

High Arctic Cetacean Survey



Progress report – June 10, 2014
Steve Ferguson, Kevin Hedges (C&A)
Thomas Doniol-Valcroze (Quebec)

Why the survey was needed

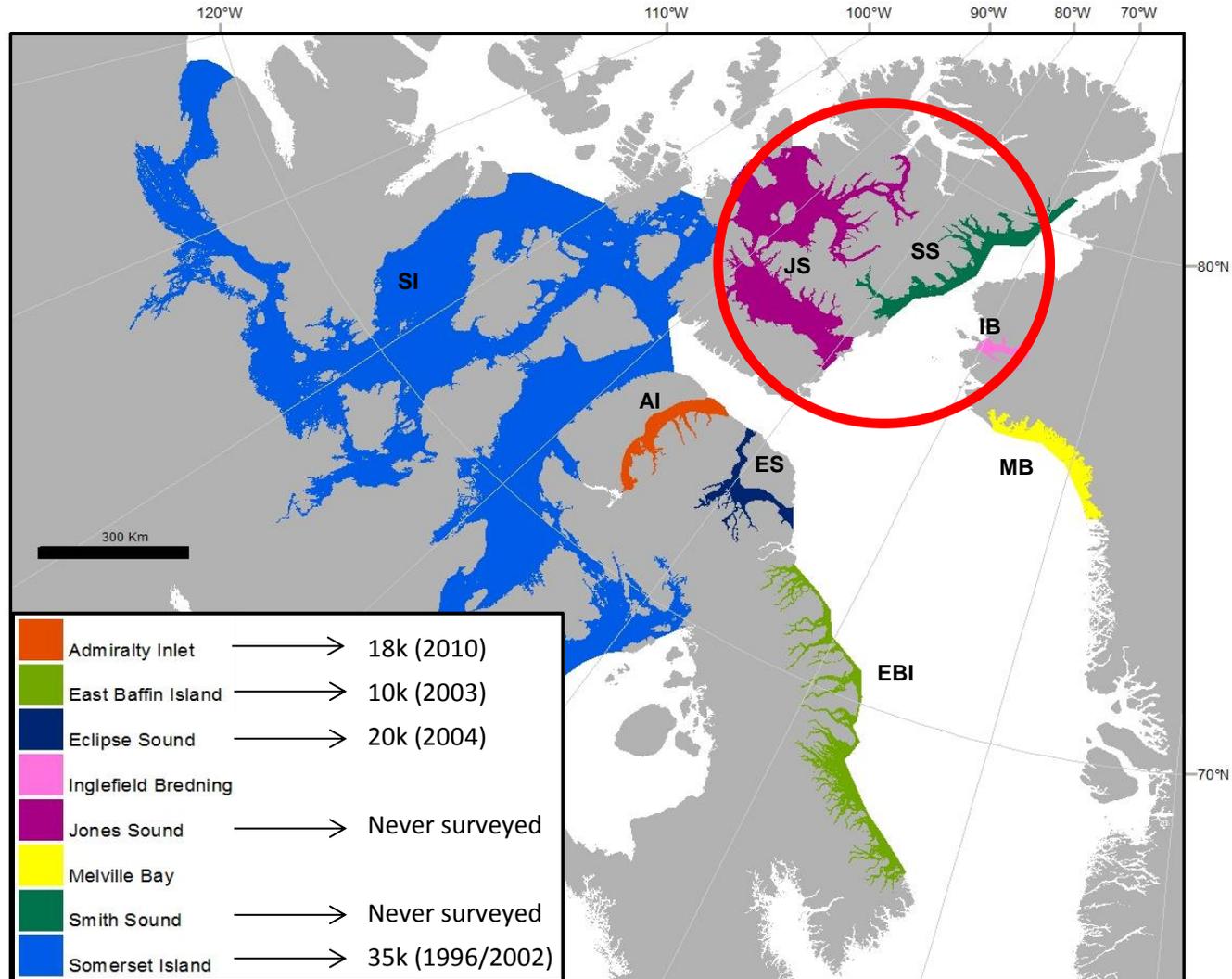
- 2002 bowhead whale abundance estimate was not precise and needed to be updated.
- Narwhal abundance estimates were old (e.g., Somerset Island stock last surveyed in 1996)
- Never have all narwhal stocks been surveyed during the same summer with evidence of possible movements between summer aggregations
- The Convention on the International Trade of Endangered Species (CITES) science authority could not issue non-detrimental finding (NDF) letters for Grise Fiord narwhal stock(s) due to lack of evidence demonstrating sustainability of the harvest, thereby restricting the international trade in tusks
- Increased national and international interest in how the narwhal fishery in Nunavut is managed

