth North American Arctic Goose Conference*, Albuquerque, NM.

C.8. Blouin, F., J.-F. Giroux, J. Ferron, G. Gauthier & J. Doucet. 1995. Tracking the fall migration of greater snow geese using satellite telemetry. *Eighth North American Arctic Goose Conference*, Albuquerque, NM.

C.7. Gauthier, G. & D. Lepage. 1994. The interaction between food supply and gosling growth in greater snow geese. *XXIst Interational Ornithological Congress*, Vienna, Austria.

C.6. Gauthier, G. 1992. Diet, food quality and food intake of pre-laying and laying greater snow geese. *Seventh North American Arctic Goose Conference*, Vallejo, CA.

C.5. Choinière, L. & G. Gauthier. 1992. Reproductive energetics of female greater snow geese on Bylot Island (NWT), Canada. *Seventh North American Arctic Goose Conference*, Vallejo, CA.

C.4. Hughes, J., A. Reed & G. Gauthier. 1992. Habitat use by brood-rearing greater snow geese. *Seventh North American Arctic Goose Conference*, Vallejo, CA.

C.3. Lindholm, A. & G. Gauthier. 1992. Hatch date, food quality and growth of juvenile greater snow geese. *Seventh North American Arctic Goose Conference*, Vallejo, CA.

C.2. Manseau, M. & G. Gauthier. 1992. Brood-rearing habitats in greater snow geese: a comparative study based on the animal perception of its environment. *Seventh North American Arctic Goose Conference*, Vallejo, CA.

C.1. Reed, A. 1992. Incubation behavior and body mass of female greater snow geese. *Seventh North American Arctic Goose Conference*, Vallejo, CA.

Graduate student theses

T.68. Seyer, Y. 2022. Mouvements annuels, reproduction et compétition alimentaire chez un prédateur aviaire de la toundra, le labbe à longue queue. PhD thesis, Département de biologie, Université Laval, Québec.

T.67. Duchesne, E. 2020. Effet des interactions indirectes engendrées par un prédateur commun sur les variations spatio-temporelles d'abondance des espèces dans une communauté de vertébrés. MSc thesis, Département de biologie, Université du Québec à Rimouski.

T.66. Reséndiz, C. 2020. Phénologie de la reproduction chez l'oie des neiges et changements climatiques. PhD thesis, Département de biologie, Université Laval, Québec.

T.65. Juhasz, C.-C. 2020. Impacts de la variabilité climatique sur les interactions prédateur-proie en Arctique. PhD thesis, Département de biologie, Université de Moncton.

T.64. Lapierre-Poulin, F. 2018. Vulnérabilité des tanières du renard arctique aux risques géologiques reliés aux changements climatiques. MSc thesis, Département de biologie, Université du Québec à Rimouski.

T.63. Léandri-Breton, D.-J. 2018. Stratégies migratoires et vulnérabilité à la prédation chez des pluviers nichant dans l'Arctique. MSc thesis, Département de biologie, Université du Québec à Rimouski.

T.62. Chevallier, C. 2018. Démographie et dynamique de la population de renards arctiques (*Vulpes lagopus*) de l'Île Bylot, Nunavut, Canada. PhD thesis, Département de biologie, Université du Québec à Rimouski.

T.61. Lai, S. 2017. Écologie spatiale du renard arctique sur l'Île Bylot, Nunavut, Canada. PhD thesis, Département de biologie, Université du Québec à Rimouski.

T.60. Robillard, A. 2017. Mouvements et utilisation de l'habitat en hiver chez un prédateur nomade: le harfang des neiges. PhD thesis, Département de biologie, Université Laval, Québec.

T.59. Fauteux, D. 2016. Effets directs et indirects de la prédation sur les lemmings dans l'Arctique canadien. PhD thesis, Département de biologie, Université Laval, Québec.

T.58. Beardsell, A. 2016. Écologie de la nidification de la buse pattue dans le Haut-Arctique et vulnérabilité des nids aux risques géomorphologiques. MSc thesis, Département de biologie, Université Laval, Québec.

T.57. Royer-Boutin, P. 2015. Effets des cycles de lemmings sur le succès de nidification d'oiseaux différant par leur taille corporelle et leur comportement. MSc thesis, Département de biologie, Université du Québec à Rimouski.

