

Nunavut Wildlife Management Board Interim Project Report 2013-2014
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Project Number: 4-13-05

Project Title: Viscount Melville Polar Bear Populations Estimate

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Summary:

Sustainable management of harvested wildlife is dependent on current information concerning distribution, abundance and demographic parameters of wildlife populations. The most recent population estimate and demographic data for the Viscount Melville (VM) polar bear subpopulation comes from mark-recapture research conducted from 1989-1992. In recent years the sea ice in the Viscount Melville region has shifted from a multi-year sea ice to annual sea ice system, remaining ice free in late summer. Currently, it is not known how the VM polar bear population is responding to these observed changes in sea ice habitat. Several researchers have suggested that a shift from a multi-year sea ice system to an annual sea ice system may benefit polar bears in the short term by increasing the productivity of the sea ice environment. In order to assess whether the current allocated harvest of 7 bears a year can be changed a more detailed understanding of how bears in this population are responding to changing sea ice conditions is required.

Survival, reproductive rates and the size of the VM polar bear subpopulation will be determined using a combined traditional mark-recapture (i.e. immobilization and tagging of bears), DNA mark-recapture (i.e. biopsy darting) and community based hair snag study to minimize the number of bears that need to be physically handled. This study will also involve the deployment of 25 satellite radio collars on adult female polar bears to examine polar bear habitat use, distribution and movement rates. These data will allow researchers to assess whether the existing boundary for the Viscount Melville polar bear subpopulation is adequate and to the extent to which polar bears use both multi-year and annual sea ice. Results from this study will provide valuable information that can be used to reassess total allowable harvest of the Viscount Melville Subpopulation in addition to providing insight into the potential impacts or benefits of shifting sea ice conditions for polar bears.

Project Objectives:

The objectives of the proposed research are to:

- 1) conduct mark-recapture and DNA mark-recapture research to estimate the current population size and demographic parameters of the VM polar bear subpopulation,
- (2) Initiate a community based project run by Inuvialuit and Inuit hunters to monitor a series of hair snag stations in our study area to provide additional information on the genetics and number of bears present in the VM subpopulation.
- (3) define the currently boundaries of the Viscount Melville polar bear subpopulation, and to
- (4) asses polar bear habitat use of changing sea ice habitat in the area of Viscount Melville Sound

Materials and Methods:

Traditional mark-recapture

This was the second year of a three year mark-recapture program to estimate the current population size of the Viscount Melville Polar Bear Subpopulation. Field crews worked from 3 base camps: polar bear cabins located at Wynniatt Bay on Victoria Island, Cape Providence on Melville Island, and near Castel Bay in Aulavik National Park on Banks Island. The crews did not work from Mould Bay or Nias Point this year due to weather constraints; however, the larger Viscount Melville Polar Bear Subpopulation region was still surveyed. Two helicopter field crews were working conducting capture work this spring. The first crew commenced on April 9, 2013 in Wynniatt Bay, Victoria Island and finished on working on May 10, 2013 at Cape Providence on Melville Island. Crew 1 flew 62.6 hours including ferry time. Crew members were Jodie Pongracz (ENR GWNT), Evan Richardson (EC), and Mike Woodcock (Pilot, Canadian Helicopters). The second crew worked from Polar Bear cabin on Banks Island; Crew 2 commenced working on May 1, 2013, and finished working on May 8, 2013. Crew 2 flew 38.5 hours including ferry. Crew members included Andrew Derocher (University of Alberta), Nick Pilfold (University of Alberta), and Patrick Fonseca (Pilot, Canadian Helicopters). The second crew encountered hunters north of Parker Point.

Non-invasive community hair snagging project

In spring 2013 ENR worked with the Olokhatomiut Hunters and Trappers Committee (OHTC) in Ulukhaktok, and the Ekaluktutiak Hunters and Trappers Organization (EHTO) in Cambridge Bay to carry out a pilot hair snag project in Wynniatt Bay and Hadley Bay. Ross Klengenberg and Isaac Inuktalik from Ulukhaktok and Brent Nakashook and Jack Omilgoetok from Cambridge Bay travelled by snowmobile to Wynniatt and Hadley Bay respectively where they set up DNA hair snag stations to collect hair. Plans were for each crew to set 50 to 60 sites, leave for 7-10 days, then check, remove hair and rebait, and then check again and take down. We anticipated the project would be approximately 30 days in length accounting for weather days.

