

## Final Project Report to the Nunavut Wildlife Management Board

1. NWSF Project Number: 223-17-01
2. Project Title: Inuit knowledge about the impact of light geese abundance on land, wildlife and people, and recommendations for light geese management in the Kivalliq region, Nunavut
3. Project Leaders:
  - (a) Noah Kadlak, Irniurviit Co-management Committee (ACMC) and the Aiviit Hunters and Trappers Organization (HTO) (Coral Harbour), (867) 925-8582, [ippirqvikkadlak@hotmail.com](mailto:ippirqvikkadlak@hotmail.com)
  - (b) David Aglukark Sr., Nivvialik ACMC and the Arviat HTO (Arviat), (867) 857-2924, [davidaglukarksr@gmail.com](mailto:davidaglukarksr@gmail.com)

\*\*\* This report was produced by Dominique Henri ([dominique.henri@canada.ca](mailto:dominique.henri@canada.ca), (514) 496-9024), Project Management Committee members from Environment and Climate Change Canada, on behalf of Noah Kadlak and David Aglukark Sr.

### 4. Summary

In the Canadian Arctic, populations of northern-breeding geese (primarily Lesser Snow, *Chen caerulescens caerulescens* and Ross' Geese, *Chen rossii*, hereafter collectively referred to as 'light geese') have increased dramatically in the last 50 years. In the eastern and central Canadian Arctic, light geese have negatively affected vegetation over large areas near their colonies. Scientists are conducting studies to understand the impact that light geese are having on the land and other animals that share the same habitat. In Nunavut, light geese are harvested by Inuit. Few studies have documented Inuit knowledge of goose populations or past and current interactions of geese with the land, water, other animals and people. Inuit and their ancestors have lived and hunted in the areas of light goose colonies for generations, and they have information about past patterns of population growth/decline and related impacts that western science will never have. Inuit knowledge will help everyone to better understand wildlife and habitat disturbance caused by light goose abundance, and to improve the way that humans address overabundant goose populations today. The overarching goals of this project are to document Inuit knowledge about light goose populations on Southampton Island and in the Arviat region, particularly the impact of light geese on the land, water, other animals (including other bird species) and people, and to develop light geese management recommendations that address Inuit knowledge, perspectives, and concerns.

### 5. Project Objectives

Project objectives were developed by representatives of the Irniurviit and Nivvialik ACMCs, the Aiviit and Arviat HTOs and the communities of Coral Harbour and Arviat:

- (1) Document Inuit knowledge about light goose populations and their impacts on the land, water, other animals (including other bird species) and people in the Kivalliq region;
- (2) Articulate Inuit recommendations for light goose management that address Inuit concerns and perspectives;
- (3) Increase the capacity of Coral Harbour and Arviat residents to undertake IQ research studies on wildlife; and
  - Encourage the joint use of Inuit knowledge and scientific information to provide recommendations for light goose and land management.

## 6. Materials and Methods

This project is co-led by the Irniurviit ACMC, Aiviit HTO, Nivvialik ACMC, Arviat HTO and ECCC. Members of these organizations form the *Project Management Committee*, which is responsible for: conducting project design; promoting the study within their communities and networks; helping to formulate light geese management recommendations; and sharing/discussing study results with scientific researchers. The *Research Team* is mainly responsible for data collection and analysis and includes four ECCC researchers (Natalie Carter, Dominique Henri, Paul Smith, Bhavana Chaudhary), four local community researchers (Coral Harbour: Lenny Emiktaut, Bobbie Saviakjuk; Arviat: Aupaa Irkok, Shelton Nipisar), and one researcher from Carleton University (Gita Ljubicic). Together, the *Project Management Committee* (PMC) and the *Research Team* have been conducting this study. To date, Inuit values and community perspectives have been directing each step of a collaborative and participatory research process.

Fieldwork and data collection activities took place in Coral Harbour and Arviat for six weeks between June and August 2017. Data collection in each community was co-led by local community researchers and one ECCC researcher (Carter) with the help local Interpreters. Semi-directed interviews, participatory mapping exercises and some site visits (when feasible/appropriate) were conducted with 21 participants in Coral Harbour and 20 participants in Arviat. Study participants were Coral Harbour and Arviat residents identified by PMC members as knowledgeable about light geese, shorebirds and Inuit interactions with these species. Participants were asked to provide verbal consent or to sign a consent form (available in Inuktitut and English) stating that they agree to share information as part of this project. They were also offered an honorarium for their time. Study participants will be identified in reports, presentations and publications unless confidentiality has been specifically requested.