T.56. Marmillot, V. 2015. Effets des conditions environnementales, de la condition corporelle et du statut hormonal sur la mue de la grande oie des neiges (*Chen caerulescens atlantica*). MSc thesis, Département de biologie, Université Laval, Québec.

T.55. Doiron, M. 2014. Impacts des changements climatiques sur les relations plantes-herbivores dans l'Arctique. PhD thesis, Département de biologie, Université Laval, Québec.

T.54. Doucet, C. 2014. Synchronie entre la reproduction et l'abondance des ressources: effet sur le succès reproducteur d'un insectivore nichant dans l'Arctique. MSc thesis. Département de biologie, Université du Québec à Rimouski.

T.53. Christin, S. 2014. Évaluation empirique de la précision du suivi télémétrique Argos dans le Haut-Arctique et implications pour l'estimation des domaines vitaux. MSc thesis, Département de biologie, Université du Québec à Rimouski.

T.52. Rioux, M.-J. 2014. La dynamique socio-spatiale hivernale chez les couples de renard arctique (*Vulpes lagopus*) dans le haut-arctique canadien. MSc thesis, Département de biologie, Université du Québec à Rimouski.

T.51. Bilodeau, F. 2013. Effet du couvert nival, de la nourriture et de la prédation hivernale sur la dynamique de population des lemmings. PhD thesis, Département de biologie, Université Laval, Québec.

T.50. Souchay, G. 2013. Aspects non-canalisés de la dynamique de population de la grande oie des neiges. Probabilités de reproduction et de survie juvénile. PhD thesis, Département de biologie, Université Laval, Québec & Université de Montpellier 2, Montpellier, France.

T.49. Bolduc, E. 2013. Abondance et phénologie des arthropodes terrestres de l'Arctique canadien: modélisation de la disponibilité des ressources alimentaires pour les oiseaux insectivores. MSc thesis, Département de biologie, Université du Québec à Rimouski.

T.48. Chalifour, E. 2013. Écologie de la mue chez la grande oie des neiges (*Chen caerulescens atlantica*). MSc thesis, Département de biologie, Université du Québec à Rimouski.

T.47. Perreault, N. 2012. Impact de la formation de ravins de thermo-erosion sur les milieux humides, Ile Bylot, Nunavut, Canada. MSc thesis, Département de chimie-biologie, Université du Québec à Trois-Rivières.

T.46. Therrien, J.-F. 2012. Réponses des prédateurs aviaires aux fluctuations d'abondance de proies dans la toundra. PhD thesis, Département of biologie, Université Laval.

T.45. Desnoyers, M. 2011. Le comportement social de la grande oie des neiges (*Chen caerulescens atlantica*) : existe-t-il des associations stables au sein des volées? MSc thesis, Département de biologie, Université Laval.

T.44. Juillet, C. 2011. Impact de la chasse sur la dynamique d'une population migratrice : le cas de la Grande Oie des neiges. PhD thesis, Département de biologie, Université Laval.

T.43. Côté, G. 2011. Impacts de la population de la grande oie des neiges sur l'état trophique des lacs et étangs de l'île Bylot, Nunavut. MSc thesis, Département de géographie, Université Laval.

T.42. McKinnon, L. 2011. Écologie de la reproduction et migration des bécasseaux dans le Haut-Arctique. PhD thesis, Département de biologie, Université du Québec à Rimouski.

T.41. Tarroux, A. 2011. Utilisation de l'espace et des ressources chez un carnivore terrestre de l'Arctique : le renard polaire. PhD thesis, Département de biologie, Université du Québec à Rimouski.

T.40. Duchesne, D. 2009. Sélection de l'habitat, reproduction et prédation hivernales chez les lemmings de l'Arctique. MSc thesis, Département de biologie, Université Laval.

T.39. Marchand-Roy, M. 2009. L'effet fertilisant de la Grande Oie des neiges: cinq ans de suivi de l'azote et du phosphore dans les polygones de tourbe de l'Île Bylot au Nunavut. MSc thesis, Département de phytologie, Université Laval.