Why we need to continually update narwhal science for management

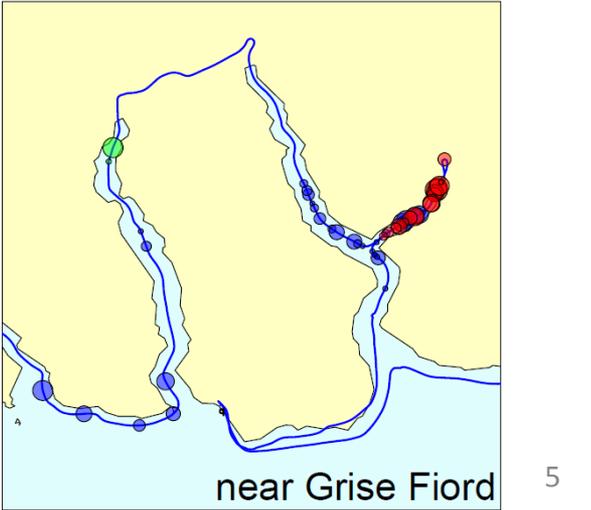
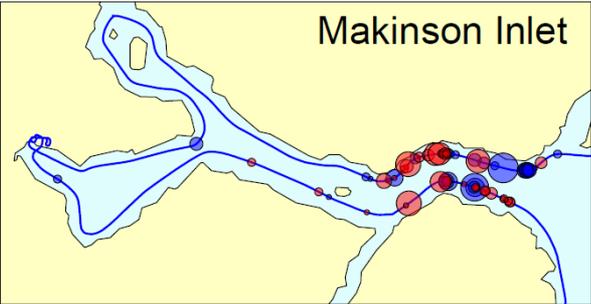
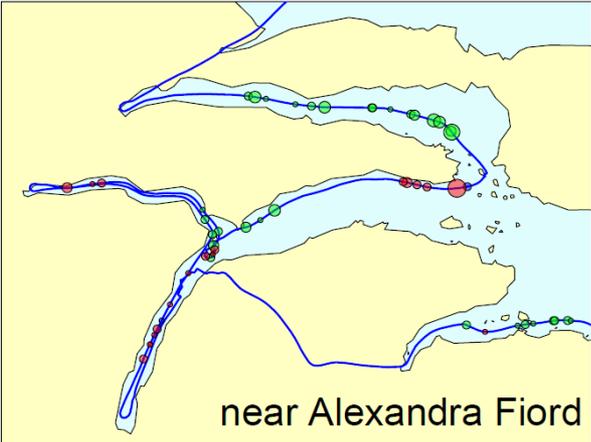
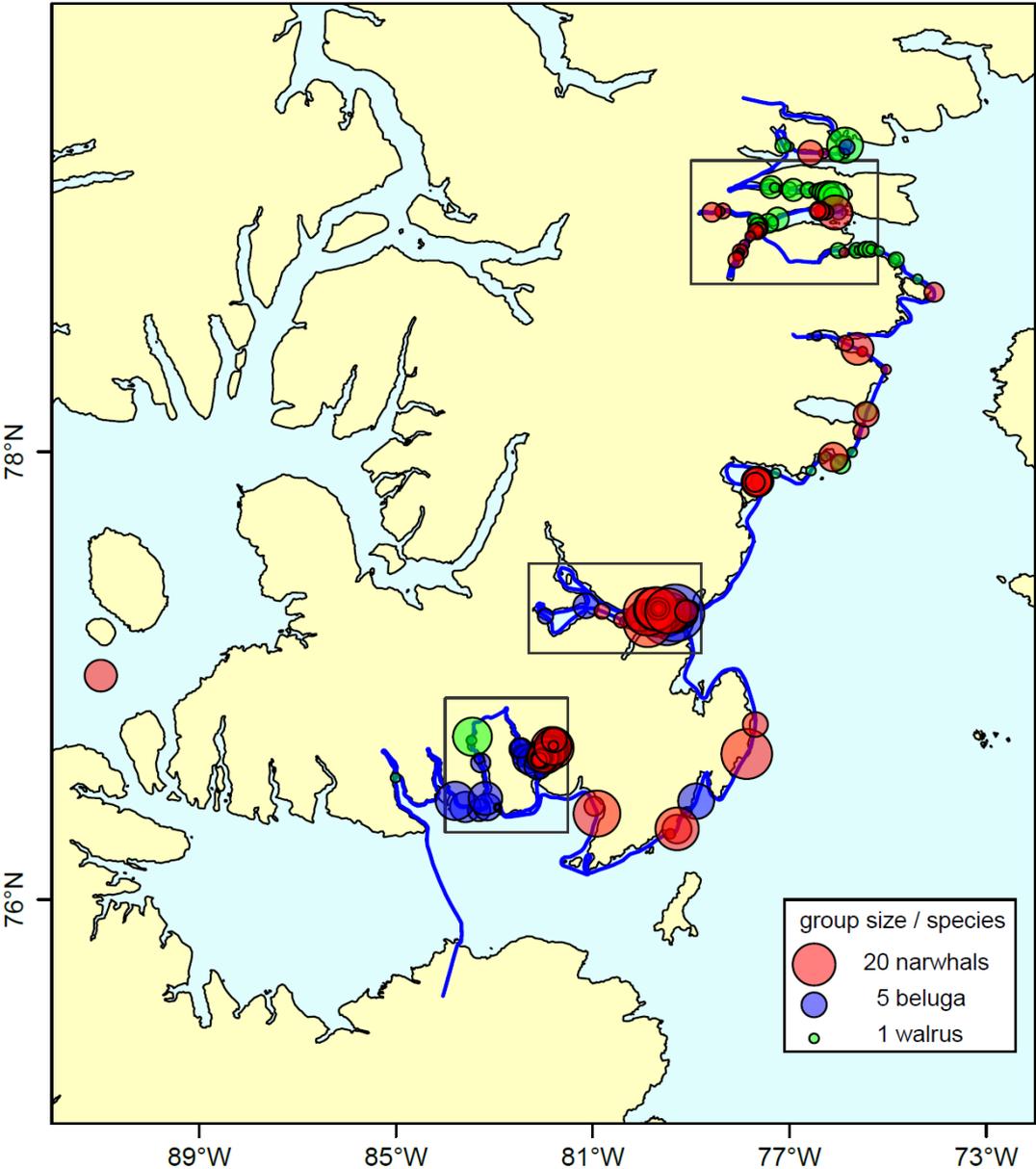
- Convention on International Trade in Endangered Species (CITES) ongoing
- Requires demonstration of sustainable harvesting
- Strengthen narwhal co-management consistent with the Nunavut Land Claims Agreement
- Incorporate best available scientific and Inuit knowledge to ensure internationally shared harvest is sustainable



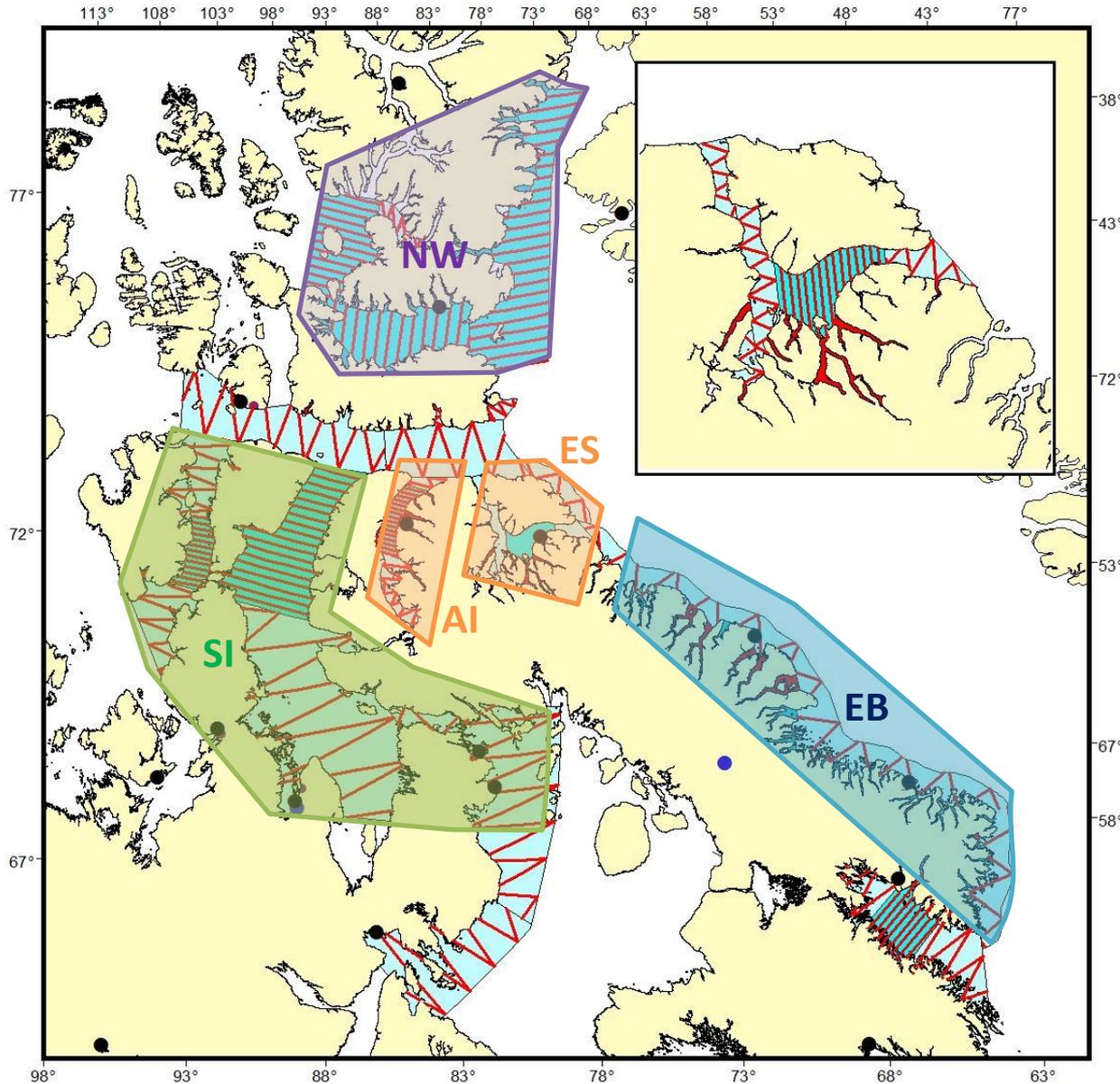
Sub-group of the NAMMCO-JCNB Joint Scientific Working Group met 10-12 March 2014 in Copenhagen, Denmark to develop catch allocation model. They decided to consider the following narwhal summer aggregations:



2012 reconnaissance



Survey design



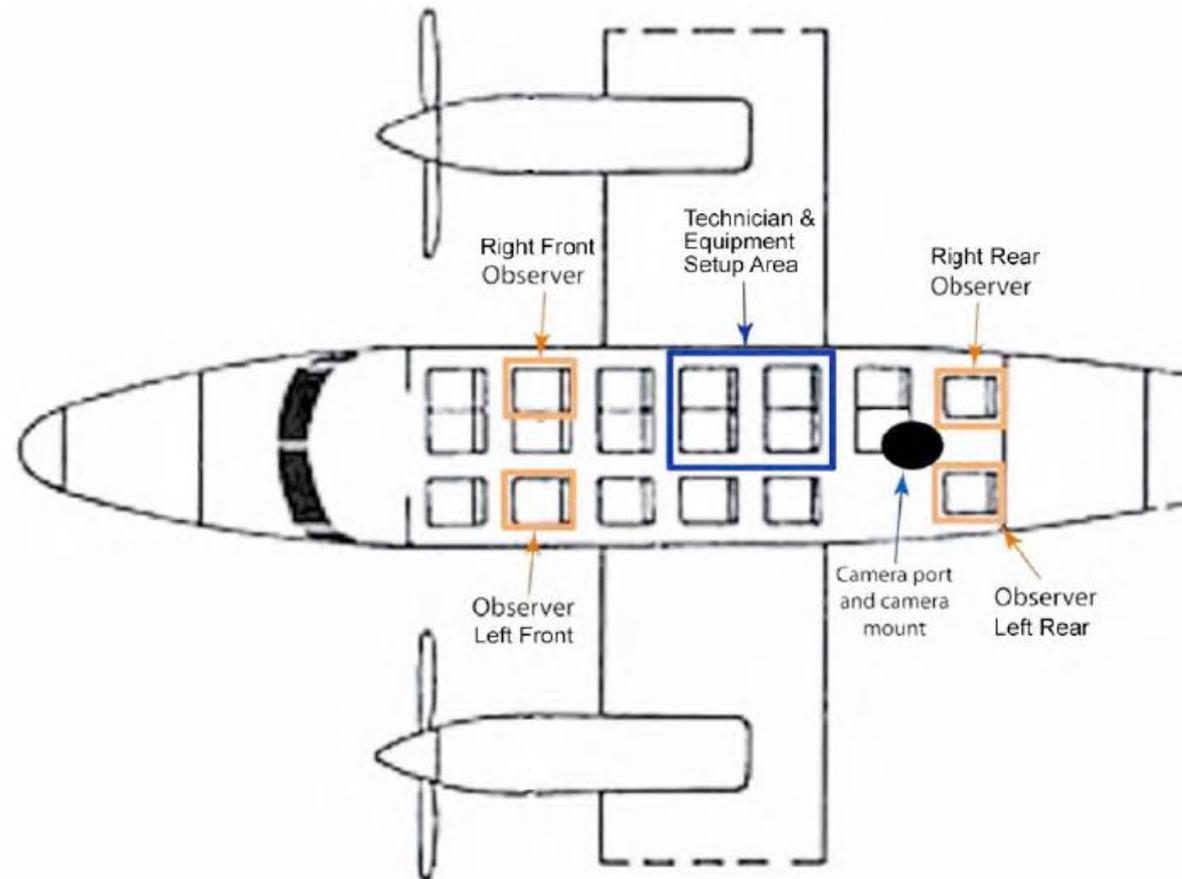
- Cover summer ranges of all stocks simultaneously
- Include bowhead range
- Increase coverage to reduce uncertainty
- Based on previous surveys, satellite tags and traditional knowledge
- Include fiords
- Short window of opportunity (weather + narwhal migration)

Survey logistics

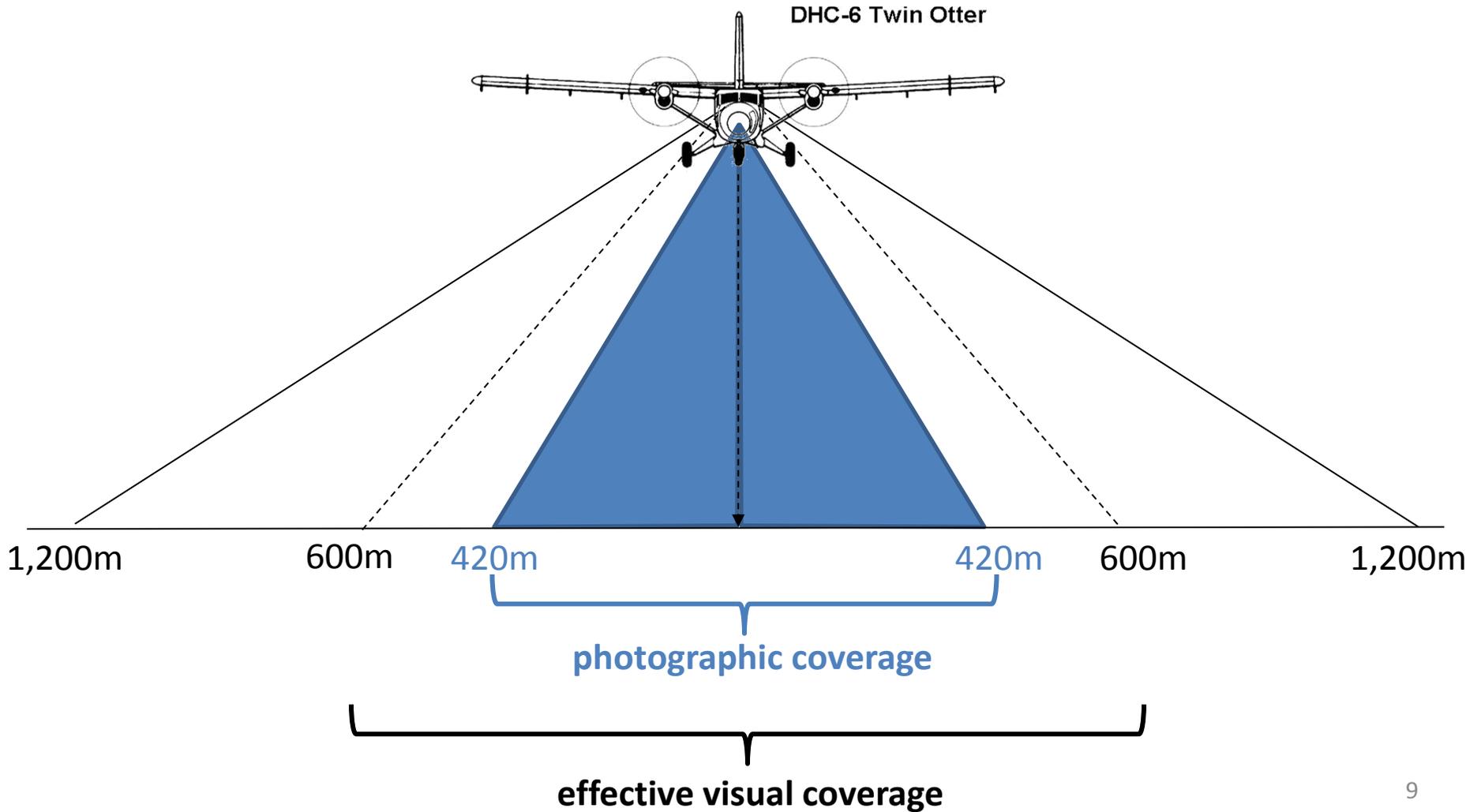
- 3 Twin-Otters x (4 observers + 1 operator + 2 cameras)
- Visual (double-platform) + photographic
- 2 days of in-flight training and calibration