Project Schedule:

Output or step	Start date (dd/mm/yy)	End date (dd/mm/yy)	
Project development and community consultation	06/01/2010	31/12/2010	completed
Funding applications and project planning	01/01/2011	31/12/2013	completed
Logistics and spring field work 2012	05/01/2011	31/03/2012	completed
Spring field work 2012	21/04/2012	31/05/2012	completed
Logistics and spring field work 2013	05/01/2012	31/03/2013	completed
Community consultations	08/01/2013	10/01/2013	completed
Spring field work 2013	15/04/2013	15/05/2013	completed
Logistics and field work spring 2014	05/01/2013	31/03/2014	completed

Spring field work 2014	08/04/2014	15/26/2014	completed
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The Viscount Melville polar bear population project is on schedule and following the completion of our 2014 spring field programs we will be analyzing the data from this project and presenting the results of our findings to the local users and communities in the Inuvialuit Settlement Region and Nunavut Territory in December of 2014.

Preliminary results/discussion:

Traditional mark-recapture

Weather was exceptionally poor in the 2013 field season. Crew 1 experienced an abundance of bad weather days that were not suitable for flying (did not fly 21 of 34 days in the field due to poor weather (not including days weathered in Inuvik or Ulukhaktok before or after the fieldwork). Overcast conditions prevailed, and there were many days with strong winds, blowing snow, and very poor visibility. Days worked were even cut short due to deteriorating weather conditions. A total of 32 bears were marked in the Viscount Melville Sound Subpopulation area (Table 1). These bears were sighted in 22 groups (Table 2; 6 family groups, 2 mated pairs, 14 lone individuals). Four family groups were YRLGs; two females were with COYs. An additional 6 collars were deployed on adult female polar bears throughout the region. Five bears captured last year were recaptured, of these were a female with a yearling (COY in 2012), a female with a yearling (COY in 2012) that had two COYs in 2012, and an adult male.

Crew 1 observed two mortality events navigated to by stationary collars. One was a 17 year old adult female that had two COYs in spring 2012. Her collar went stationary on January 17, 2013. At the site we found her heavily scavenged remains (only bones remaining) and half of the collar she wore. There was an abundance of wolf sat in the immediate vicinity. The second mortality we discovered was a 30 year old adult female. Her collar went stationary on January 16, 2013. Her remains were not scavenged, but covered in snow. She appeared emaciated, and had bled a considerable amount from the mouth. There was also a bare patch on the top of her head. We removed her collar and there did not appear to be any collar wear. Crew 1 observed a few cases of hair loss on the face/behind the ears; Crew 2 observed a single case of hair loss on top of a hind foot.

There were very few observations of seal kills and attempted digs on seal layers. Sea ice was consolidated in the Viscount Melville Sound. No open water, moving ice, or active cracks were observed by either crew. No large pans of multiyear sea ice were observed in VM sound as was the case in spring 2012. Few small floes of multiyear ice were observed around Winter Harbour and the region and to the east. No prominent pressure ridges occurred through the larger bays (Liddon Gulf/ Wynniatt Bay) as was observed in spring 2012. Overall, tracking conditions were very poor. Crew 2 experienced excellent tracking conditions on a single day and flew approx. 1000km, observing an abundance of fox tracks but only 3 bears. Overall adult female bears captured in spring 2013 were found to be in worse condition than those captured in 2012 (Table 3). During the Viscount Melville survey, one grizzly bear was captured in Liddon Gulf on Melville Island. A second grizzly bear with similar markings/colourings as that captured last year on the sea ice north of Clumber Pt, Victoria Island was sighted just off Northwest Banks Island.

Table 1. Sex and age class of bears captured in Viscount Melville Sound during spring 2013.

Ageclass	Female	Male	Total
COY	0	3	3
YRLG	2	3	5
2YR	0	2	2
Subadult	1	0	1
Adult	8	13	21
Total	11	21	32

Table 2. Number of groups of bears captured in Viscount Melville Sound during spring 2013.

Female with COYs	2
Female with YRLGs	4
Mated Pairs	2
Lone Female (subadult)	1
Lone male (includes 2 -2YO)	13
Total	22

Table 3. Condition of adult female polar bears captured during spring 2012 and spring 2013 in Viscount Melville Sound.