T.38. Cameron, C. 2009. Régimes d'appariement du Renard Arctique (*Vulpes lagopus*). MSc thesis, Département de biologie, Université du Québec à Rimouski.

T.37. Graham-Sauvé, M. 2008. Effets en cascade du climat et des interactions trophiques indirectes sur les plantes de la toundra par l'oie des neiges. MSc thesis, Département de biologie, Université du Québec à Rimouski.

T.36. Morrissette, M. 2008. L'influence respective du climat, des interactions trophiques indirectes et de la densité sur la productivité annuelle de la Grande Oie des neiges (*Chen caerulescens atlantica*). MSc thesis, Département de biologie, Université du Québec à Rimouski.

T.35. Giroux, M.-A. 2007. Effets des ressources allochtones sur une population de renards arctiques à l'Île Bylot, Nunavut, Canada. MSc thesis, Département de biologie, Université du Québec à Rimouski.

T.34. Lecomte, N. 2007. Risque de prédation, hétérogénété de l'habitat et fidélité au site de reproduction: Le cas de la Grande Oie des neiges dans le Haut-Arctique. PhD thesis, Département de biologie, Université Laval.

T.33. Gruyer, N. 2007. Étude comparative de la démographie de deux espèces de lemmings (*Lemmus sibericus* et *Dicrostonyx groenlandicus*), à l'Île Bylot, Nunavut, Canada. MSc thesis, Département de biologie, Université Laval.

T.32. Careau, V. 2006. Comportement de mise en réserve du renard arctique dans une colonie d'oies des neiges à l'Île Bylot, Nunavut. PhD thesis, Département de biologie, Université du Québec à Montréal.

T.31. Szor, G. 2006. Sélection des sites de tanières et des tanières de reproduction chez le renard arctique à l'Île Bylot, Nunavut. MSc thesis, Département de biologie, Université du Québec à Rimouski.

T.30. Dickey, M.H. 2006. Effet des facteurs climatiques sur la phénologie et le succès reproducteur de la grande oie des neiges (*Chen caerulescens atlantica*) à l'Île Bylot. MSc thesis, Département de biologie, Université Laval.

