

6c. ላዩባራታኮምፒውተር ድርጅቱ
የክልሉ የኮሚሽን ልማት ምክር ቤቱ ለፍትሕ
ደርጅ ስራ ለማድረግ የሚገባውን ስራ
ላካፍሎ ለሚገኙ ሰራተኞች ስራ
ላስጥባቸው ይረዳል።

6c. ECCC researchers sought advice from the ACMC on logistics for a proposed communication study to assess and improve quality of scientific information being presented in northern communities.

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ኅባረኅረረረኅ ላዕረኅረኅረኅ
ረረረኅረኅረኅ ረረኅ ረረኅረኅረኅ
ኅረኅረኅረኅረኅ ረረኅረኅረኅረኅ,
ረኅረኅረኅረኅ ረረኅረኅረኅረኅ,
ረረኅረኅረኅረኅረኅ ረረኅረኅ
ረረኅረኅረኅረኅ ረረኅረኅረኅረኅ.

[illegible]

6c. The ACMC reviewed proposed site visit plans with ECCC researchers for concerns, collaboration and suggestions.

It was suggested to contact Custom Helicopters, which has helicopters in Rankin Inlet for a quote (Long Ranger on pop-out floats). Based on preliminary plans 6 drums of fuel at HTO cabin in Ikkattuaq Harry Gibbons should suffice, and researchers will inform ACMC if there is left over drums that could be used.

በኢፍፋኑ ልማት ወር ልዩ ስርዓት በሚከተለው መንገድ ይኖር፡
 1. ስርዓቱ በሰላምና በቅርብ ምክንያት ሊካተት ይችላል፡፡
 2. በሰላምና በቅርብ ምክንያት ሊካተት ይችላል፡፡
 3. በሰላምና በቅርብ ምክንያት ሊካተት ይችላል፡፡
 4. በሰላምና በቅርብ ምክንያት ሊካተት ይችላል፡፡
 5. በሰላምና በቅርብ ምክንያት ሊካተት ይችላል፡፡
 6. በሰላምና በቅርብ ምክንያት ሊካተት ይችላል፡፡
 7. በሰላምና በቅርብ ምክንያት ሊካተት ይችላል፡፡
 8. በሰላምና በቅርብ ምክንያት ሊካተት ይችላል፡፡
 9. በሰላምና በቅርብ ምክንያት ሊካተት ይችላል፡፡
 10. በሰላምና በቅርብ ምክንያት ሊካተት ይችላል፡፡

[illegible]

linked to MBSs (i.e. birds from MBSs also use the Coats/Walrus area) the ACMC may be able to influence routing.

A/I – Invite other organizations with broader mandates (e.g. KIA President and Vice President, HTO Chair and Vice-Chair) to next meeting to introduce ACMC but also discuss these concerns. There may be an opportunity to collaborate on influencing routing or establishment of a protected area if support exists.

[illegible]

ACMC members expressed interest in creating a website/Facebook page about the Irniurviit ACMC and the MBSs. The purpose is to increase awareness.

A/I – Vice-Chair to explore options and limitations of creating a Facebook page.

በጥናታዊ: ልዩግጥጥር ጋራጥራ ክልላዊጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ለጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ልዩግጥጥር ልዩግጥጥር ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ	Suggestions for content include: bird posters, link to ECCC protected areas website, description of importance of areas, etc.
5a. ልዩግጥጥር ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ለጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ	5a. ACMC members reviewed permit applications: Gilchrist - Eider Research at Qaqsauqtuuq East Bay, and Smith - Shorebird Research at Qaqsauqtuuq East bay (only an amendment). Details regarding incidental polar bear monitoring were unclear in the application, but Grant was later able to provide further details.
ልዩግጥጥር ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ለጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ ጥናታዊ በጥናታዊ: ልዩግጥጥር ጥናታዊ	ACMC members had no major concerns with proposed research or amendment. A/I – Vice-Chair to draft letters

[illegible]

$${}^a b \triangleright L^{\triangleright} \triangleleft \cap^b L \triangleleft \triangleleft L \sigma^a \rho^a \sigma^b.$$
[illegible]



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Climate Change Canada

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Changement climatique Canada

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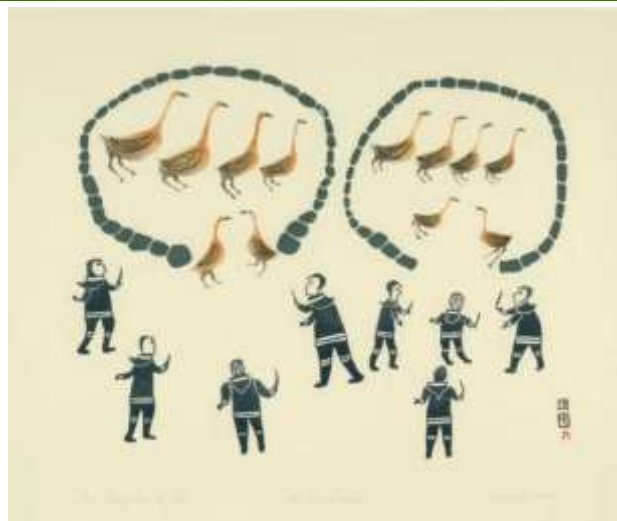


Arctic Geese and Habitat

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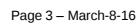
Iriurviit ACMC Meeting
Jim Leafloor
Coral Harbor, NU
March 7, 2016



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စံပယ်တံတိုင်းမြို့နယ်



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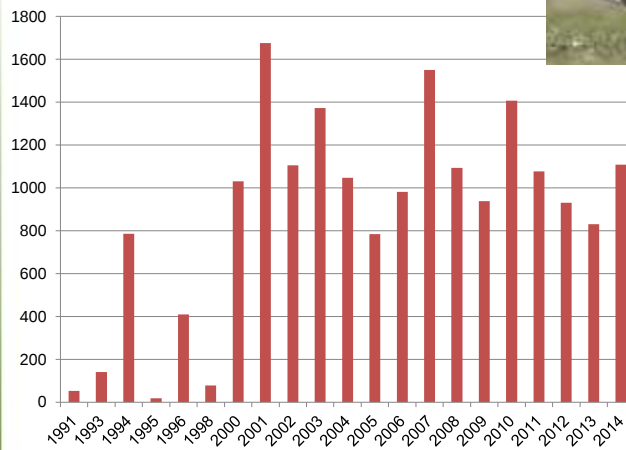
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Brant Nirlinnait σᶦᶜᵃᵒΔᶜ



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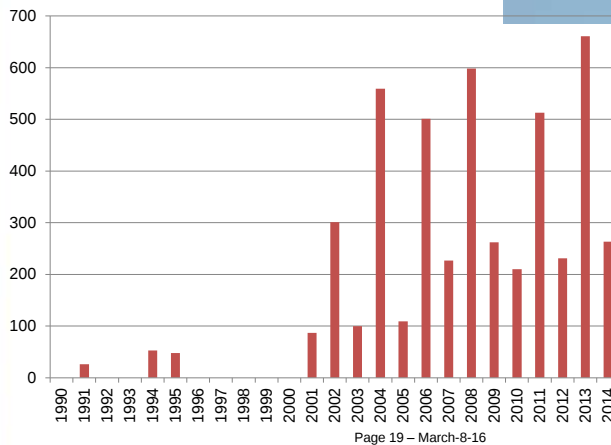


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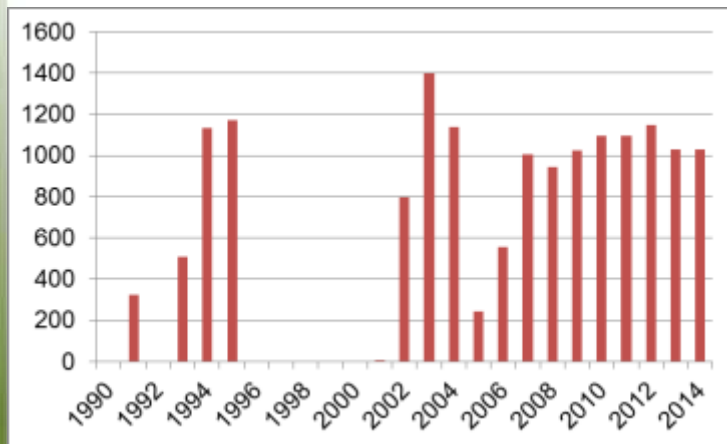
Ross's Goose Kangunnaaq ᑲᓄᓯᓐᓇᑦ



