A polar bear is walking across a vast, flat expanse of sea ice. The ice is composed of numerous small, broken floes, creating a textured surface. The bear's fur is a mix of white and light brown, and its shadow is cast onto the ice ahead of it. The background shows a distant, hazy horizon under a pale sky.

Polar Bears in the Deep Offshore Regions of the Beaufort Sea: A Preliminary Study to Estimate Distribution and Density in Previously Under-Surveyed Areas

Norm Snow, Joint Secretariat

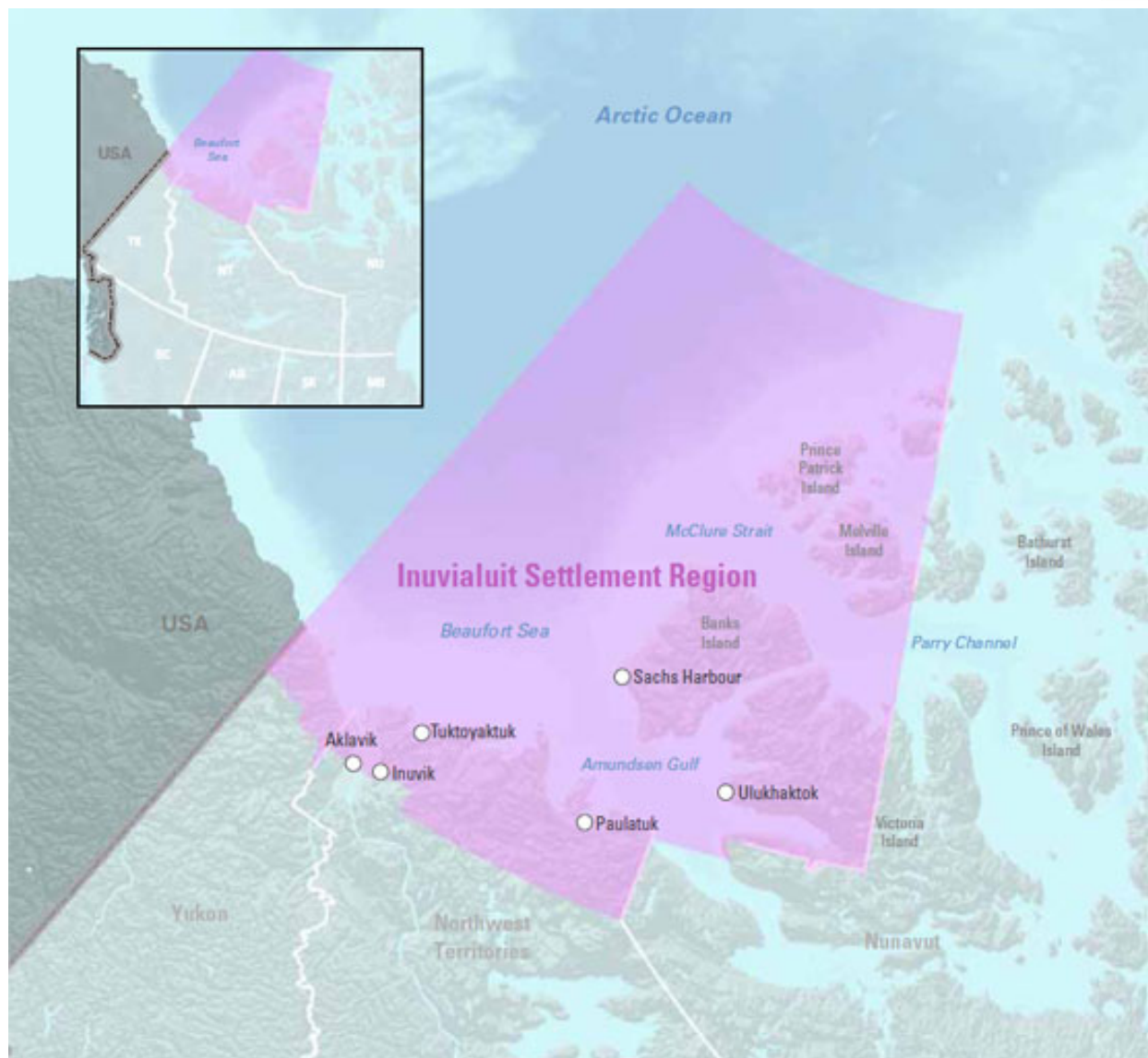
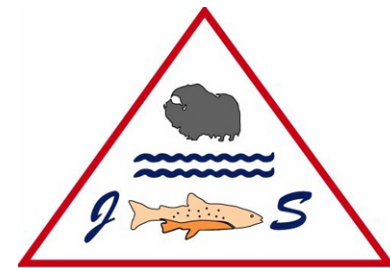
Filip Petrovic & Genevieve Carr, Aboriginal Affairs and
Northern Development Canada