Upon completion of data collection, a preliminary analysis of interview and mapping data was conducted between September and November 2017 by local community researchers, ECCC social sciences researcher (Carter) and ECCC cartographer and GIS specialist (Chaudhary), using both qualitative and quantitative techniques. Interviews were transcribed and thematically coded. Georeferenced information was digitized and analyzed using ArcGIS software. A week-long training in qualitative research methods was also offered in November in Ottawa to two local community researchers (Irkok, Nipisar). Community researchers participated actively in transcribing and analyzing interview transcripts.

Once preliminary data analysis was completed, the *Research Team*, in consultation with the PMC, conducted validation workshops in Coral Harbour and Arviat in November 2017. Workshop objectives were to: (1) present preliminary results to study participants and local collaborators and validate themes identified during data analysis; (2) invite study participants and local collaborators to validate results and provide additional feedback/information; and (3) discuss light geese management recommendations addressing Inuit perspectives and concerns. Preliminary research results were co-presented by local community researcher (Emiktaut) and ECCC research (Carter) in December 2018 at the ArcticChange Conference in Québec City.

After incorporating feedback received from community members during validation workshops, final results were presented to residents from Coral Harbour and Arviat in April 2018 through a series of results-sharing activities, which included PMC meetings, community open houses, distribution of project reports to all informants, call-in radio shows, and school presentations.

Henri planned and led these activities with support from community researchers, Carter, Smith, and other PMC members.

The final step in this project will be a workshop held in fall 2018 in Winnipeg. This workshop will bring together Inuit from Nunavut, scientists, and wildlife managers. The goals of this workshop are: (1) to discuss existing knowledge about light geese from both Inuit and scientific perspectives; (2) to explore how Inuit knowledge and science can be brought together to better understand and manage light goose populations; (3) to discuss and produce common recommendations for light goose management, particularly in the Kivalliq region of Nunavut. Proceedings from this meeting will be shared with all project collaborators (including funding agencies) and interested parties, to encourage the joint use of Inuit knowledge and science to support wildlife management through the circumpolar Arctic.

## 7. Results

You will find below is a summary of key project findings from Coral Harbour and Arviat.

### *From Coral Harbour*

Here is what Coral Harbour residents said about light geese:

- Starting in 1917, the government tried to stop Inuit from hunting light geese because they said the numbers were too low. Inuit did not listen, as they saw how many geese were nesting.
- In the past, people did not eat as many light geese as today. Instead they hunted other animals.
- Light geese were an important food source from the time when there were no caribou around (starting in 1967) until there were enough caribou for Sallirmiut to hunt (in the late 1970s).
- In the past, light geese and their eggs were stored underground to keep them cool.
- Light geese are a very important food source today. Mostly youth hunt them.
- People described different things about the size of the light goose population around Coral Harbour, such as (1) the goose population is increasing and there are too many geese, (2) the goose population is increasing but this is fine, (3) the goose population is stable.
- People described different things about the impacts of light goose droppings on the land, water, wildlife, and people. Goose droppings are (1) contaminating drinking water out on the land; (2) contaminating the land; (3) helping the land by adding nutrients; and (4) making caribou sick when light goose droppings are on their food.
- People described different things about how light geese have changed the land. They mentioned that (1) this is just part of the natural cycle and not a concern; (2) light geese are eating so much that they are changing the vegetation, and (3) geese leave a lot of feathers and droppings.
- Some people said that when light geese nest, it affects the land the most. Other people said that when light geese graze, it affects the land the most.
- People explained that light geese have recently moved to new areas. Reasons for this include:
  - Climate change is making the land drier than in the past;
  - Like all animals, light geese need to move to new feeding grounds when food runs out;

- Light geese are avoiding predators such as foxes, and higher numbers of hawks and polar bears;
- Light geese have changed the land so they move when there is bare soil and nothing to build nests with;
- Use of motorized transportation (snowmobiles, all-terrain vehicles) when going out on the land has become very common. The increase in types of transportation, the number of people using them, and how often people are using them has disturbed light geese and caused them to move to new areas.