Survey logistics



Survey logistics



Community involvement

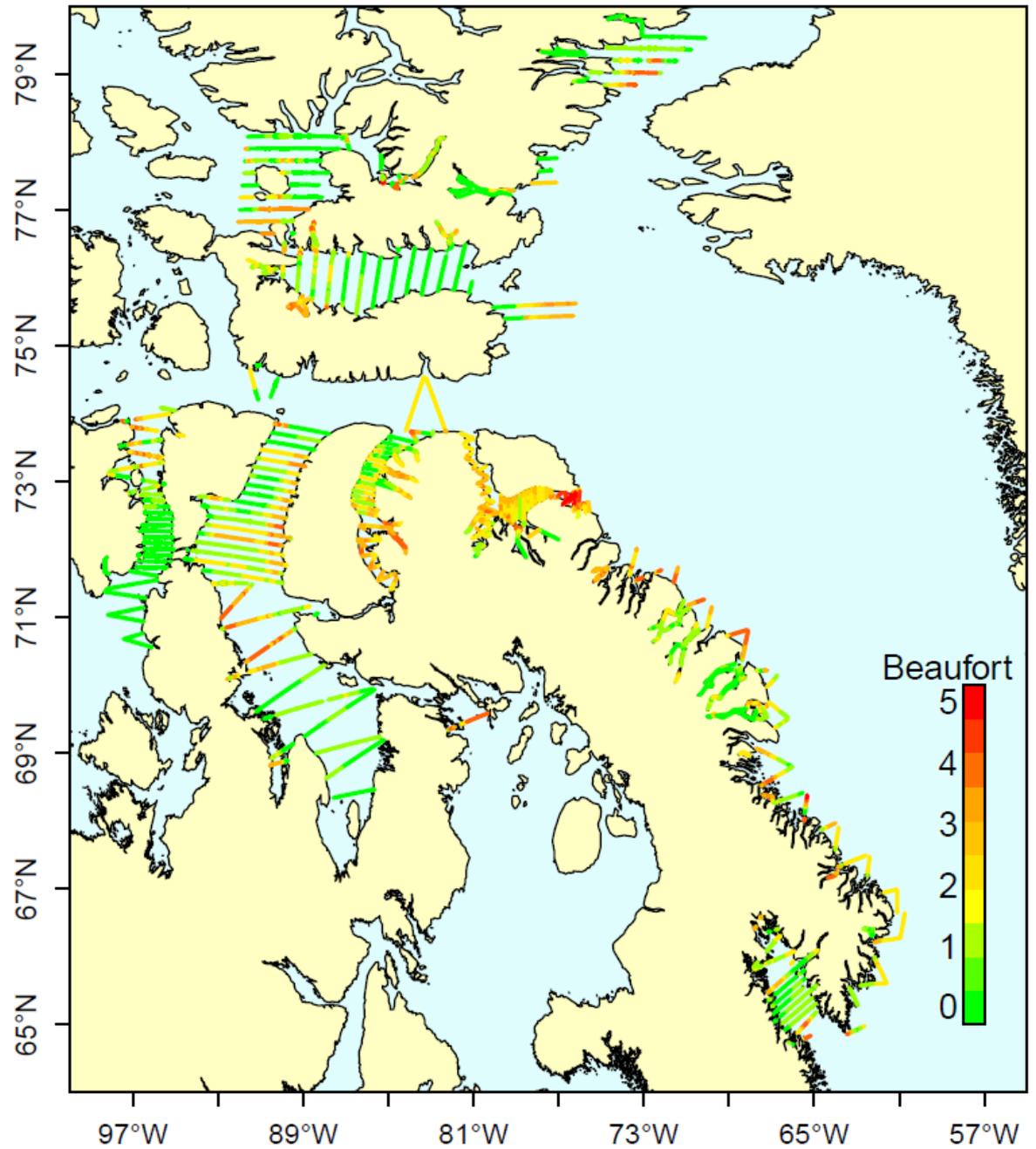
- 3 observers + 2 back-up (all received training)
- Collected data as observers
- Also invited HTO members from all communities