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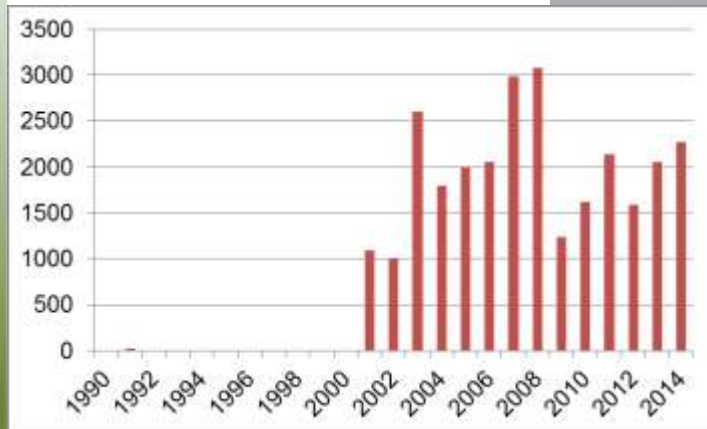
Cackling Geese ᑲᓄᓯᓐᓇᑦ ᑲᓄᓯᓐᓇᑦ ᑲᓄᓯᓐᓇᑦ ᑲᓄᓯᓐᓇᑦ



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Snow Goose Kangut бѣлѣ



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Nesting Range of Atlantic Brant





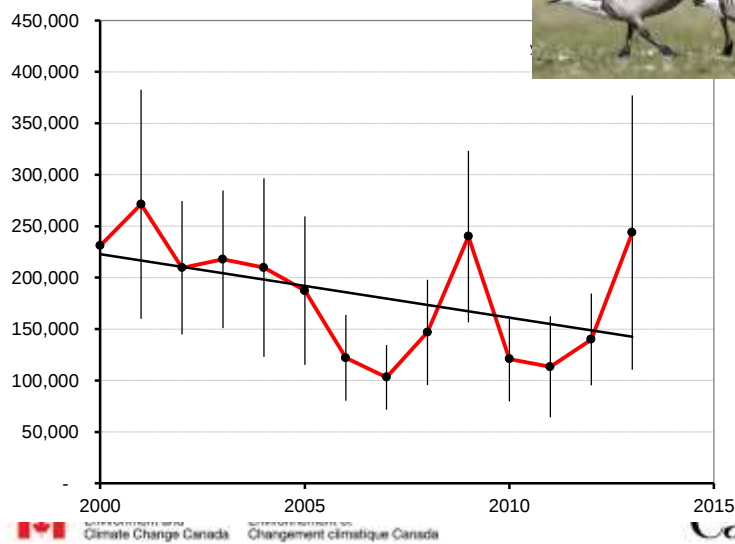
உயிர்வாழ்வுப் பண்பாடு?

Brant
Nirlinnait
 $\sigma^{\epsilon} \zeta^{\alpha} \omega \Delta^{\epsilon}$



Canada

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2015
Canada

Cackling Geese

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Chris Nicolai 2014



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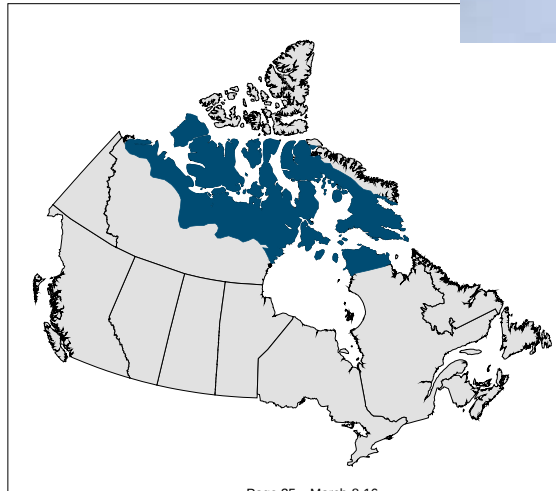
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[illegible]

Cackling Geese
 ԲԵՅԱԴՐՈՒԹՅԱՆ

 A photograph of a Cackling Goose (Branta cacklingensis) sitting on a nest. The nest is constructed from dry grass, twigs, and other natural debris. The goose has a black head and neck with a white patch on its throat, and its body is covered in brown and black feathers. The background is a clear blue sky.



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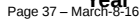
Cackling Geese

ბ^აჟΔ^ც ΓΡ<Π▷^აσ^ცბ^აΔ^ც

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ΔΓΰσφϱϵ



▷ ↳

Cackling Geese
 b^aʝΔ^c ɾpɹ̥ɪɳɔ^aσ^cbɥΔ^c



Ross's Goose

Kangunnaaq

ᑭᐱᑭᐅᑦᑕᐅᑦ



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Breeding Distribution ~ 1965



Breeding Distribution ~ 2006





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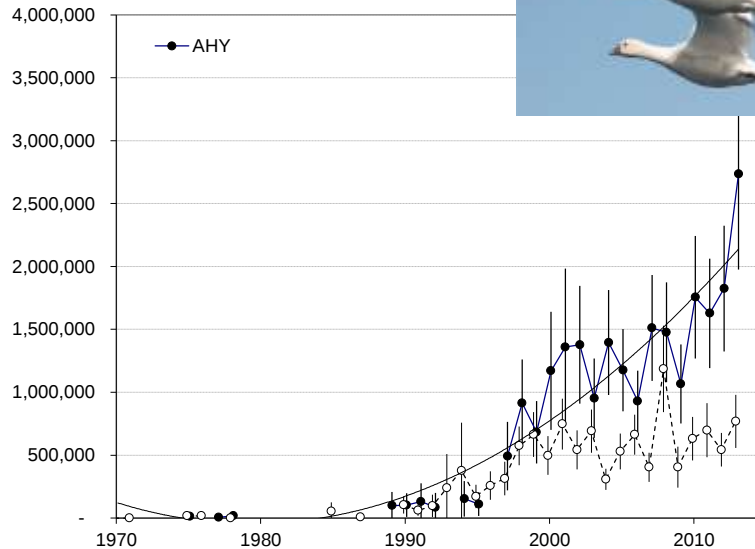


2016



Population Size

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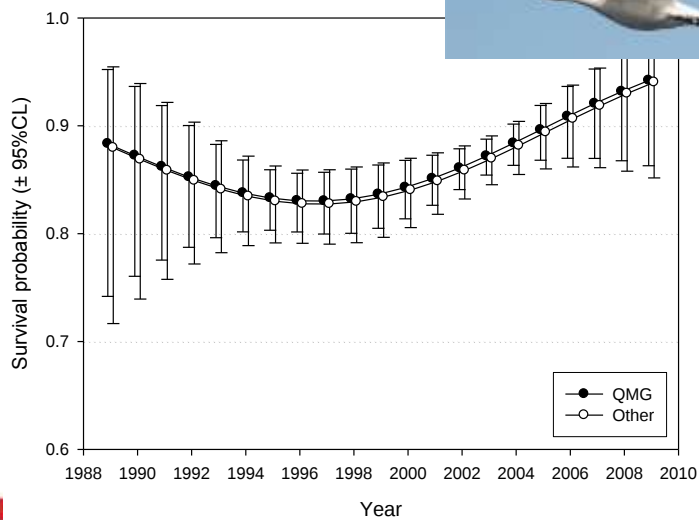
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Changement climatique Canada

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Survival

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Year

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Snow Goose Kangut ᑭᐱᑭᑦ



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Snow Goose
Kangut
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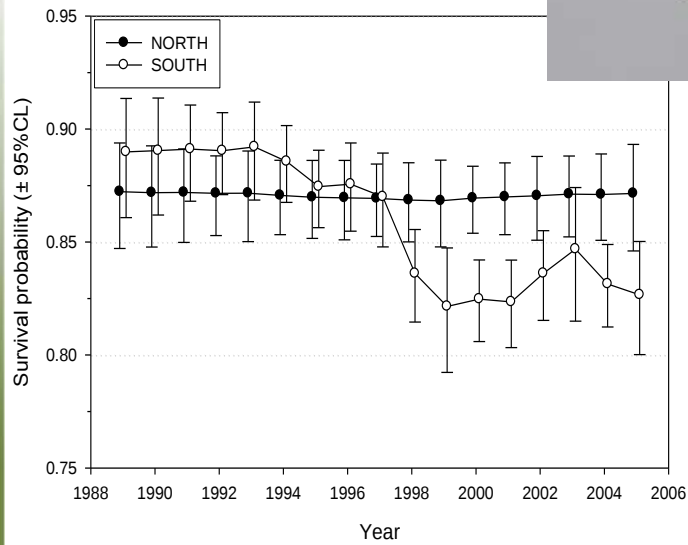
Where Do They Go?
ᑭᐱᑭᑦ ᑭᐱᑭᑦ ᑭᐱᑭᑦ?