#### *From Arviat*

Here is what Arviat residents said about light geese:

- The past ban on hunting and collecting migratory bird eggs was very hard for Inuit to bear, and caused the overabundance of light geese that is happening today.
- Light geese meat (goslings and adults) and eggs had great cultural significance in the past.
- Today, cultural significance varies by person/family as do taste preferences for geese.
- People described different things about the size of the light goose population around Arviat, such as (1) the goose population is increasing and there are too many geese, (2) the goose population is increasing but this is fine, (3) the goose population is stable and this is fine, (4) the goose population is decreasing in some locations and research is needed, and (5) unsure if the goose population is increasing or decreasing and research is needed.
- People described different things about the impacts of light goose droppings on the land and water. Goose droppings are (1) contaminating the hamlet's drinking water source; (2) contaminating the land; (3) helping the land by adding nutrients; and (4) not having any impact on the land.
- People described different things about how light geese have changed the land. They mentioned that (1) geese are impacting the land by grazing and nesting, and in the spring people can tell where the geese have been eating and pulling out plants; and (2) geese are not impacting the land in the nesting area, and it is not changing because as soon as they nest, they start walking, so they do not feed that much in the nesting area.
- People explained that light geese have recently moved to new areas. Reasons for this include:
  - Climate change is making the land drier than in the past (lakes are drying up);
  - The vegetation has changed. There are more shrubs, bushes, and more grasses and vegetation to eat;
  - Other animals have changed. There are more predators, and geese are competing with them for food;
  - Light geese are moving to find new nesting areas. Due to the population increase they do not have enough area to lay their eggs;
  - Light geese have changed the land by pulling out plants. When animals like caribou and geese do not have enough food in one area, they look for other places with more food; and
  - Use of motorized transportation (snowmobiles, all-terrain vehicles) when going out on the land has become very common. The increase in types of transportation, the number of people using them, and how often people are using them has disturbed the light geese and caused them to move to new areas.

Please note that full project reports as well as peer-reviewed manuscripts are currently being prepared for this project. Once these documents are made public (likely in 2018 and 2019), they will be shared with the Nunavut Wildlife Management Board.

## 8. Discussion/Management implications

Light geese management recommendations suggested to date by study participants from Coral Harbour and Arviat are summarized below.

### *From Coral Harbour*

Here is what Coral Harbour residents said about light geese management strategies that could be implemented in the future:

- Hire local hunters to harvest enough light geese for everyone in Coral Harbour and for communities that do not get many light geese.
- Put a bounty on light geese.
- Hunt light geese commercially and build a local processing plant (i.e., factory for treatment of meat and down).
- Have open sport hunting for light geese.
- Increase the sport hunting daily bag limit for non-Inuit in order to encourage people to come to Coral Harbour.
- Develop tourism opportunities such as bird watching and seeing nesting areas.
- Light geese should not be wasted. That is not the Inuit way. Geese that are not eaten by people should be fed to dogs or used as bait.
- More research is needed about the light goose population size outside the Qaqsauqtuuq (East Bay) and the Ikattuaq (Harry Gibbons) Migratory Bird Sanctuaries.
- Take no action as people want the light geese to come back next year.

### *From Arviat*

Here is what Arviat residents said about light geese management strategies that could be implemented in the future

- Hire local hunters to harvest geese.
- Ship geese to other communities and developing countries.
- Inuit should continue to harvest geese and eggs. Non-Inuit should still require permits but they should be allowed to harvest any amount of any type of geese, in any season.
- Discuss this challenge and do something before the population drops suddenly due to disease or other (as Inuit Qaujimajatuqangit says will happen).
- Take no action. The number of geese is fine and geese will self-regulate their population.
- Scientists should investigate the size of the light goose population near Arviat.
- Inuit need to do more research. Community-based monitoring about light geese and other birds should be done.
- Community members and scientists should do the research together at the same time. That way they can have discussions as the research is being done, versus talking to community members first, then bringing IQ holders and scientists together later.

The final step of this project will consist in a workshop where Inuit from Nunavut, biologists conducting scientific research on light geese and shorebirds, and wildlife managers will share

their knowledge and develop joint recommendations for the management of light geese in the Kivalliq region, Nunavut. This workshop will take place in Winnipeg in September 2018 and representatives from the NWMB have been invited to participate. Lastly, the knowledge documented as part of this project and project results will inform the development of Management Plans for the three Migratory Bird Sanctuaries located in the Kivalliq region, a process which is currently led by the Irniurviit and Nivvialik Area Co-Management Committees.

### 9. Reporting to Communities/Resource Users

Reporting to participating communities has been on schedule, as planned in the NWSF application. Here is an updated schedule of community consultation and reporting activities.