T.29. Pouliot, R. 2006. Les effets fertilisants de la grande oie des neiges sur la dynamique des milieux humides de l'île Bylot au Nunavut : impact du tapis de bryophites. MSc thesis, Département de phytologie, Université Laval.
T.28. Audet, B. 2006. Écologie alimentaire des oisons de la grande oie des neiges (*Chen caerulescens atlantica*) en milieux mésiques sur l'Île Bylot, Nunavut. MSc thesis, Département de biologie, Univ. Laval.
T.27. Calvert, A.M. 2004. Variations spatiales et temporelles de la mortalité due à la chasse et les effets des mesures de gestion chez la grande oie des neiges (*Chen caerulescens atlantica*). MSc thesis, Département de biologie, Université Laval.
T.26. Mainguy, J. 2003. Déplacements des familles de la grande oie des neiges durant la période d'élevage, Île Bylot, Nunavut. MSc thesis, Département de biologie, Université Laval.
T.25. Bourguelat, G. 2003. Durée de séjour automnale de la grande oie des neiges dans l'estuaire du Saint-Laurent : une nouvelle approche méthodologique. MSc thesis, Département de biologie, Université Laval.
T.24. Reed, E. 2003. Coûts des soins parentaux et effet des conditions environnementales sur la reproduction de la Grande Oie des neiges. PhD thesis, Département de biologie, Université Laval.
T.23. Béchet, A. 2003. Ecologie et comportement de la grande oie des neiges lors de sa migration pré-nuptiale dans le Quebec méridional. PhD thesis, Département de biologie, Université du Québec à Montréal.
T.22. Duclos, I. 2002. Milieux mésiques et secs de l'Île Bylot, Nunavut (Canada): caractérisation et utilisation par la grande oie des neiges. MSc thesis, Département de chimie-biologie, Université du Québec à Trois-Rivières.
T.21. Otis, P. 2002. Adaptations au froid chez les oisons, juvéniles et adultes et modèles de croissance chez la grande oie des neiges. MSc thesis, Département de biologie, Université Laval.
T.20. Féret, M. 2002. Effet d'une chasse printanière sur la condition physique de la Grande Oie des neiges en migration. MSc thesis, Département de biologie, Université Laval.
T.19. Bêty, J. 2001. Interactions trophiques indirectes, prédation et stratégies de reproduction chez l'oie des neiges nichant dans le Haut-Arctique. PhD thesis, Département de biologie, Université Laval.
T.18. Demers, F. 2000. Effets des colliers émetteurs sur le maintien du couple, le succès reproducteur et le comportement de la grande oie des neiges. MSc thesis, Département de biologie, Université du Québec à Montréal.
T.17. Rioux, S. 2000. Effets du vent et du rayonnement sur la thermorégulation chez les oisons de la grande oie des neiges, *Chen caerulescens atlantica*. MSc thesis, Département de biologie, Université Laval.
T.16. Renaud, M. 1999. Coûts énergétiques de la thermorégulation chez les jeunes de la grande oie des neiges en milieu naturel. MSc thesis, Département de biologie, Université Laval.
T.15. Pineau, C. 1999. Facteurs limitant la croissance des plantes graminoïdes et des mousses dans les polygones de tourbe utilisés par la grande oie des neiges. MSc thesis, Département de phytologie, Université Laval.
T.14. Massé, H. 1998. Estimation de la capacité de support des différents écosystèmes humides utilisés par la grande oie des neiges nichant à l'Île Bylot (TNO, Canada). MSc thesis, Département de phytologie, Université Laval.
T.13. Menu, S. 1998. Survie de la grande oie des neiges : aspects méthodologiques et implications dans la dynamique de population. PhD thesis, Département de biologie, Université Laval.
T.12. Ratté, J. 1998. Thermorégulation et croissance chez les oisons de la Grande Oie des neiges (*Chen caerulescens atlantica*). MSc thesis, Département de biologie, Université Laval.
T.11. Poussart, C. 1997. Patron d'incubation et régime thermique des oeufs chez la Grande oie des neiges. MSc thesis, Département de biologie, Université Laval.
T.10. Lepage, D. 1997. Variations saisonnières du succès reproducteur chez la Grande Oie des neiges (*Chen caerulescens atlantica*). PhD thesis, Département de biologie, Université Laval.
T.9. Piedboeuf, N. 1996. Qualité nutritive des sites d'alimentation des oisons de la grande oie des neiges: est-il avantageux d'utiliser des sites déjà broutés? MSc thesis, Département de biologie, Université Laval.

T.8. Lesage, L. 1995. La croissance corporelle, et l'influence de la date d'éclosion et du site d'élevage sur le développement tissulaire chez les oisons de la grande oie des neiges. MSc thesis, Département de biologie, Université Laval.

T.7. Fortin, D. 1995. L'environnement thermique des oisons de la grande oie des neiges (*Chen caerulescens atlantica*) dans l'Arctique canadien. MSc thesis, Département de biologie, Université Laval.

T.6. Beaulieu, J. 1995. La croissance des plantes arctiques (*Dupontia fisheri* et *Eriophorum scheuchzeri*) en réponse au broutement par les oisons de la grande oie des neiges. MSc thesis, Département de biologie, Université Laval.

T.5. Hughes, J. 1992. Utilisation de l'habitat par la grande oie blanche pendant la période d'élevage des couvées à l'Ile Bylot, Territoires du Nord-Ouest. MSc thesis, Département de biologie, Université Laval.

T.4. Choinière, L. 1992. Stratégie énergétique de la grande oie blanche (*Chen caerulescens atlantica*) pendant la reproduction. MSc thesis, Département de biologie, Université Laval.

T.3. Manseau, M. 1991. Habitats d'élevage des oisons de la grande oie des neiges (*Chen caerulescens atlantica*): une approche comparative incluant la perception de l'animal. MSc thesis, Département de biologie, Université Laval.

T.2. Boismenu, C. 1991. Physiologie du jeûne prolongé chez la grande oie des neiges (*Chen caerulescens atlantica*). MSc thesis, Département de biologie, Université Laval.

T.1. Tardif, J. 1990. Comportement d'alimentation de la grande oie blanche (*Chen caerulescens atlantica*) en période pré-reproductrice. MSc thesis, Département de biologie, Université Laval.