Condition of Adult Female bears			
	Poor	Fair	Good
2012	0	67	33
2013	13	88	0

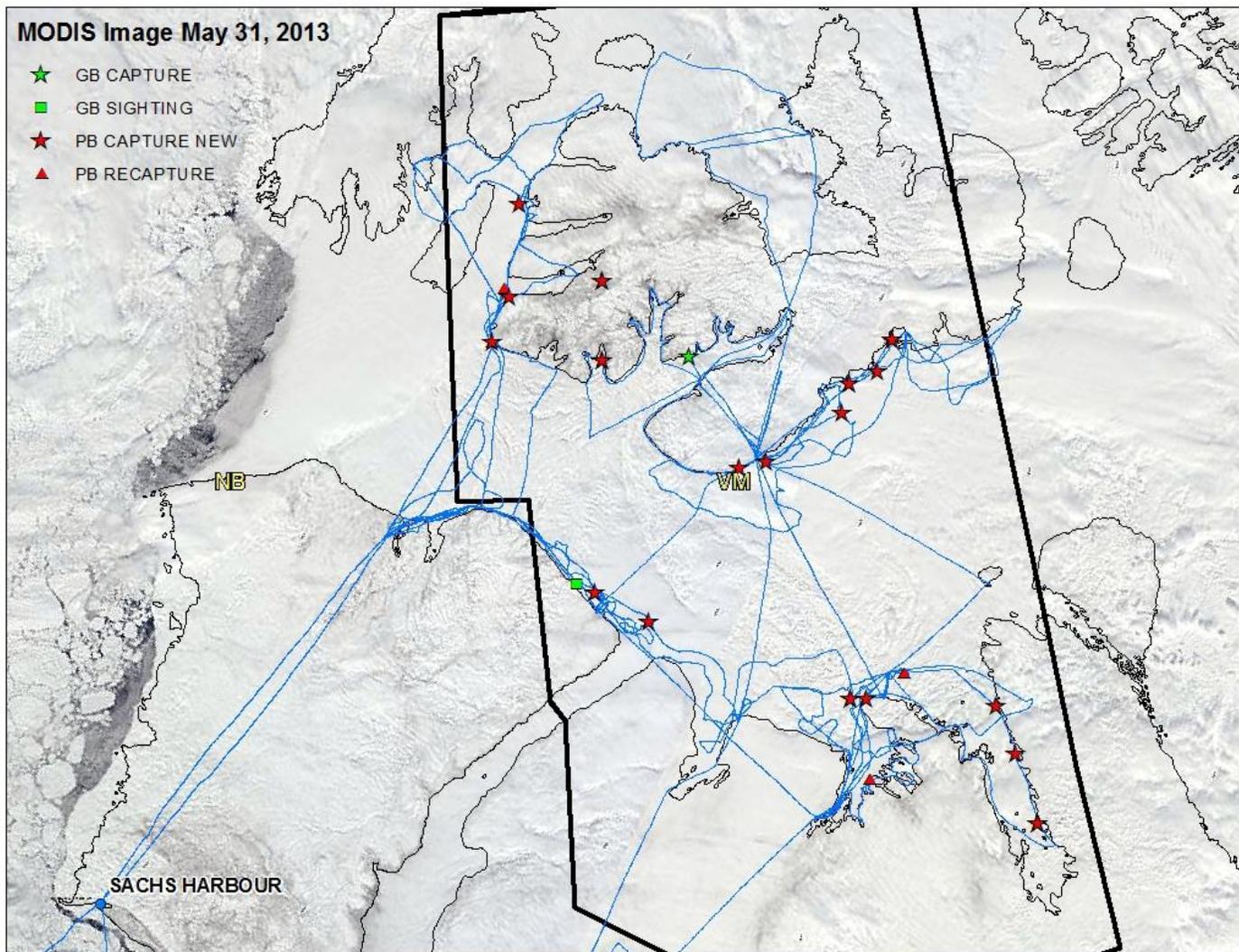


Figure 1: Location polar bears captured and recaptured (from spring 2012), location of grizzly bears captured and sighted, and tracks flown by both crews during spring 2013.

Non-invasive hair snagging

Hair snag crews battled very poor weather conditions, which lead to additional expenses (in field longer than 30 days) and white gas shortages. Both crews had snowmobile problems on the way out and in the field that lead to delays; the Cambridge Bay team required delivery of parts. Jack and Brent were in the field from April 7th through May 17th. They set up 38 stations. Eleven stations were hit from which 22 samples were collected (Figure 2).

Ross and Isaac were in the field April 12th through May 8th. They set up 13 stations using fermented fish as lure. Four stations were hit, two of which were hit twice; a total of 34 samples were collected (Figure 3). DNA results from the stations are pending. Not all hits were believed to be polar bears. Some information regarding tracks at stations where samples were collected was noted, however, this was not always possible due to poor weather and blowing conditions.