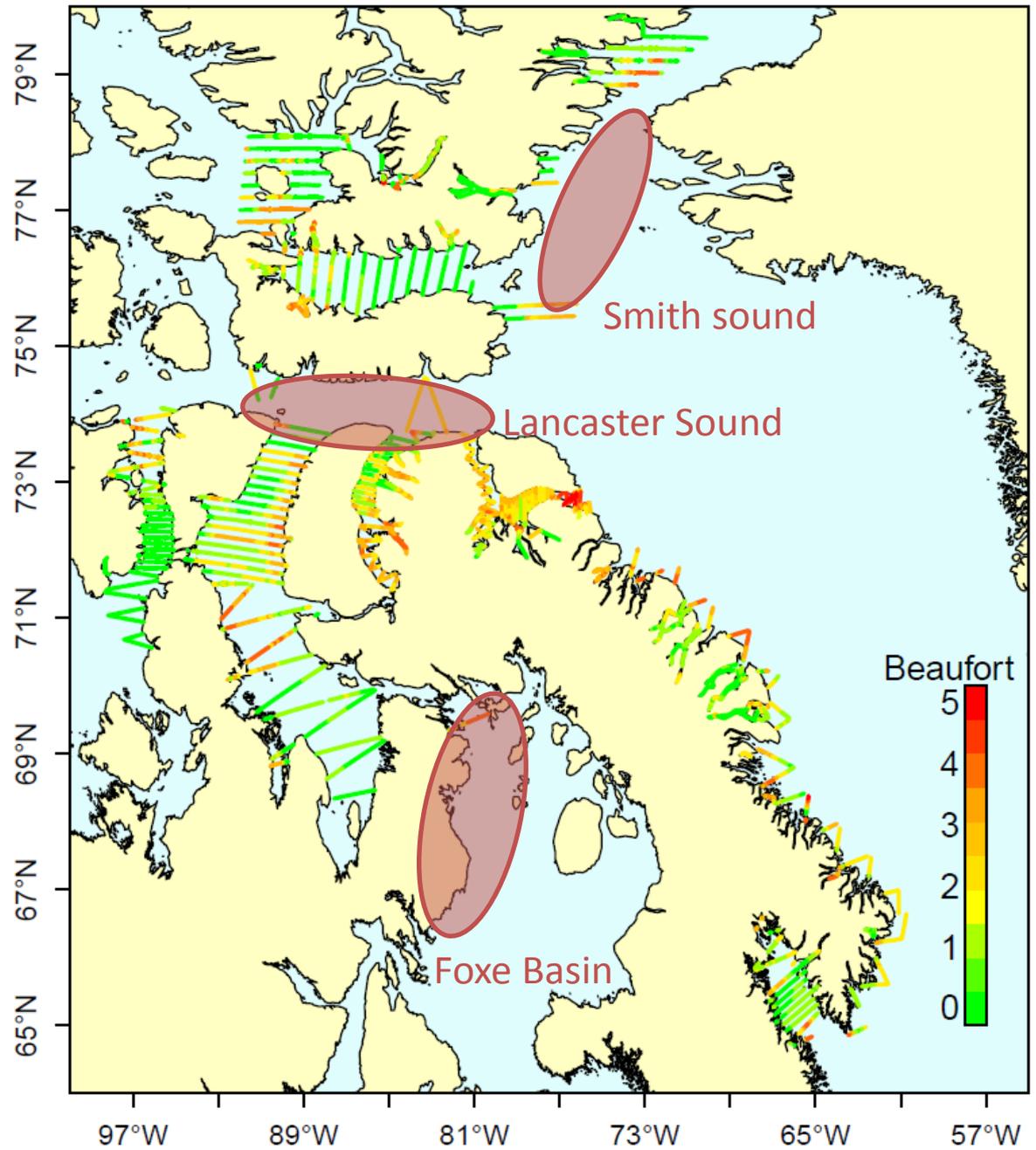
Survey sequence

- August 3 – 26, 2014
 - Favourable weather: 35% of available time
 - Large areas covered in one day by using all 3 planes simultaneously (e.g. Prince Regent Inlet)
 - Summer ranges of most stocks surveyed in short, contiguous time periods (e.g. Admiralty Inlet and Eclipse Sound in same week)
- Minimizes risks of whale movements

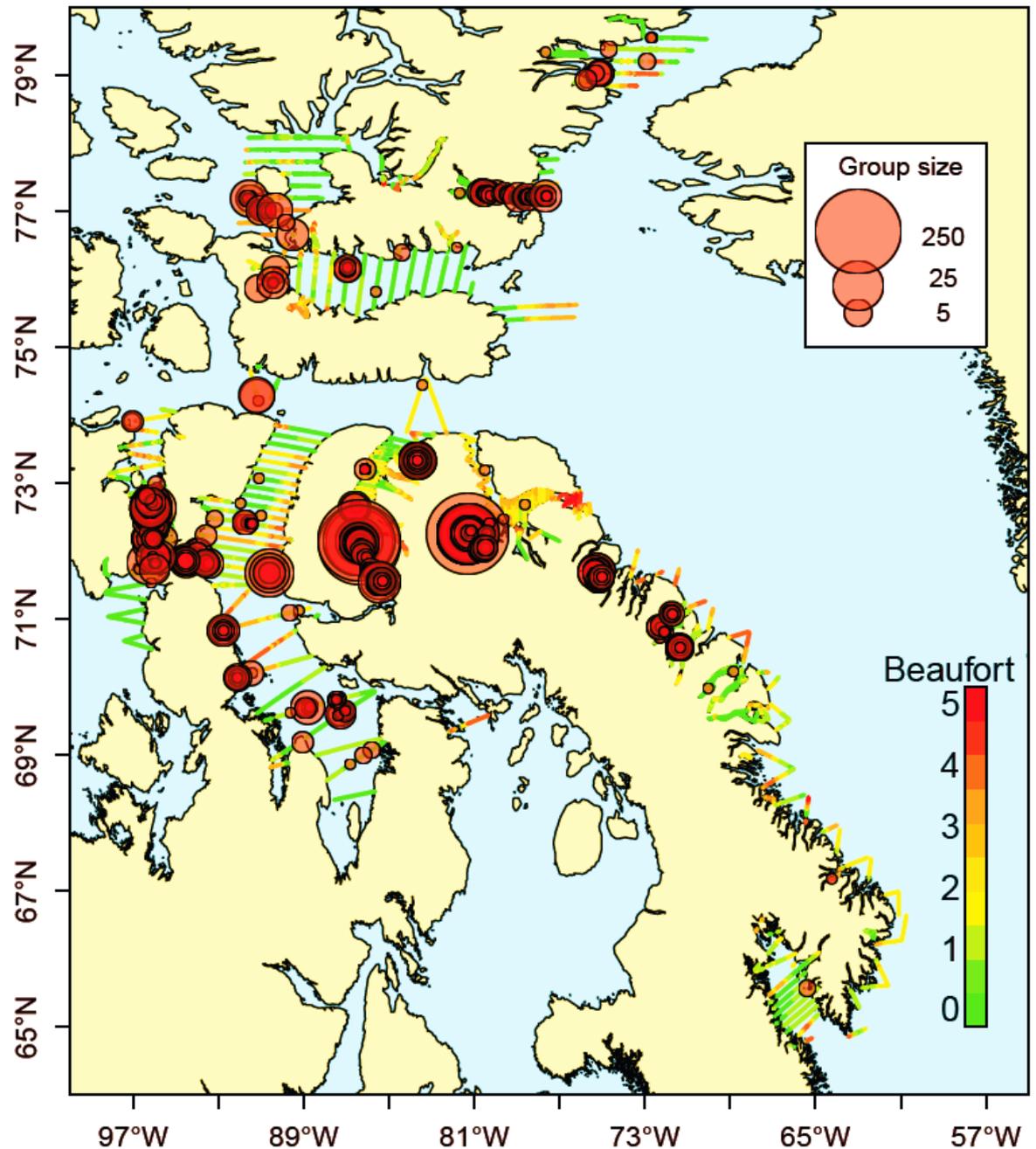
- 13,400 km of effort
(10,500 in Beaufort < 3)