Environment and
Climate Change

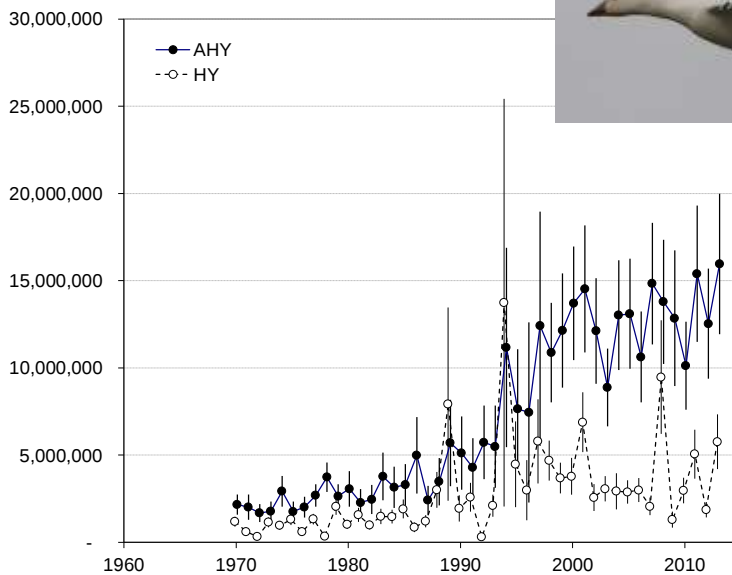
Canada

Survival



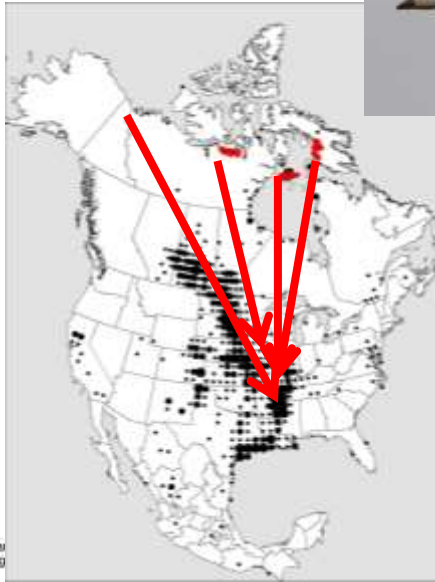
Canada

Population Size



a

Where Do They Go? ᓇᓂᓄᓂᓐ ᓂᓄᓂᓐ ᓂᓄᓂᓐ?



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Snow Goose
Kangut
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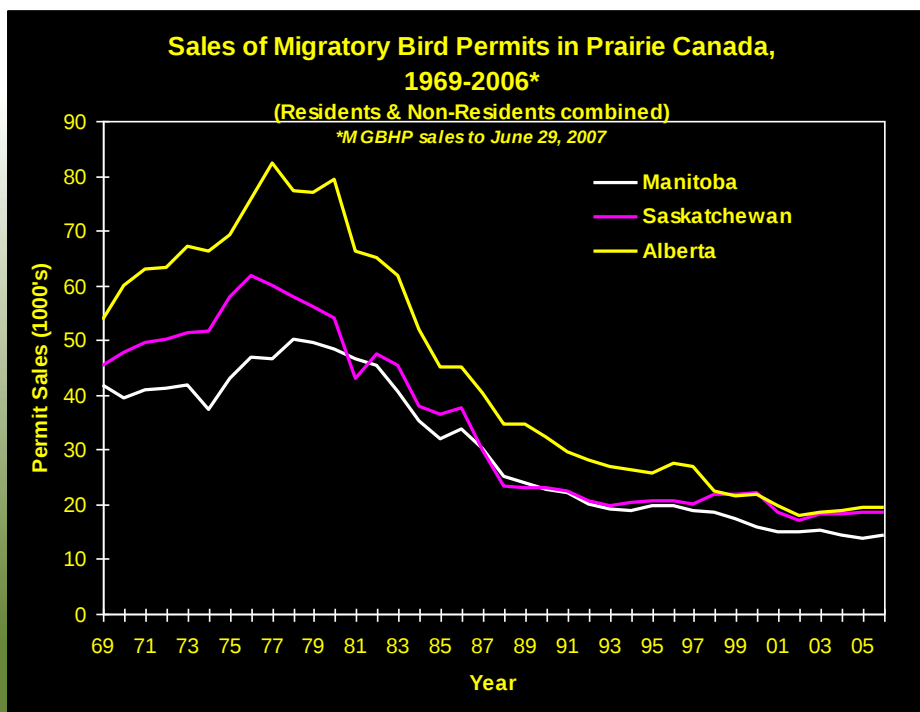
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A photograph showing four plucked ducks arranged in a row on a wooden cutting board. In front of the ducks are two plastic bags containing duck meat, one with lighter-colored meat and the other with darker meat. To the left of the bags are five ripe red tomatoes. A knife is visible behind the tomatoes.

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Geese are Delicious!
ᑭᑭᑦ ᑭᑭᑦ ᑭᑭᑦ!



Why are large snow goose populations a problem?

Degradation of coastal ecosystems

- Impacts on aquatic habitats and soils
- Impacts on vegetation
- Impacts on other species

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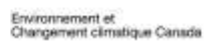
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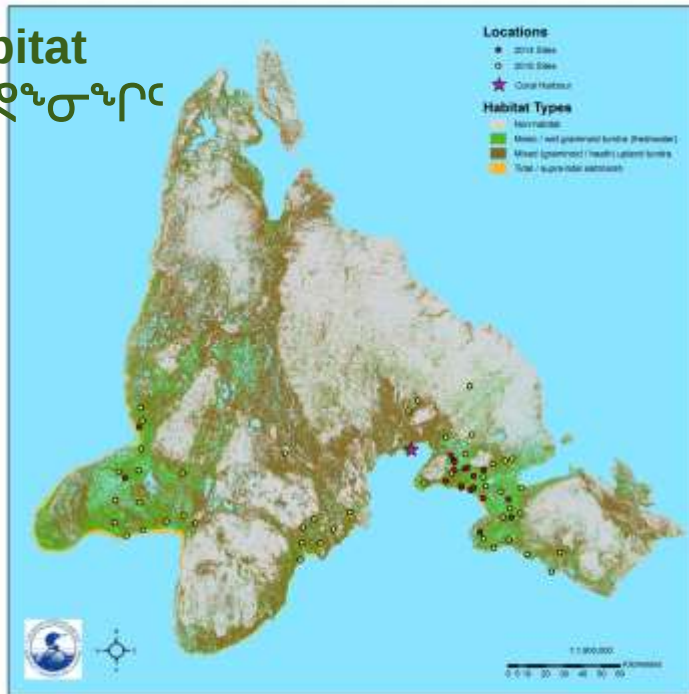
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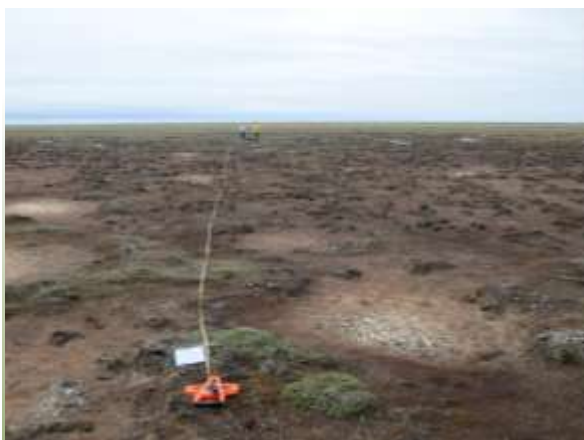
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Goose Habitat ԵՄԻՆԻՃԱԾՔՆԵՐԸ