BREA Results Forum

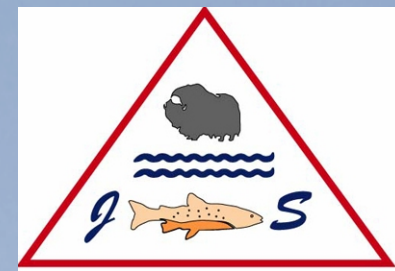
Inuvik, NT – February 21, 2013

Photo credit: Steven Amstrup

Inuvialuit Settlement Region

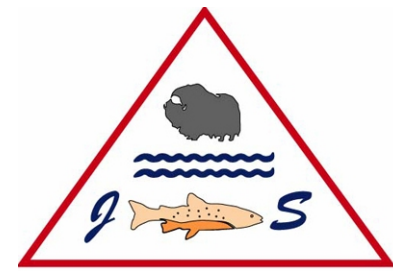


Joint Secretariat



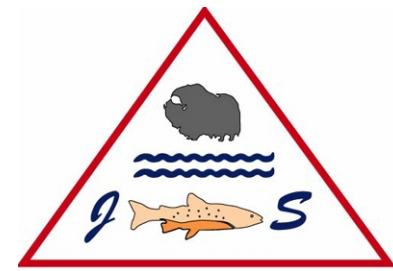
- The Joint Secretariat (JS) was established in 1986 to provide technical and administrative support to 4 of the 5 co-management bodies as well as to the Inuvialuit Game Council (IGC). The Joint Secretariat office is located in Inuvik, Northwest Territories.
- The 5 co-management bodies established pursuant to the IFA are:
 - Wildlife Management Advisory Council NWT (WMAC NWT) Fisheries Joint Management Committee (FJMC) Environmental Impact Screening Committee (EISC) Environmental Impact Review Board (EIRB) * *Wildlife Management Advisory Council North Slope (WMAC NS)*

International Polar Bear Management Agreement

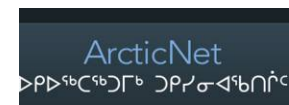


- The Inuvialuit, along with the Inupiat of Alaska, are signatories to the International Polar Bear Management Agreement(1988).
- The main objectives of this agreement include maintaining a healthy viable population of polar bears in the southern Beaufort Sea, to identify research priorities and review the best information available, including scientific and traditional knowledge in order to make recommendations for polar bear research and management.
- This progressive agreement has served as a model for other management agreements of shared polar bear populations.

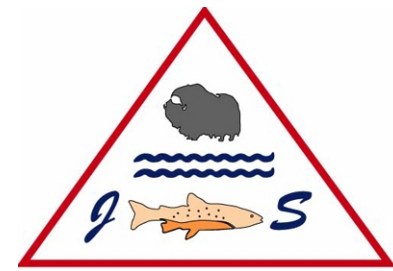
Beaufort Regional Environmental Assessment (BREA, 2010-2015)



- A partnership among Inuvialuit, industry, governments, regulators and academia to prepare for oil and gas activity in the Beaufort Sea:
 - Building a strong knowledge base to support efficient and effective regulatory decisions
- Goals:
 - Produce regional scientific and socio-economic information to simplify project-level environmental assessments
 - Strengthen integrated management
 - Engage communities and advance their priorities for oil and gas preparedness