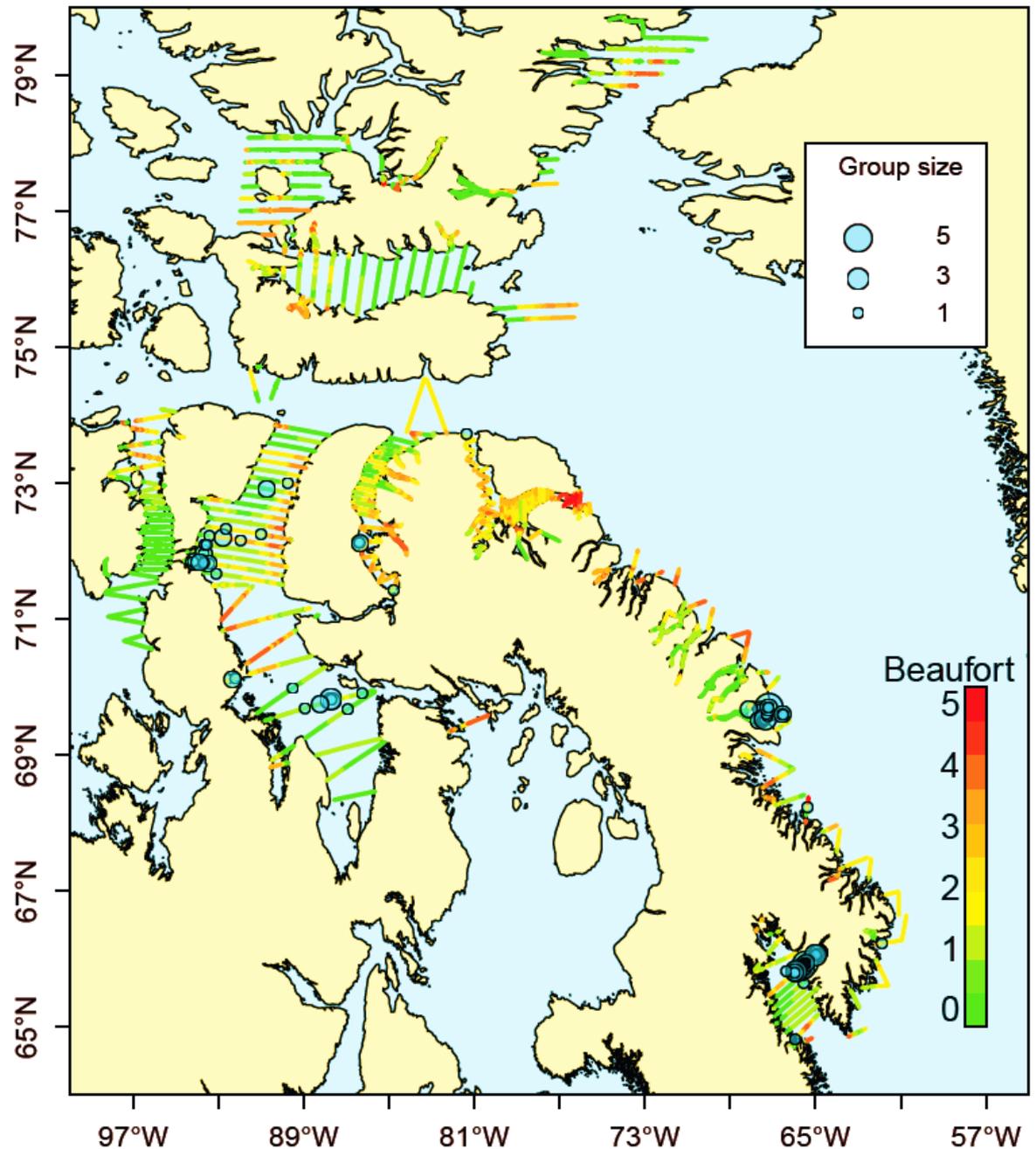
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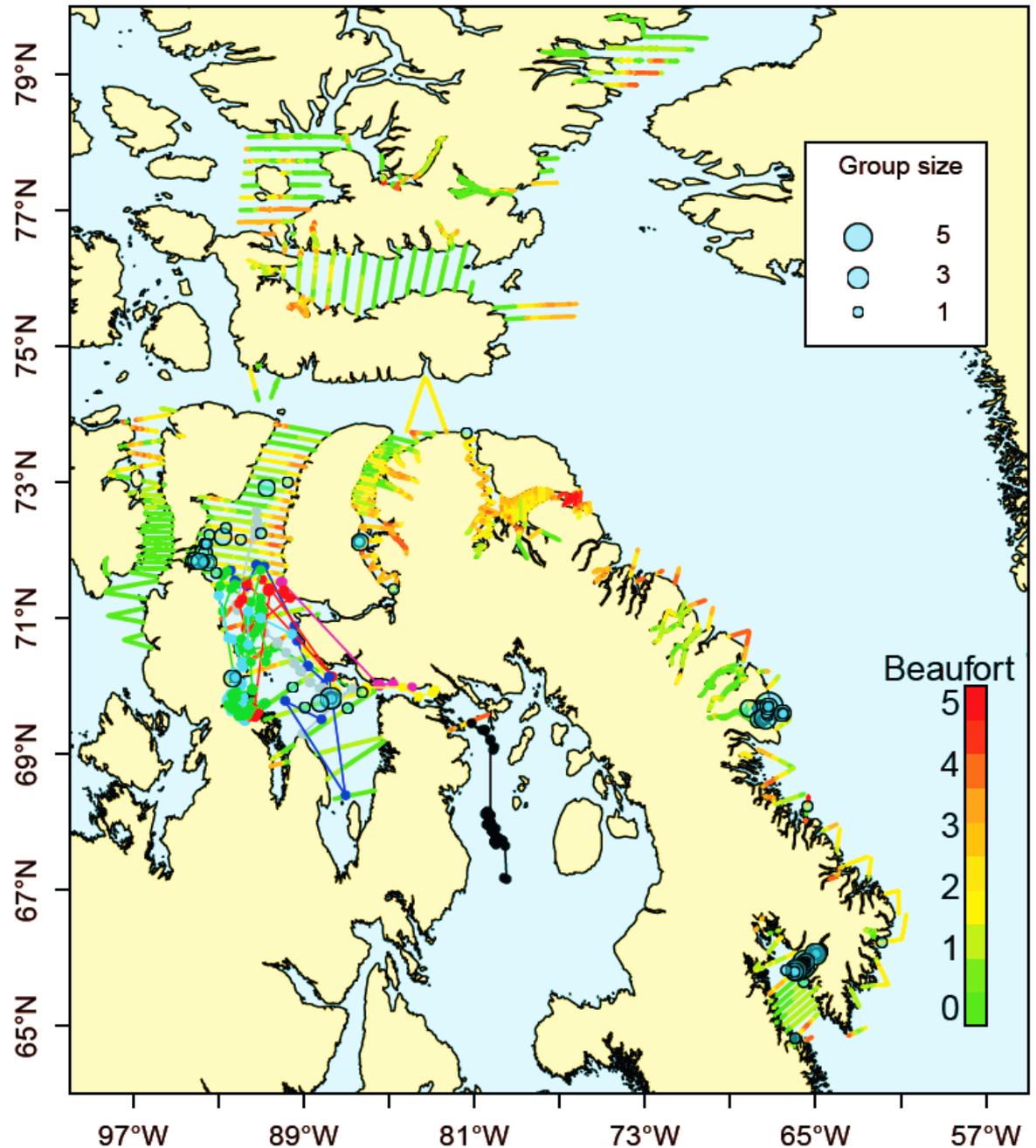
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- 1,076 narwhal sightings
by primary observers
~ 4,500 narwhals