Community/HTO	Description community consultation and reporting activities	Status
Coral Harbour, Aiviit HTO	<ul style="list-style-type: none"> <li>• <i>Before research:</i> The project has been discussed with the Aiviit HTO through: (1) Irniurviit ACMC communication with the HTO; (2) an in-person meeting with project team member Paul Smith (ECCC) in March 2016; (3) a teleconference call involving Project Team members (Kadlak, Johnston, Smith) and ACMC/ HTO board members in November 2016. The Aiviit HTO provided the attached letter of support. Irniurviit ACMC and ECCC biologist (Smith) also discussed this project with Coral Harbour residents during two community Open Houses in March 2016.</li> </ul>	Completed
	<ul style="list-style-type: none"> <li>• <i>During research:</i> Fieldwork and data collection was conducted in close collaboration with the community of Coral Harbour. Please refer to section 6 for details.</li> </ul>	Completed
	<ul style="list-style-type: none"> <li>• <i>Completion of research:</i> Project results will be communicated with the Aiviit HTO and the Coral Harbour community at large after research completion. The Aiviit HTO and Coral Harbour community members are involved throughout this project.</li> </ul>	Completed (with final workshop involving Coral Harbour community members planned for fall 2018)
Arviat, Arviat HTO	<ul style="list-style-type: none"> <li>• <i>Before research:</i> In-person preliminary discussions with the Chair of the Nivvialik ACMC and the Arviat HTO in November 2017, and a motion at the Arviat HTO meeting in January 2017.</li> </ul>	Completed
	<ul style="list-style-type: none"> <li>• <i>During research:</i> Fieldwork and data collection was conducted in close collaboration with the community of Arviat. Please refer to section 6.</li> </ul>	Completed
	<ul style="list-style-type: none"> <li>• <i>After research:</i> Project results will be communicated with the Arviat HTO and the Arviat community at large after research completion. The Arviat HTO and Arviat community members are involved throughout this project.</li> </ul>	Completed (with final workshop involving Coral Harbour community members planned for fall 2018)

### 10. References

None

### Final Project Report to the Nunavut Wildlife Management Board

1. NWSF Project Number: 223-17-01
2. Project Title: Inuit Qaujimagatuqangit (IQ) about the impact of light geese abundance on land, wildlife and people, and recommendations for light geese management in the Kivalliq region, Nunavut
3. Project Leaders:
  - (c) Noah Kadlak, Irniurviit Co-management Committee (ACMC) and the Aiviit Hunters and Trappers Organization (HTO) (Coral Harbour), (867) 925-8582, [ippirqvikkadlak@hotmail.com](mailto:ippirqvikkadlak@hotmail.com)
  - (d) David Aglukark Sr., Nivvialik ACMC and the Arviat HTO (Arviat), (867) 857-2924, [angote@qiniq.com](mailto:angote@qiniq.com)

\*\*\* This report was produced by Dominique Henri ([dominique.henri@canada.ca](mailto:dominique.henri@canada.ca), (514) 496-9024), Project Management Committee member from Environment and Climate Change Canada, on behalf of Noah Kadlak and David Aglukark Sr. Given that all research expenses have been completed prior to submission of the Interim Financial report in January 2018, please note that this Final Financial Report is the same as the Interim Financial Report.

#### 4. Original Project Budget

In our original NWSF application, **NWSF funding was requested for completing some of the activities included under Task 3A only.** A copy of the original budget approved for *Task 3A – Data collection in Coral Harbour* is provided below.

Item	Funds (\$)
Travel to Coral Harbour by IQ Researcher (Carter) for data collection (Plane ticket Ottawa-Coral Harbour \$4,000 + accommodation \$250/day X 21 days + food \$100/day X 21 days)	11,350
Payment of honoraria to study participants for interviews and site visits in Coral Harbour (\$150 X 30 interviews + \$150 X 10 site visits)	6,000
Payment of salary to Local IQ Researcher in Coral Harbour (\$35/hour X 6 hours/day X 20 days)	4,200
Payment of salary to Local Interpreter in Coral Harbour (\$150 per interview X 40 interviews)	6,000
ATV rental for site visits (including gas) in Coral Harbour (\$150/day X 4 days)	600
Snacks and tea for interview participants in Coral Harbour (\$600)	600
Helicopter rental – site visits to East Bay, Harry Gibbons Bird Sanctuaries (\$2,225/hour X 15 hours + pilot food and accommodation in Coral Harbour for 3 nights (\$250 + \$100)X 3)	34,425
Map production for use during interviews	1,000
<b>TOTAL</b>	<b>64,175</b>

## 5. Original Contributions

The following table summarizes contributions of the NWMB and others, from the application approved by the NWMB. Please note that these contributions are for 2016/2017 and 2017/2018 only. This project has one more year of funding (2018/19) but these figures are not included.