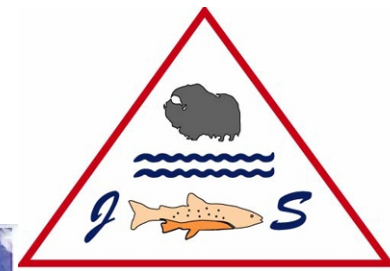


Motivation for Polar Bear Study

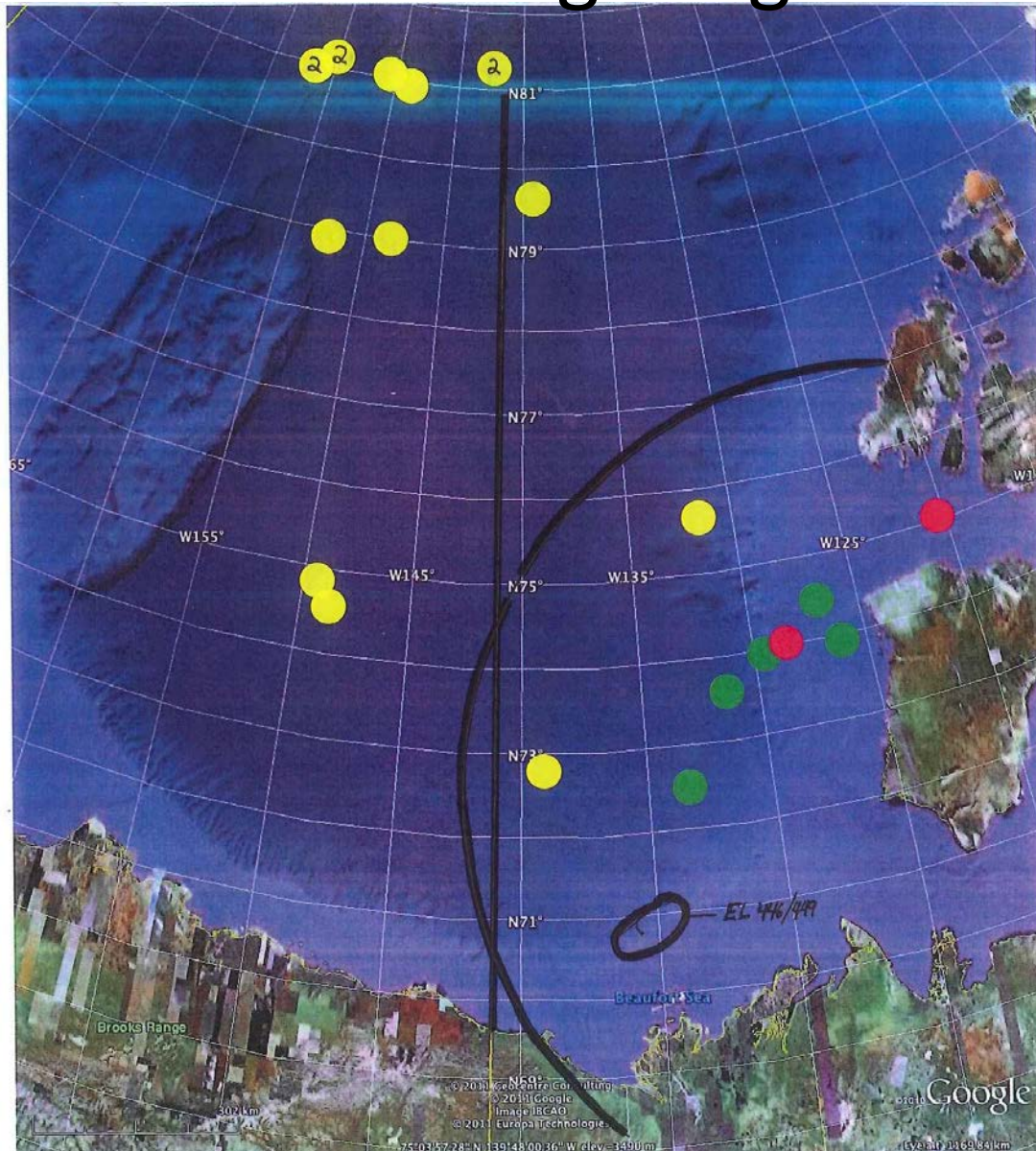


- The potential presence of polar bears in the deep waters of the offshore Beaufort Sea has been a longstanding interest and concern of Inuvialuit communities.
- This concern has been elevated with the current interest in oil and gas development in the area.
- Estimates of bear density in the offshore region of the Beaufort Sea will enable regulators to better understand potential effects of offshore oil and gas development activities on these marine mammals.
- At the same time, results from this study will help guide further studies into polar bear population structure in the Beaufort Sea, eventually leading to a longer-term understanding of bear biology.