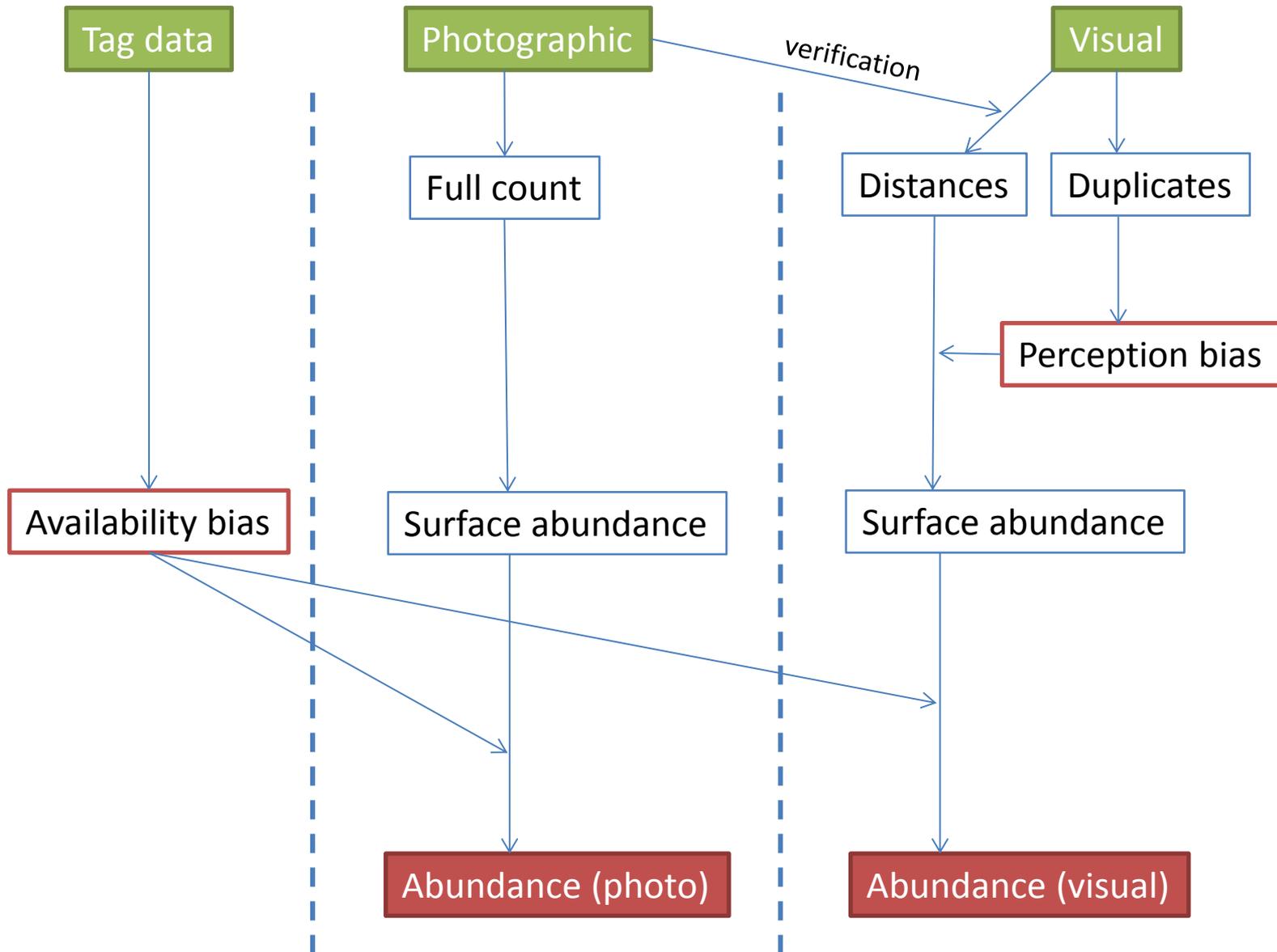
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Data management



Timeline: data management

- **October 2013:** Transcription of recordings
- **November 2013:** Merging and cleaning of database
- **December 2013:** Analysis of tag data for availability bias
- **January 2014:** Use of photos for missing data and verification of uncertain sightings
- **February 2014:** Identification of duplicate sightings
- **March 2014:** Development of photo reading system