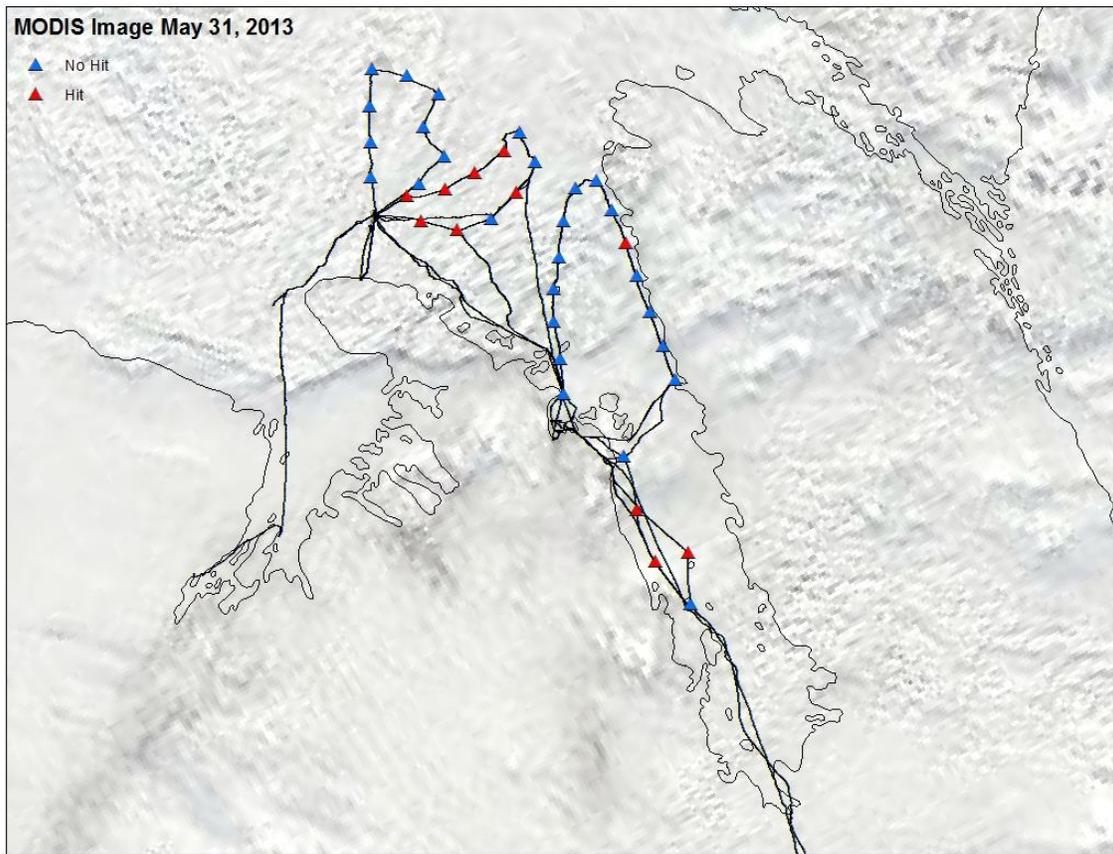


Figure 2. Stations set up and snowmobile tracks from Cambridge Bay crew.



Photo 1. Cambridge Bay crew working on a hair snag station in Hadley Bay, Victoria Island.