Environment
Climate Change



Environment and
Climate Change Canada

Enviro
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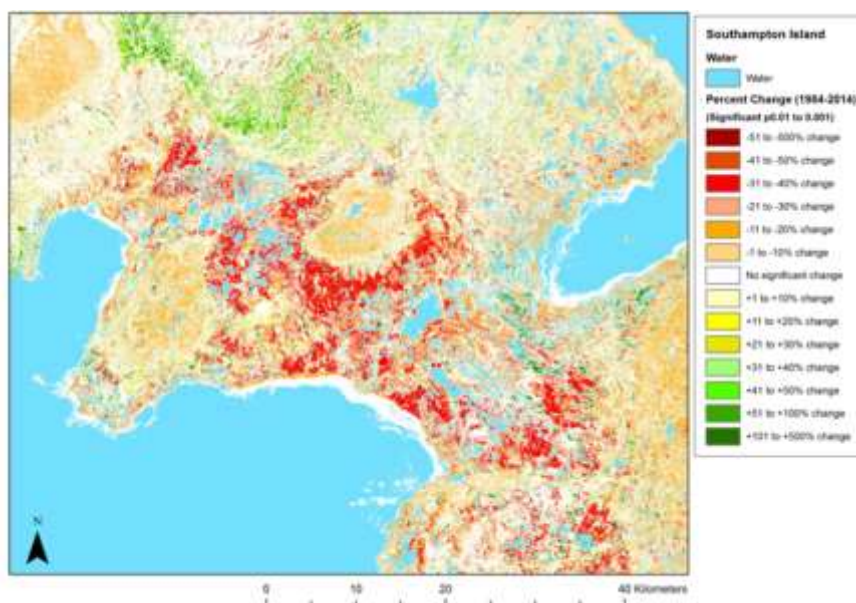
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Future directions

- Estimation of ecosystem effects (S&T)
 - Land cover change
 - Bird community response
 - Food-webs and nutrient cycling



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Research in a Changing Arctic: Conservation Biology of Marine Birds



Northern Common Eider
Somateria mollissima borealis



General ecology

- Seabirds
- Gregarious at all life stages
- Harvested for meat, eggs, and feather down

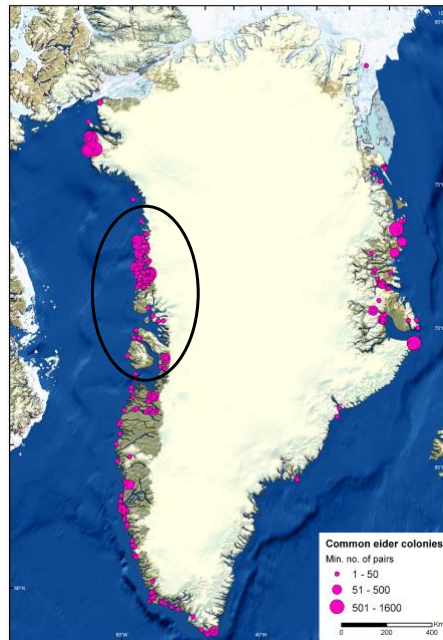




Harvest

Population decline

- Evidence of a 80% population decline 1960-2000 (Merkel 2004)
- Decline probably linked to unsustainable harvest



9

Crippling loss

“Given that the eider is very resistant to shot, often 2-3 birds are wounded for each bird that is shot dead”

Miller, South Greenland, 1906

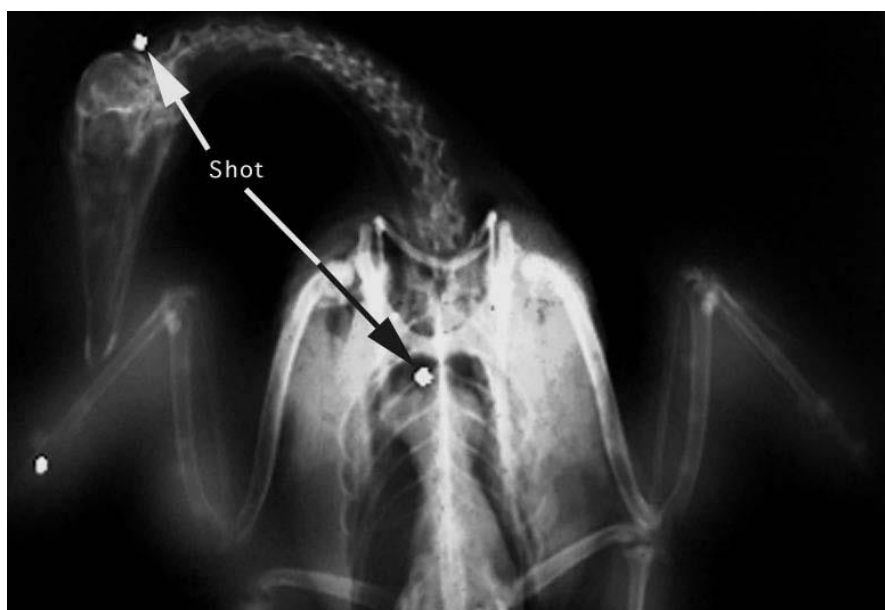
10

“Airport Security”



Falk et al., 2006. Wildlife Biology

11



12

**A first step: Quantifying the migratory linkages
between Greenland and Canada**



East Bay Migratory Bird Sanctuary



“Aglirulaaqvik”



“The shivering place”





19

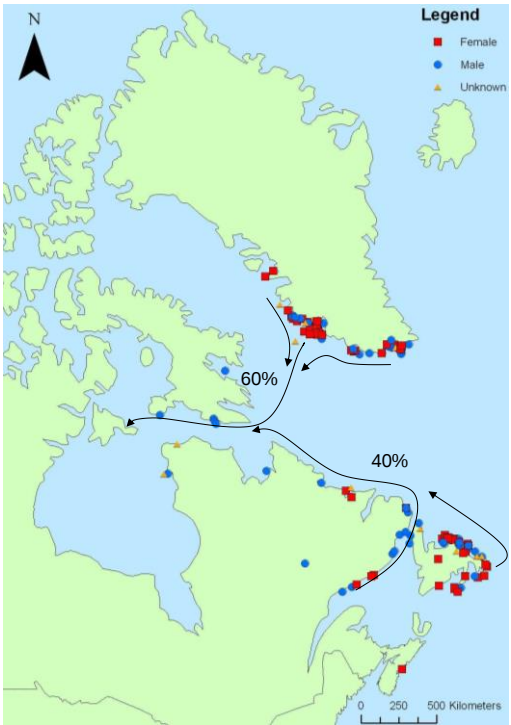


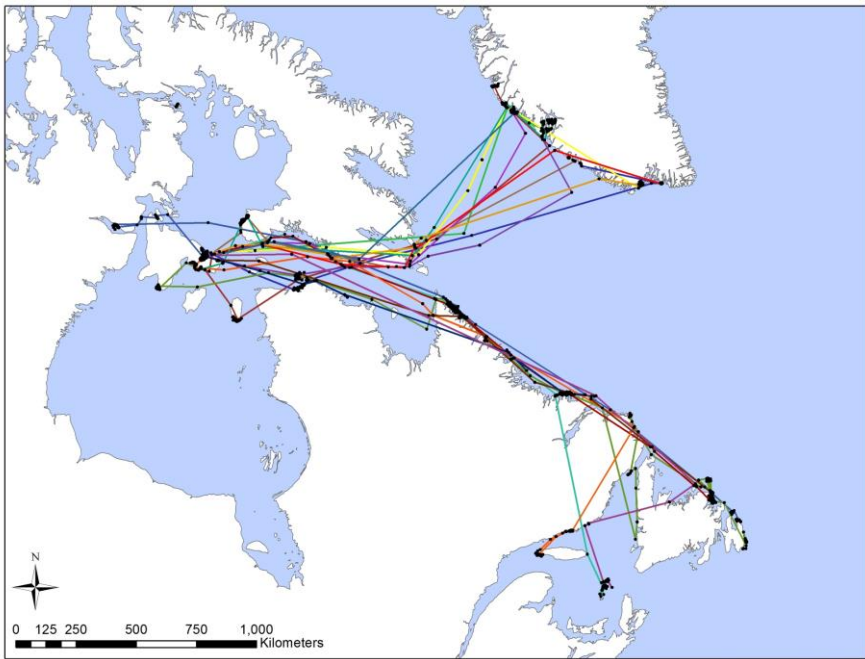




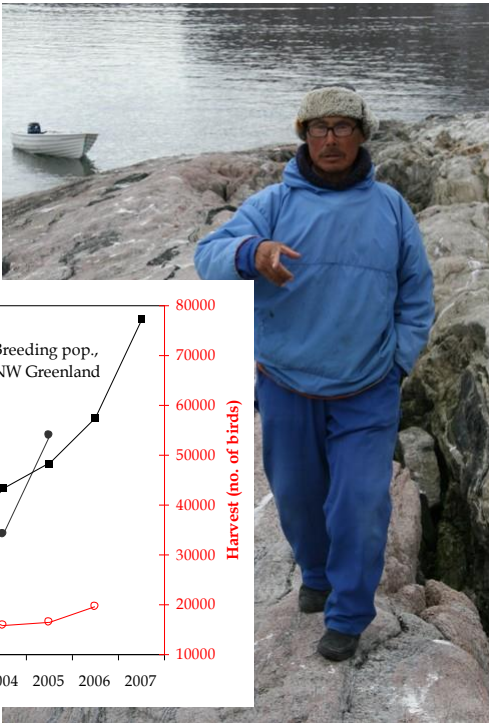


Band returns





Recent population increase in
Canada and Greenland
apparently linked to harvest
reduction