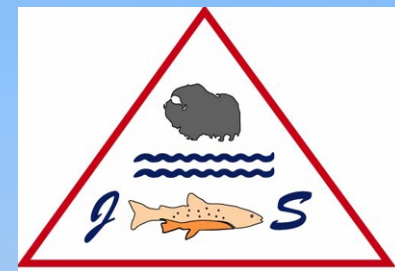
Incidental Polar Bear Sightings



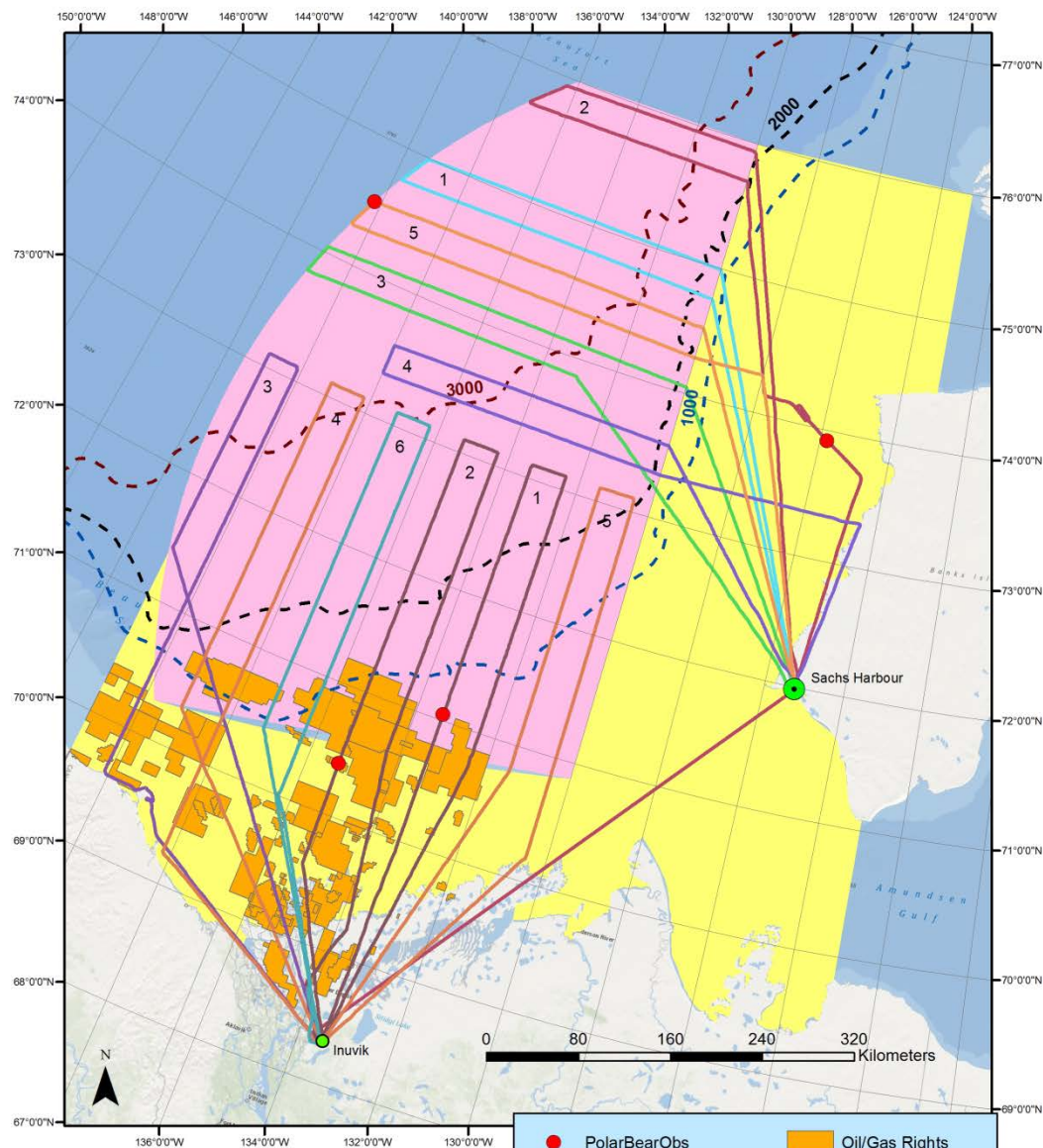
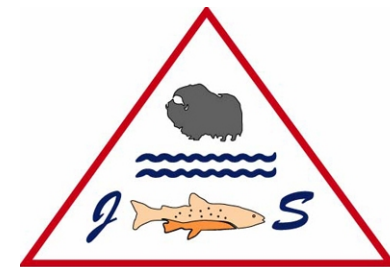
- GXT observations (2010)
- NRCan observations during UNCLOS work (2009-2010)
- Wildlife monitor observations from CFL study (2007-2008; selected observations only)