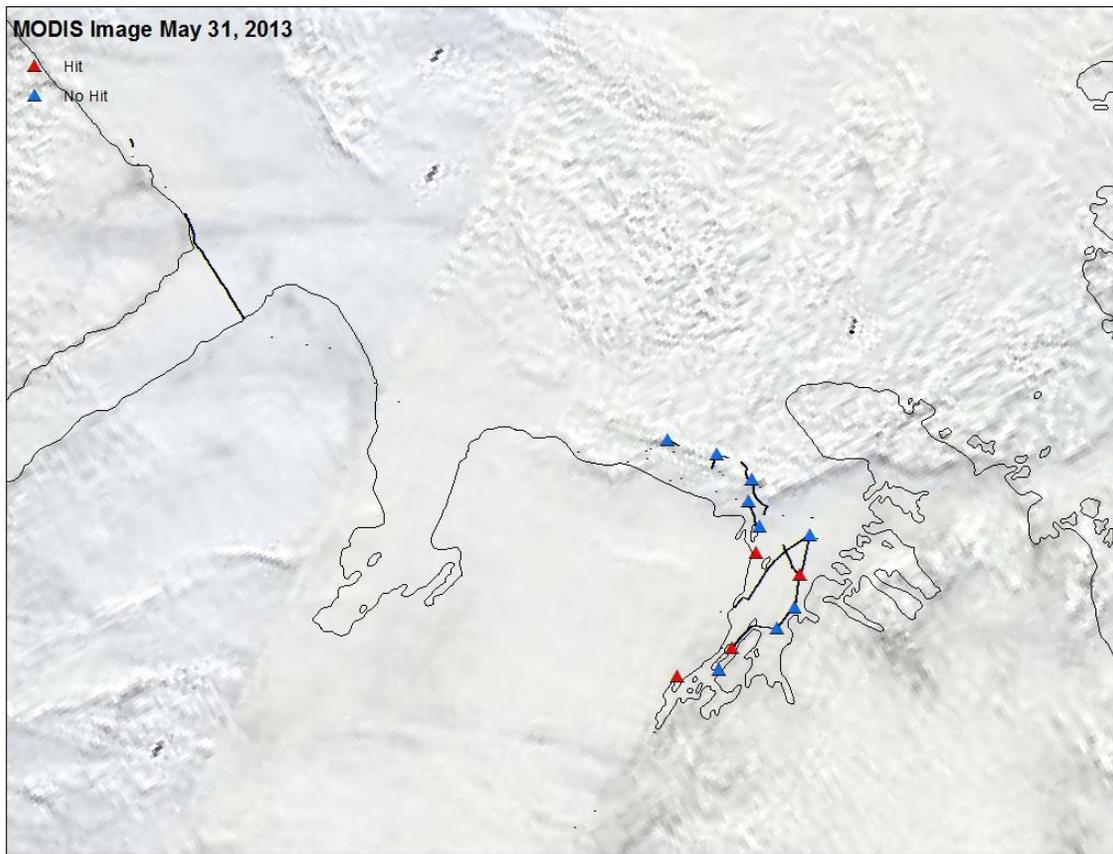


Figure 3. Stations set up and snowmobile tracks from Ulukhaktok crew.



Photo 2. Ulukhaktok crew setting up a hair snag station in Wynniatt Bay, Victoria Island.

This report summarizes the second year of a three year project to assess the status of the Viscount Melville polar bear population. Results from the first year and a half of collar movement data suggest that some bears spend most of their time within the Viscount Melville population boundary, while others may make extended movements into other polar bear subpopulations. The movement of individuals between subpopulations will be an important factor to consider when assessing the level of harvest in the Viscount Melville polar bear population. Ongoing genetics work also suggests that there may be a significant degree of gene flow within the Viscount Melville subpopulation which supports our observed movement data. The movement of individuals in and out of our study area will also need to be assessed in relation to our mark-recapture data to ensure that our population estimate is not biased by potential emigration of individuals outside of the study area.

In an effort to support community concerns regarding the handling of polar bears we initiated a community based project to collect hair samples from baited hair snag stations that were set up and monitored by local hunters. Although the logistics and cost of this project were fairly high we are optimistic that the samples collected with help inform our overall status assessment of the population. However, it is important to note that the ability of local hunters and trappers to monitor a large area (Figure 3 & 4) was restricted by where they could travel with snowmobiles. Thus, although this methodology helps inform ongoing mark-recapture work, given the cost and logistics, on its own hair snagging does not provide a feasible means of assessing the status of the Viscount Melville polar bear population.

Although we observed less multi-year sea ice in the spring of 2013, in general bears that were caught this year were in relatively poor condition and very few seal kills were observed during our surveys. Currently, it is not known if these observations related to potential changes in ringed seal productivity or the poor weather conditions that persisted throughout the spring field season. It is hoped that our last year of research will provide additional insights into the overall productivity and health of the Viscount Melville polar bear population.

Reporting to communities/resource users:

Cambridge Bay public community consultation occurred on Wednesday January 9th 2013; prior to the 2013 field season; the objective of the meeting was to communicate research results from year 1 and to get direction from the community and Ekaluktutiak Hunters and Trappers Organization (EHTO) as to whether they thought biopsy darting or mark-recapture should be used to sample the population in 2013. Ulukhaktok public community consultation; occurred on Tuesday January 8th 2013; prior to the 2013 field season; the objective of the meeting was to communicate research results from year 1 and to get direction from the community and Olokhatomit Hunters and Trappers Committee (OHTC) as to whether they thought biopsy darting or mark-recapture should be used to sample the population in 2013. Both communities supported mark-recapture during the 2013 spring field season.

Results of the first two years of research were presented to the Inuvialuit Game Council and the Olokhatomit Hunters and Trappers Committee (OHTC) president in December of 2013 in Inuvik. Consultations with Ekaluktutiak Hunters and Trappers Organization (EHTO) from Cambridge Bay occurred via an updated progress report including the results of the first 2 years of this project and a request for community support for our final year of field work. Following completion of this project in 2014 final results from this study will be presented at community meetings in both Ulukhaktok and Cambridge Bay in December of 2014.

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