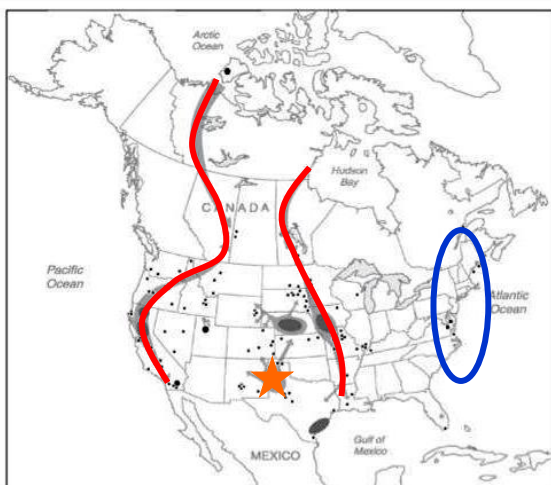




Disease

31

History of avian cholera in N.A.



- First in Texas 1944
- Northward spread along migratory routes of water fowl
- **Serotype 1** dominated in central & western flyway
- **Serotype 3 and 3x4** dominated in eastern flyway until 2000

32

Samuel et al. 2007



Avian cholera in Eiders

- 1963:
 - Maine
- 1964 – 2011:
 - St. Lawrence River colonies (cyclical at least since 1984)
- 2004 first detection in Arctic Eiders
 - 2004 – 2011 :
 - Ungava Peninsula (sporadic)
 - East Bay Island (annual)

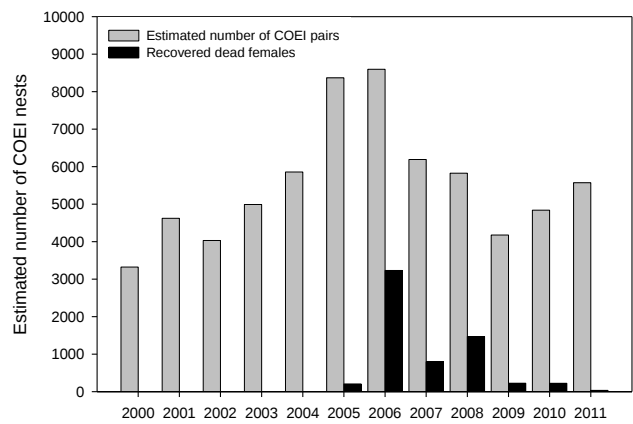
Local Ecological Knowledge – Eiders and disease