Aerial Survey for Polar Bears in the Northern Beaufort Sea



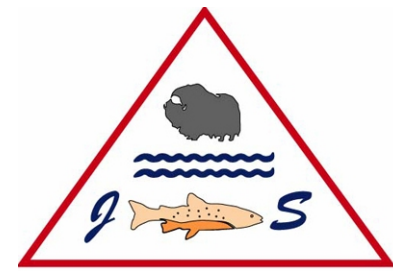
- Preliminary study to estimate the distribution and density of polar bears in a previously under-surveyed offshore area of the Beaufort Sea.
- Aerial surveys over multiple days along line-transects in the region.
- A total of 7776 km was flown "on-transect" in late March 2012 in a fixed-wing aircraft containing 4 observers and 2 pilots.



Data Source: AANDC, ESRI
 Projection: Lambert Conformal Conic
 Coordinate Reference System:
 NAD 1983 Northwest Territories Lambert
 Created by: GPG Date: 2 Aug 2012

- | | |
|-----------------------------|------------------------|
| ● PolarBearObs | ■ Oil/Gas Rights |
| — Transect Routes (per day) | - - - 1000m bathymetry |
| Study Areas | |
| ■ Offshore Stratum | - - - 2000m bathymetry |
| ■ Nearshore Stratum | - - - 3000m bathymetry |
| | ● Sachs Harbour |

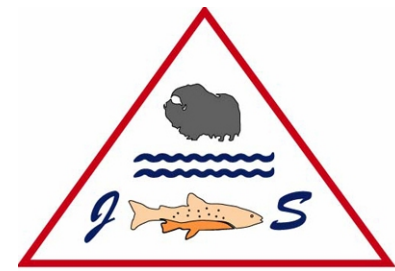
Polar Bear Sightings



- A total of 4 polar bears (2 adult females and 2 yearlings) were sighted in two groups in the study area.
- Outside the study area, an additional 5 bears (2 adult females, 1 yearling, 2 cubs of the year) were sighted.
- The number of bears in the study area during late March was estimated to be approximately 124, which equates to a density of 0.061 bears per 100 km².



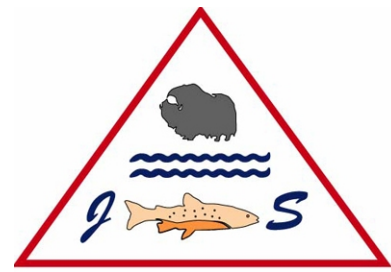
Community Priority – Polar Bears in the Offshore



- The study was developed, conducted & analyzed in partnership with
 - Environment Canada
 - University of Alberta
 - Joint Secretariat / Game Council
 - Aboriginal Affairs and Northern Development Canada
 - Government of the Northwest Territories
 - Government of Yukon
 - ISR community members
 - Dennis Andriashek
 - West Inc. Consultants