- Main database has 13,562 lines of data, including 2,823 sightings



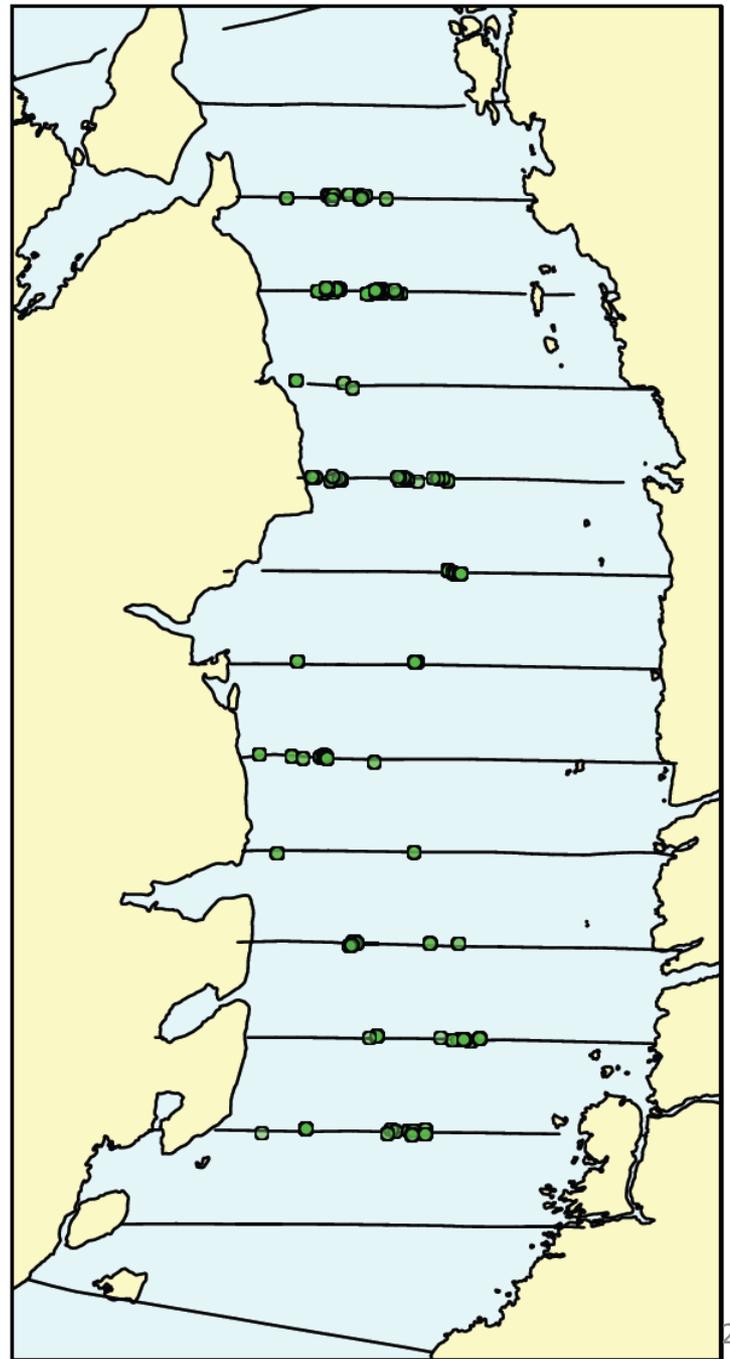






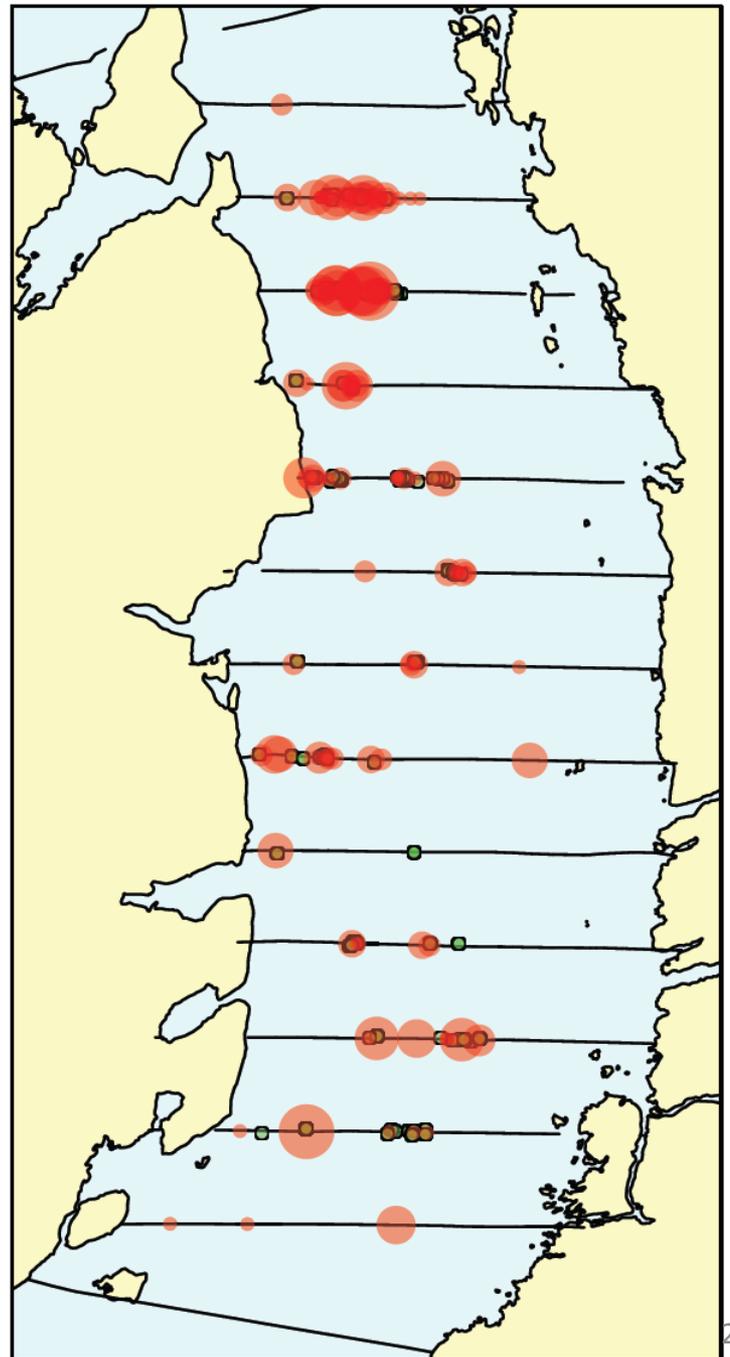
Systematic reading of photos

- Peel Sound high intensity fully read
- ~7,500 photos in 5 weeks
- Average of 300 photos per day (21 km)
- Lots of ice, lots of animals
- Photos: 296 narwhals



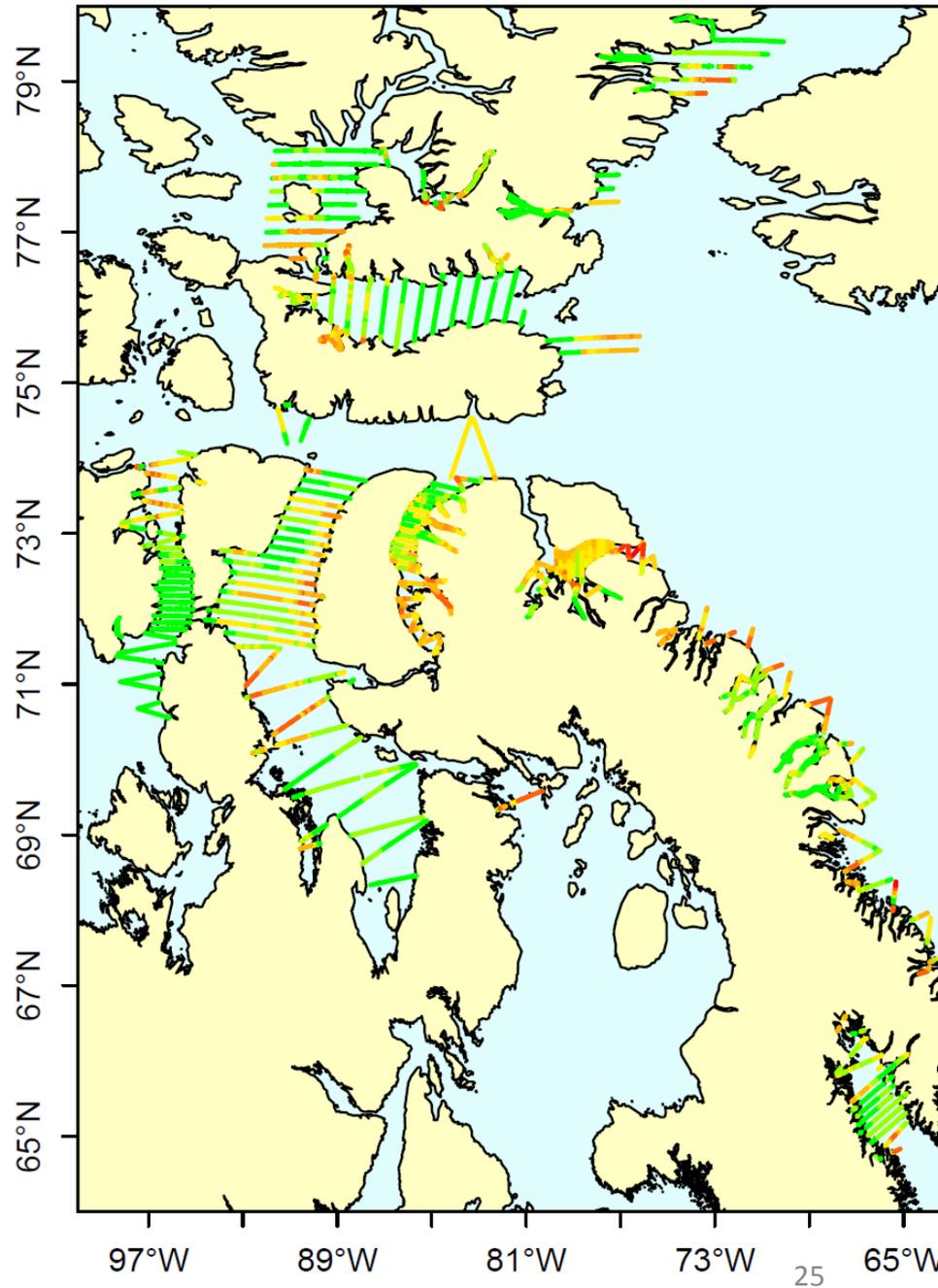
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- Visuals: 368 narwhals



Systematic reading of photos

Stocks/Strata	Weeks
North Water	28
Somerset Island	40
Admiralty Inlet	12
Eclipse Sound	10
East Baffin	22
Cumberland Sound	8
Total	120 (600 days)



Timeline: future steps

- **June-July 2014:** abundance estimates (visual)
- **August 2014:** analysis of fiord sightings
- **September 2014:** working documents
- **October 2014:** National Marine Mammal Peer-Review Committee
- **April 2015:** publication of CSAS research documents and scientific advisory reports
- **On-going:** systematic reading of photos