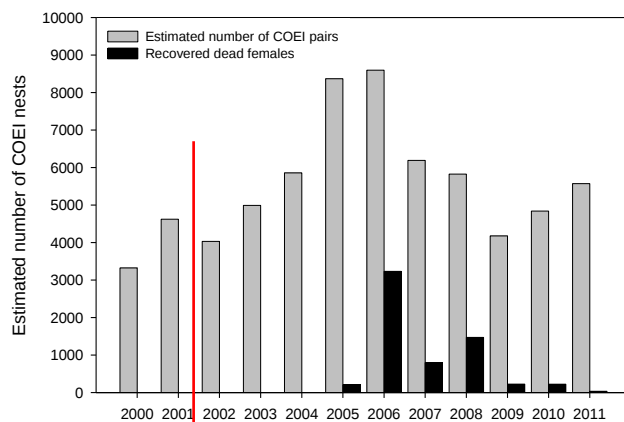
Disease dynamics: Methods



35

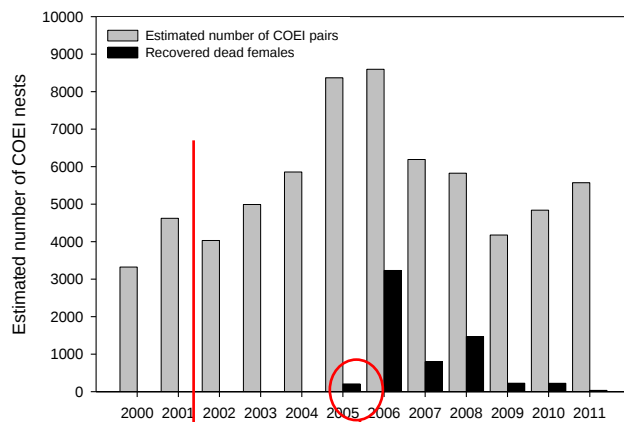


36



Change in harvest regulations

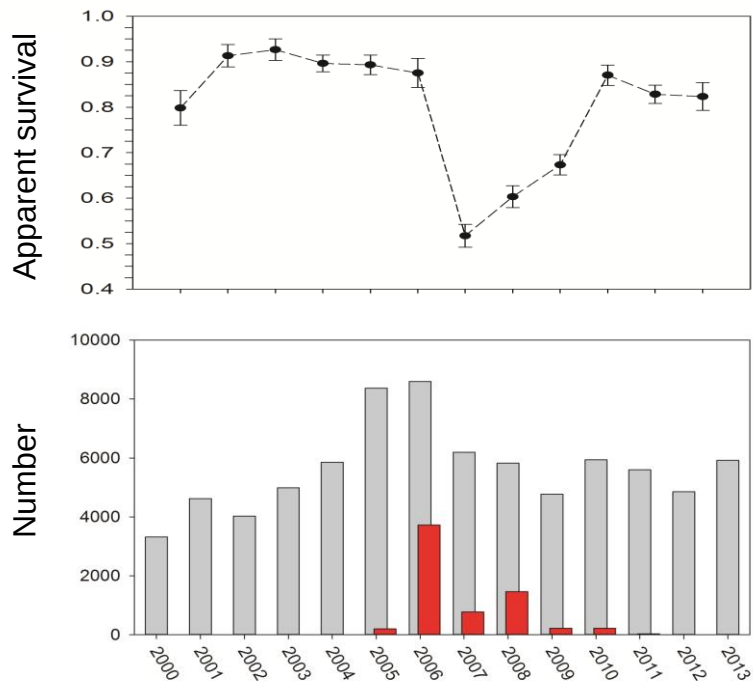
37



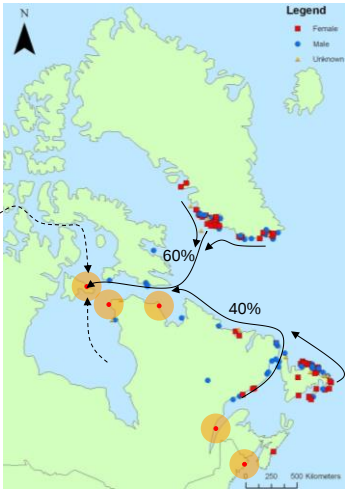
Avian cholera 1st confirmed

Change in harvest regulations

38



Eider Migration

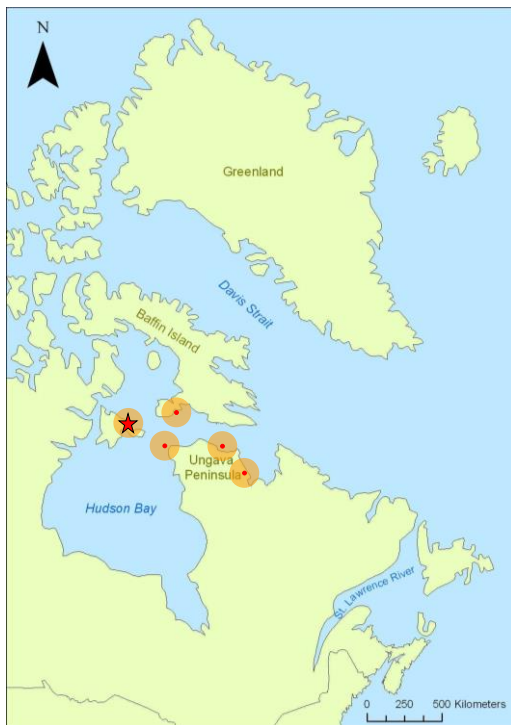


41

Herring Gull Migration

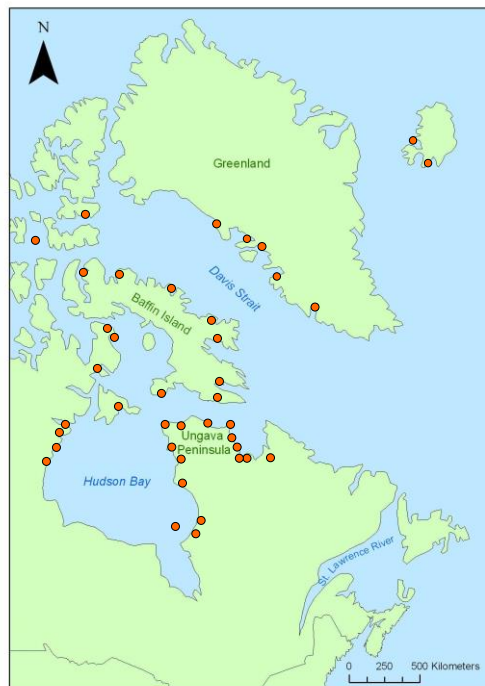


42



Avian cholera in Eiders

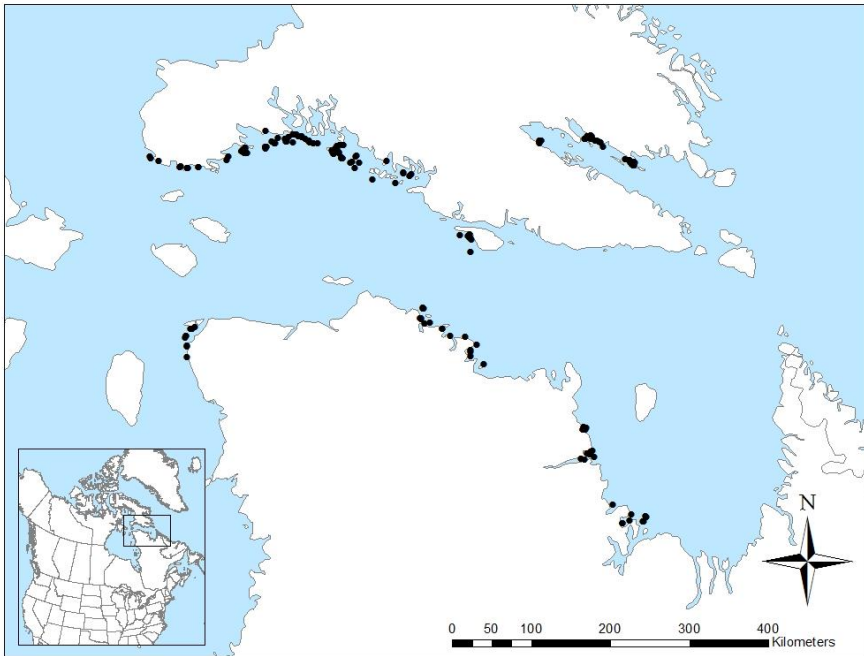
- Expanded monitoring and disease surveillance
- Detection of new issues