Contributor	Funds (\$)/In-kind (PY)
(1) Irniurviit Area Co-Management Committee	In-kind: \$15,000 (0.2 PY personnel support), Cash- \$40,000 (helicopter support for remote field visits, translation and interpretation for some meetings)
(2) Nivvialik Area Co-management Committee	In-kind: \$15,000 (0.2 PY personnel support) Cash- \$3,000 translation and interpretation for some meetings)
(1) Aiviit HTO	In-kind: \$15,000 (0.2PY personnel support)
(2) Arviat HTO	In-kind: \$15,000 (0.2 PY personnel support)
(3) Nunavut Inuit Wildlife Secretariat	In-kind: \$8,000 (0.1 PY)
(4) Nunavut General Monitoring Program (NGMP)	Cash: \$11K in 2016/17 fiscal year Cash: \$30,000 (potential request for 2017/18 FY- call for proposals not yet out))
(5) Environment and Climate Change Canada	In-Kind: \$100,000 (1 PY combined for Johnston, Smith, Duffe) In-Kind: \$36,000 (Postdoctoral IQ Researcher Carter for project planning and fieldwork- for FY 2016/17)
(6) Environment and Climate Change Canada	Cash- Travel funds for P. Smith – 2 trips Ottawa to Coral Harbour @ \$5,680 per trip Cash- travel funds for V. Johnston- 2 trips Yellowknife to Coral Harbour and Arviat @ \$7K per trip Cash- travel funds for N. Carter – 1 trip Ottawa to Coral Harbour and Arviat @ \$5,680 Cash- travel funds for N. Qillaq- 1 trip (field season 21 days) Iqaluit to Arviat @ \$11,100 Map production \$2,000 Total cash contribution = \$33,040
(7) Carleton University	In-kind: \$15,000 (0.20 PY for Ljubicic)
(8) NWMB (NWSF)	Cash: \$28,650 (requested)
(9) NWMB (IQRF)	Cash: \$24,625 (requested)
<b>TOTAL FUNDS</b>	\$185,540
<b>TOTAL IN-KIND</b>	\$219,000

## 6. Explanations of changes

For budget year 2017/2018, there were no changes for the in-kind contributions originally presented to and approved by NWMB. However, there were some changes with regards to overall funds (cash contributions) obtained for this project. The table below summarizes total funds (cash contributions) that were obtained for this project in 2017/2018.



Source	Amount (\$)
NWMB – IQ Fund	24,625
NWMB – Nunavut Wildlife Study Fund	28,650
Nunavut General Monitoring Program	36,368
POLAR	78,430
ECCC	33,040
<b>Total</b>	<b>201,113</b>

## 7. Financial Report and Explanation of Variances

Upon reception of the funds described in section 6, the project team decided to review the overall budget structure and to allocate NWSF funding to cover costs related to:

- (a) professional fees for the hiring of local IQ researchers and interpreters during project planning and data collection phases;
- (b) payment of honoraria for study participants and Project Management Team Members from Arviat and Coral Harbour during interviews and project meetings in communities;
- (c) miscellaneous field expenses;
- (d) cost of training for local IQ researchers; and
- (e) service fee (15%) charged by the Kivalliq Wildlife Board for administering NWSF funds (KWB is currently administering all project funds on behalf of Project Leaders).

This process explains all variances and changes from original project budget. The table below describes how NWSF funds were used as part of this project during the 2017/2018 fiscal year.

Budget Item	Budgeted (\$)	Disbursed (\$)	Variance
Professional fees for local interpreters/translators in Arviat and Coral Harbour	Please see explanation provided above for reviewed budget structure.	3,967.07	Please see explanation provided above for NWSF funds reallocation from original budget.
Professional fees for local IQ researchers from Arviat and Coral Harbour		3,777.38	
Fees for training of two IQ researchers in Ottawa (Arviat-Ottawa airfare, accommodation, expenses)		6,659.47	
Honoraria for study participants and Project Management Team members from Arviat and Coral Harbour (for project meetings and interviews)		7,282.06	
Miscellaneous field expenses in Arviat and Coral Harbour (gas, room rental and snacks during meetings and interviews)		2,666.52	
KWB service fee on administration of NWSF funds (15%)		4,297.50	
<b>TOTAL</b>			

Balance, if any, to be returned to NWMB: None

8. Verification of Information Provided

On behalf of Project Leaders, I certify that this is an accurate statement of the Board project funds received and disbursed in accordance with the joint contribution agreement.

*Dominique Henri*

Dominique Henri, Environment and Climate Change Canada

June 21<sup>st</sup> 2018

Date

*Toghweemu (Teegee) Akande*

Toghweemu (Teegee) Akande, Dir. Of Finance (NIMS)

(For Kivalliq Wildlife Board)

June 21<sup>st</sup> 2018

Date