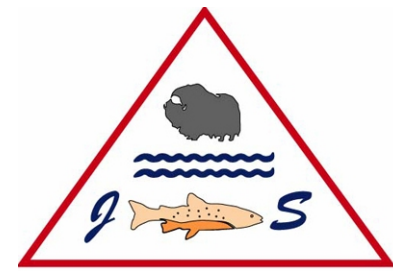


Complementary Study in the Southern Beaufort Sea

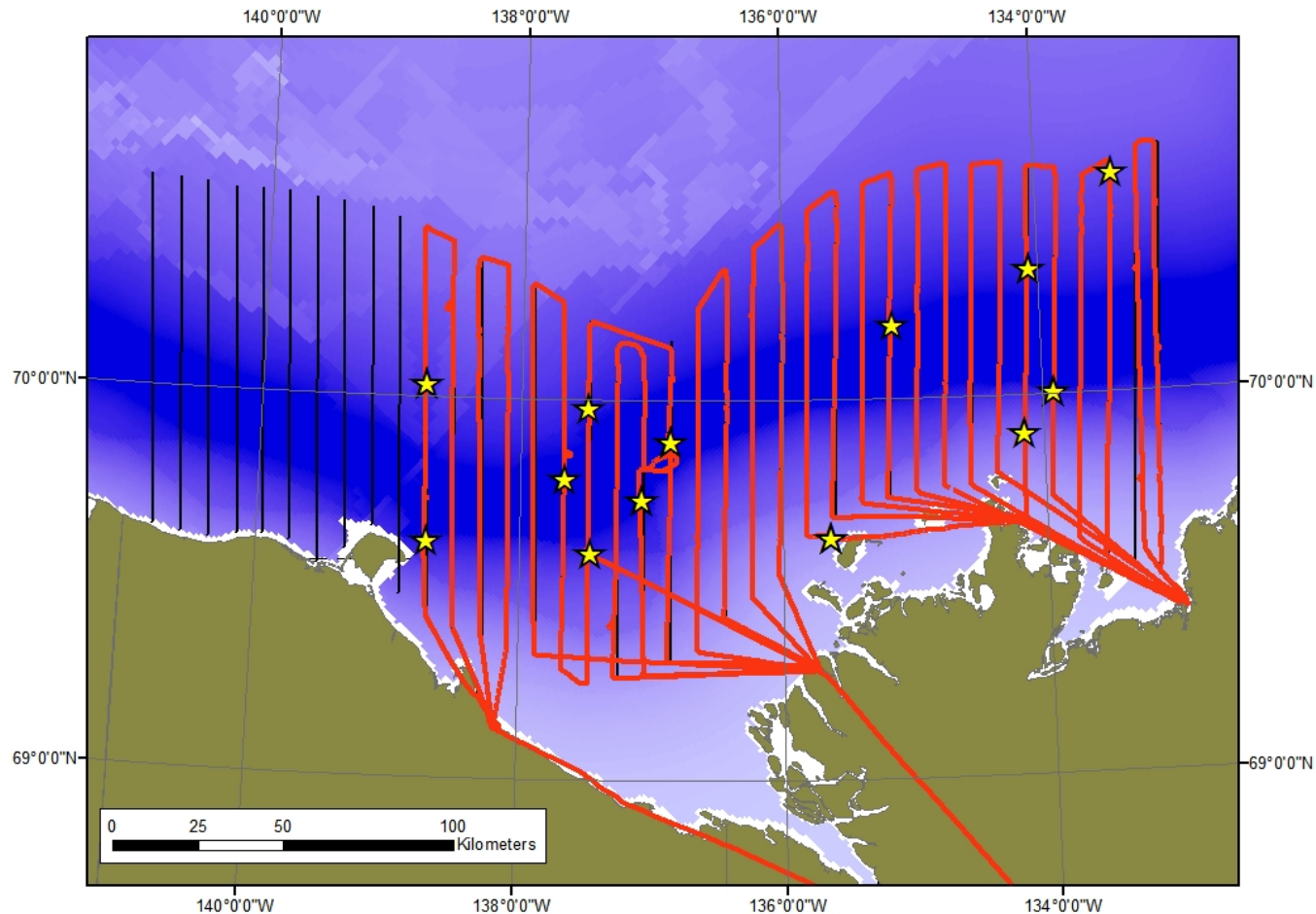


- Yukon, NWT, USGS joint study to evaluate feasibility of aerial survey
- Study area: nearshore ice
- Survey conducted around the same time as the offshore survey

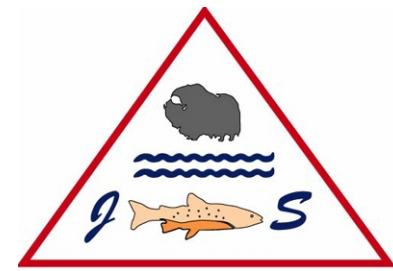
Yukon/NWT/USGS Results



- 3000 km of survey flights
- 12 groups (21 individuals) spotted on-effort
- Maximum distance bears sighted offshore: 100 km



Next Steps



- Future surveys should consider allowing the aircraft to go off-transect when fresh tracks are sighted in an effort to find the bear.
- If allowed, it would be important for the aircraft to follow tracks both forward and backward until either the bear is sighted, the tracks disappear, or the aircraft crosses a neighboring transect line.
- This modification to the survey protocol would likely result in more bear observations.
- Analysis of such data would likely estimate the probability of including a bear as the probability of seeing a track times the length of the track's perpendicular projection onto the study's baseline.



THANK YOU