45



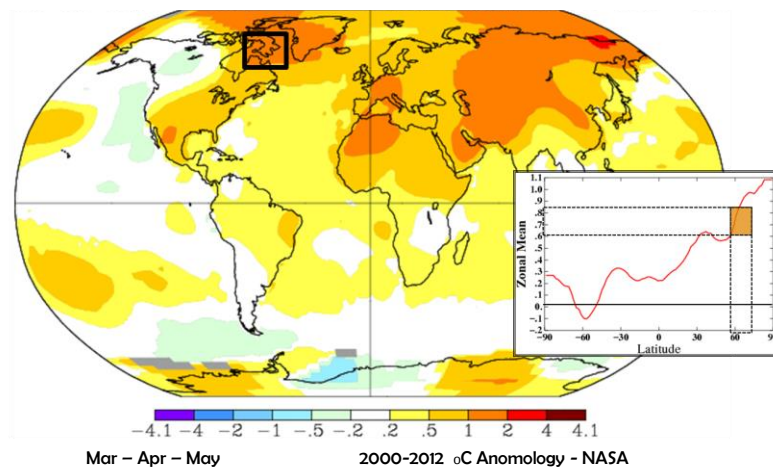




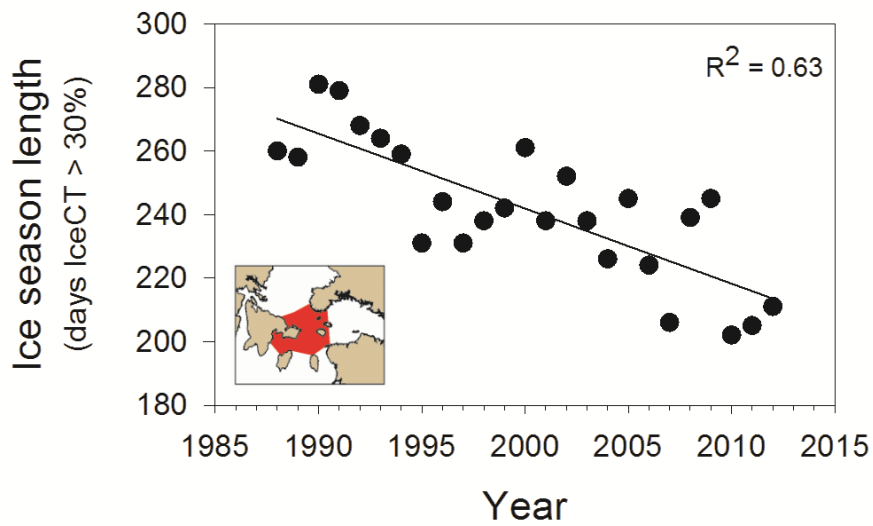
Predation

49

Eastern Canadian Arctic Temperature Change



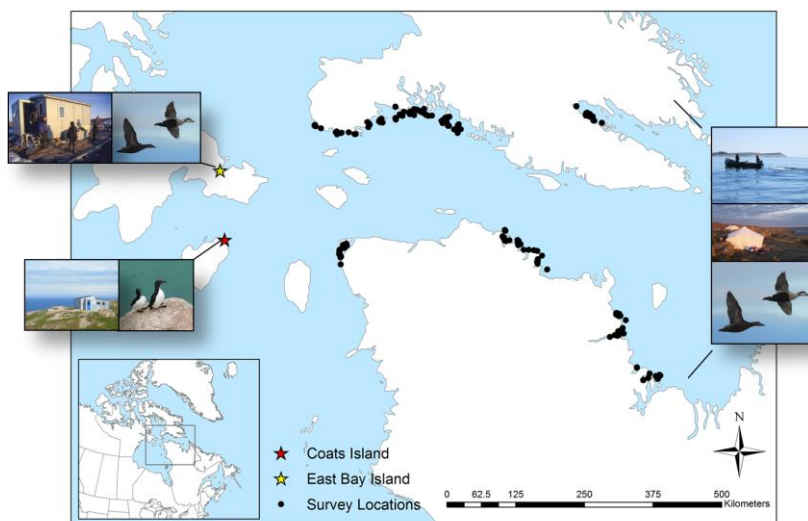
50

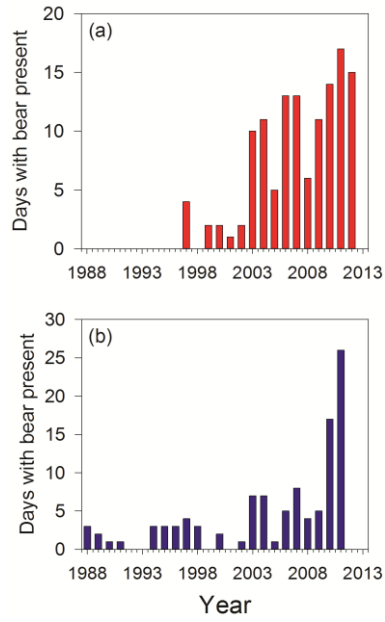


51

Iverson et. al., 2014. *Proc Roy Society*

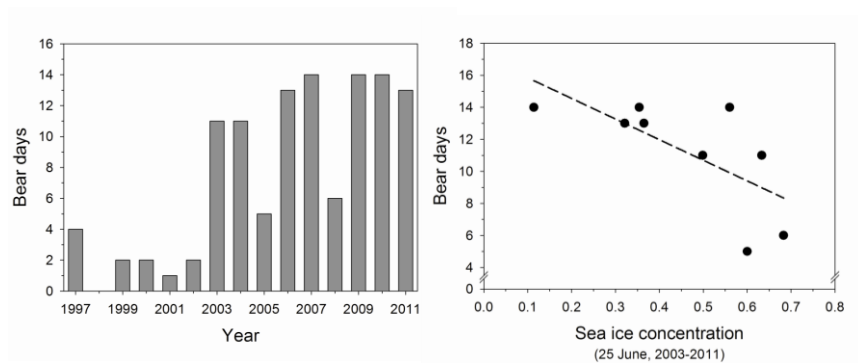
Study Area





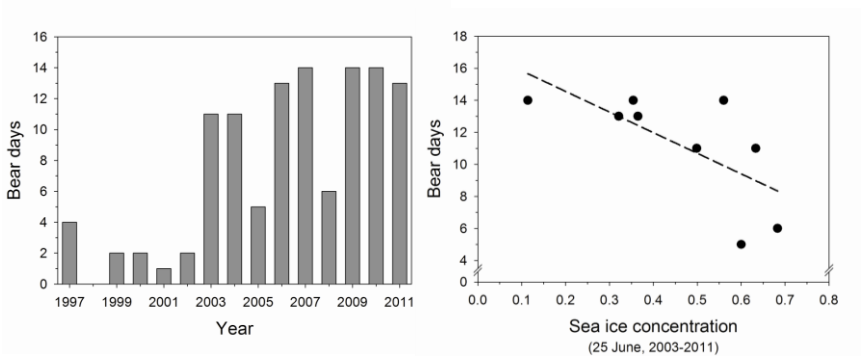
53

Iverson et. al., 2014. *Proc. Royal Society*



54

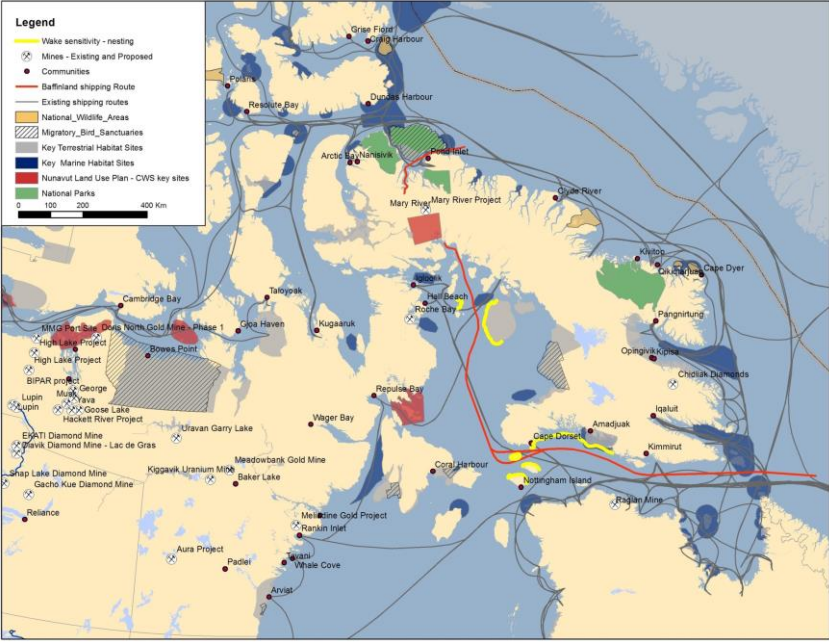
We See More Bears on Colonies During Years with Early Ice Melt



55



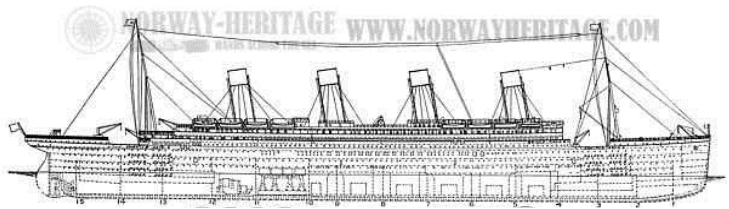
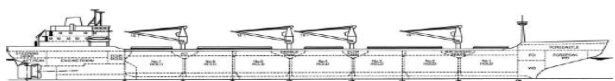
56

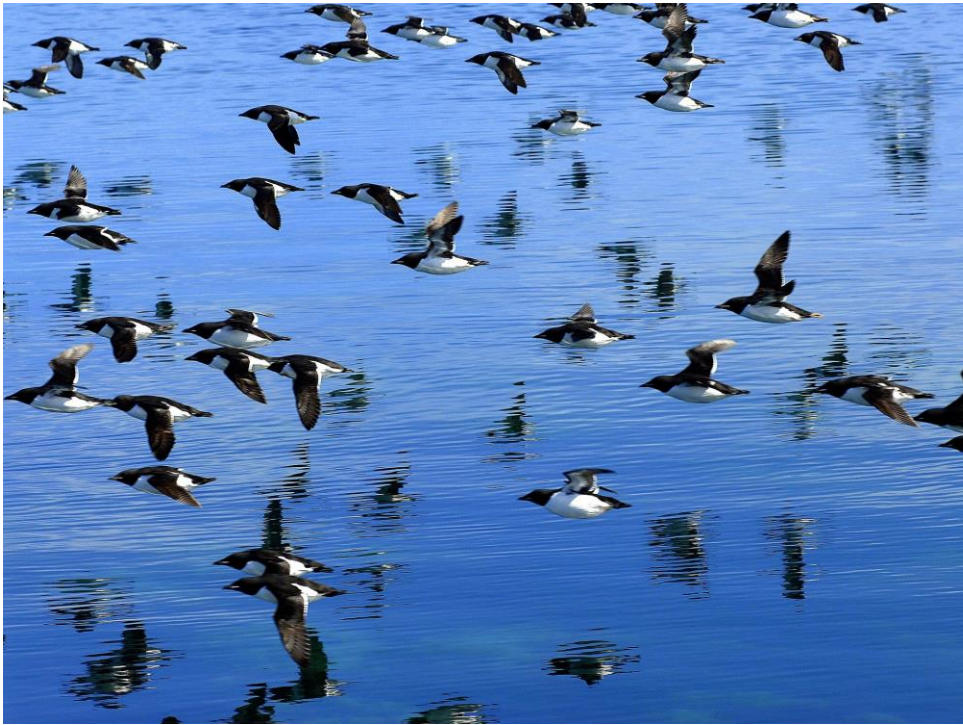


Proposed ±190,000 DWT Capacity Ice-breaker



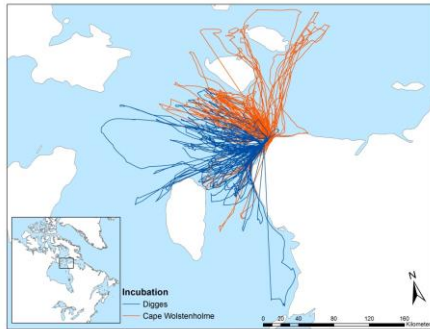
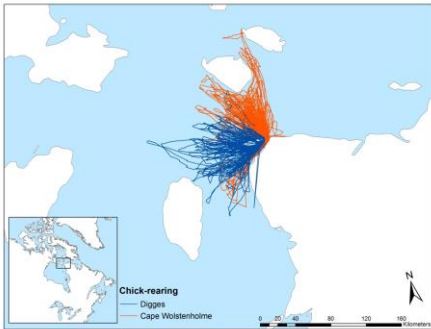
28,000 DWT Capacity MV Arctic (Owned and Operated by Fednav)





Thick-billed Murres – a cliff-nesting seabird

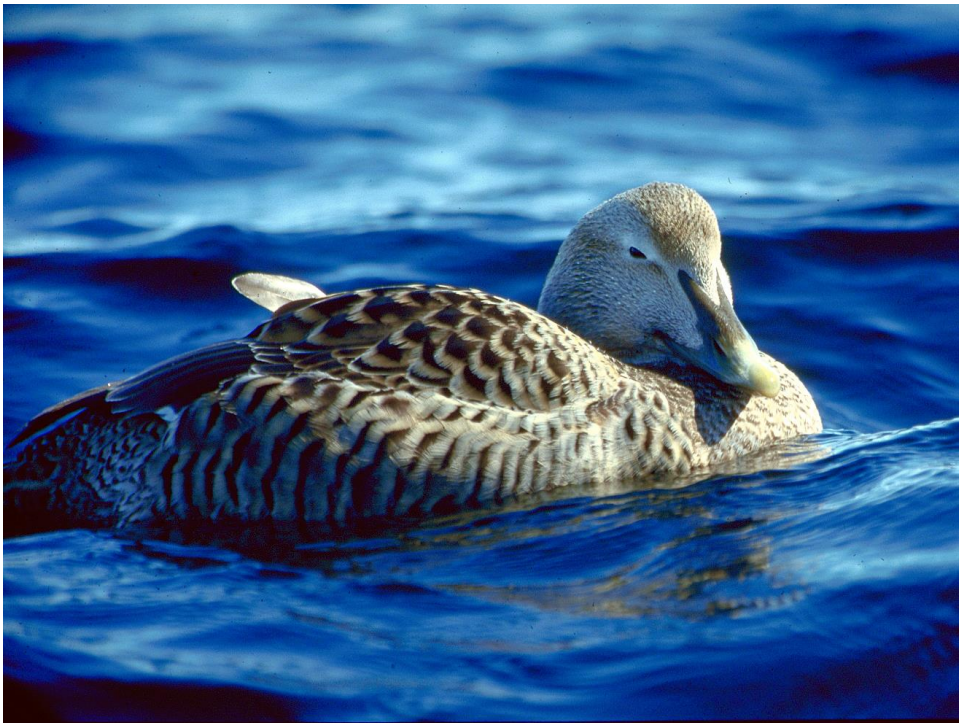




In closing ...

- Harvest, disease, and sea ice influence eider reproduction and survival
- Interactions are complex, interesting, and evolving
- Long-term studies – many results and contributions cannot be foreseen
- The value of great people and diverse collaborations

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[illegible]

-

Overabundant Snow Geese?

ᐅᓄᓗᐱᓕᓂᓴᓯᓐ ᑲᓴᐅᓐ ᓴᓕᓴᓯ?







Need to understand HOW geese might affect shorebirds
 ጋዖሪኪሳኔጋጋር ኔጋሪር ህጋዊ ልጋጋሙሪ ሪኪሳራሙ

- Habitat damage?
- ሲኔርሲክ ሪኒርጋሙሪ?
- Fewer bugs (shorebird food)?
- ናጋሪክጋሪኔጋጋር (ሪኪሳራሙ ሙሪ)?
- More predators?
- ሙሪኔጋሪ ልጋሪጋሪኔጋጋር?
- Is it a problem? If so, how big of a problem?
- ልጋሪከሪከጋጋር ኔጋሪር ልጋሪከሪ?



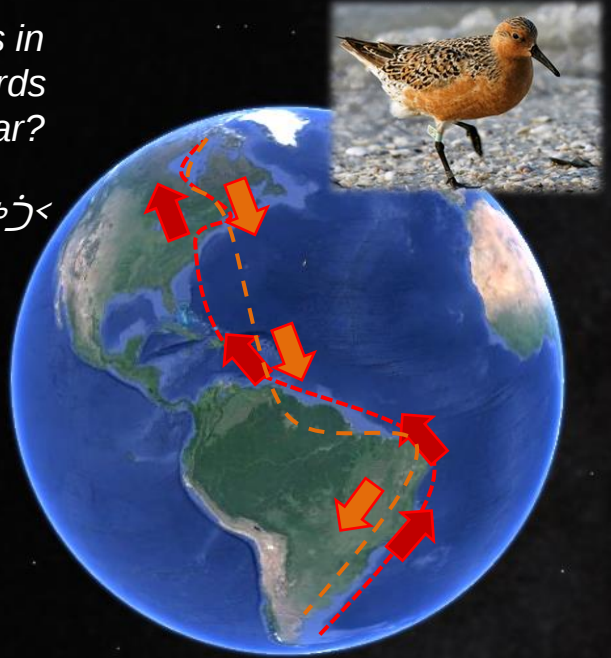
Some early results: ርዕሪከጋጋር ሪጋጋር:

- 3x fewer shorebirds inside/near goose colonies than outside
- 15x more predators inside colonies
- More shorebird nests lost to predator inside colonies
- 3-ሲኔርሲክ ልጋሪጋራሙሪ ሪኪሳራሙ ልጋሪጋራሙሪ ኔጋሪር ልጋሪጋራሙሪ
- 15-ሲኔርሲክ ልጋሪጋራሙሪ ሙሪኔጋሪ
- ሙሪጋራሙሪ ልጋሪጋራሙሪ ሙሪኔጋሪ ልጋሪጋራሙሪ ኔጋሪር ልጋሪጋራሙሪ



How do conditions in
the North affect birds
throughout the year?

ኖብላር ልዩ ልዩ ስነ ምግባር
ሰር ስሪ
ሰር ስሪ
ሰር ስሪ
ሰር ስሪ
ሰር ስሪ
ሰር ስሪ



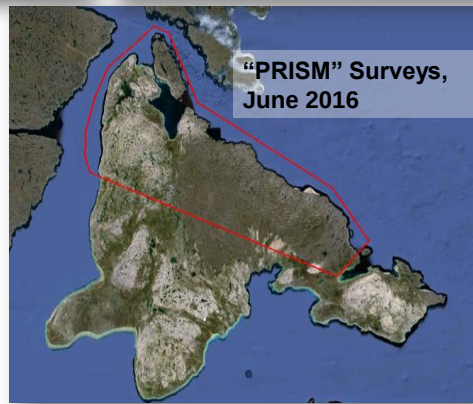
“ፊኖላር ልዩ ልዩ ስነ ምግባር”
“Geolocators”



Radio Telemetry: “Motus” ᐃᑦᑕᐅᑎᐃᑦ ᐃᑦᑭᑦᑕᑦ: “ᐅᑕᑦ”



- [2014 Red Knot results!](#)
- 2014 ᑭᐅᑦᑕᑦ ᑦᑕᐅᑭᑦᑕᑦᑕᑦ!

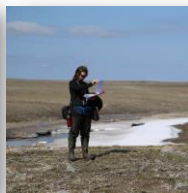




**መከላከያ ልማት ክልላዊ ክልል
ክልላዊ ክልል
ክልላዊ ክልል**

**Project Proposal:
Linking IQ and Science for
Goose Management**

- ከክልላዊ ክልል ክልላዊ ክልል
ክልላዊ ክልል ክልል
ክልላዊ ክልል ክልል
- ክልላዊ ልማት ክልላዊ ክልል
ክልላዊ ክልል ክልል
ክልላዊ ክልል ክልል
- ክልላዊ ክልል ክልል
ክልላዊ ክልል ክልል
- We propose a collaboration between scientists and Coral Harbour residents to:
 - Combine IQ and scientific results to better understand effects of geese on other birds
 - Work together to develop management recommendations for geese



- ፊደላት ለጥናታዊ ምርመራዎች የሚያስፈልጉትን ንግድ ይጨምሩ፡ *የዲፍረንሶች ልዩነት የሚኖርበትን ሁኔታ፣ የህይወት ልዩነት እና የፋይናንስ አጠቃቀም
 - ልዩነት የሚኖርበትን ሁኔታ፣ ዲፍረንሶችን ለማሸፍን የሚያስፈልጉትን የፋይናንስ አጠቃቀም (እኛ ወሰን 2017)
 - የፋይናንስ አጠቃቀም፡ ርዕሰ ሐሳብ፣ ልዩነት፣ ርዕሰ ሐሳብ፣ የፋይናንስ አጠቃቀም (ለፋይናንስ)
- This is something we would like to pursue: *need community support, and then funding*
 - If supported, we will seek NWMB funding in the next round (January 2017)
 - Project team: Dominique Henri, Vicky Johnston, Paul Smith, representatives from Coral Harbour (and Arviat)

