

## **GN Project No. 4249 Field Report**



Two bull muskoxen Ivittuut Region (7 June) in shore seaweed; 4-year old to left and  $\geq 5$ -year old on right. Photo C. Cuyler

## **Ivittuut muskoxen minimum count & demographics 4-12 June 2015**

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**Greenland Institute of Natural Resources**

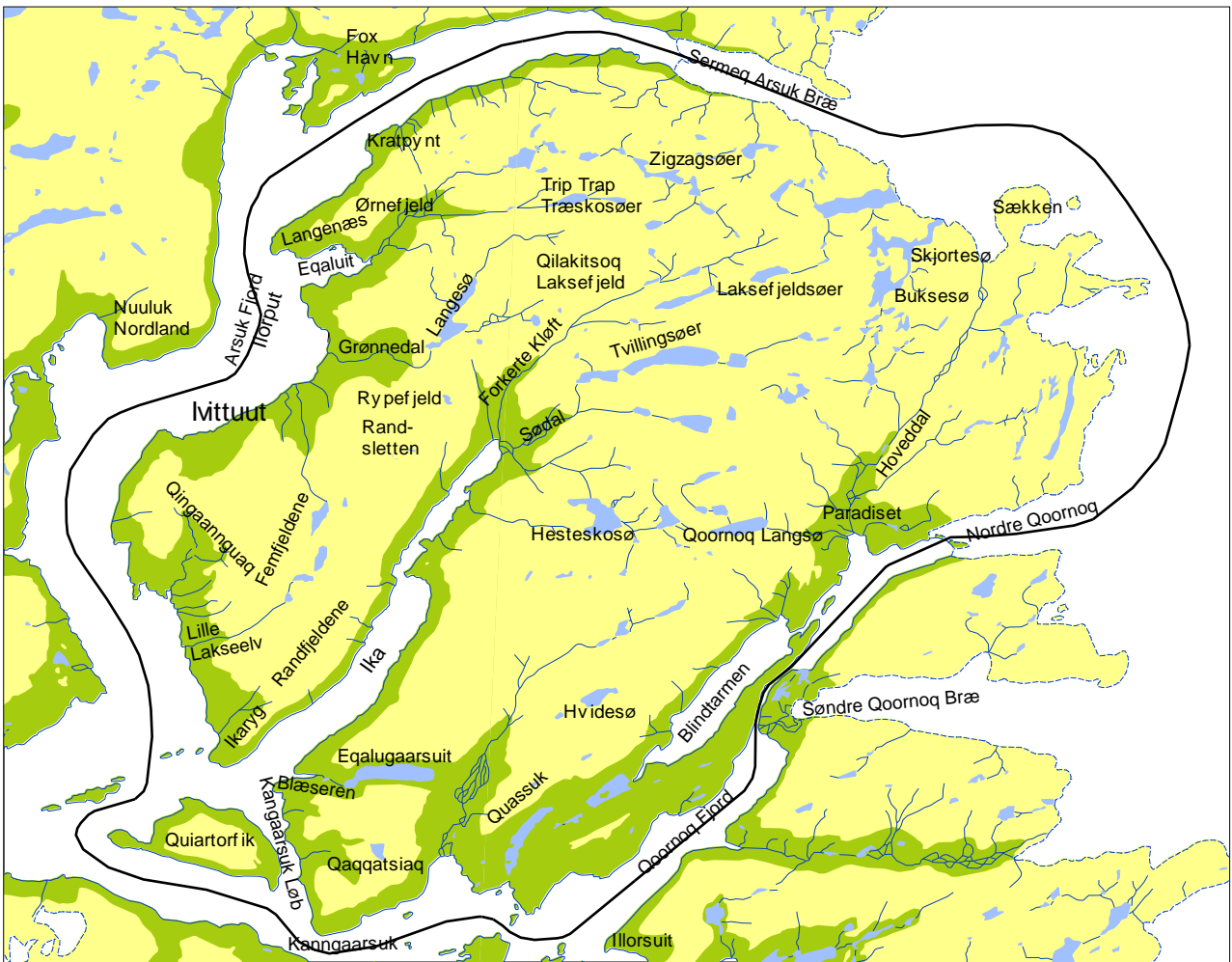


**7 July 2015**

**GN Project No. 4249 Field Report  
Muskox Minimum Count & Demographic  
Ivittuut Region, 4-12 June 2015**

The Greenland Institute of Natural Resources (GN) in cooperation with two persons from the Greenland Fisheries and Licensing Control (GFLK) and two local hunters successfully completed a minimum count of the Ivittuut muskoxen (*Ovibos moschatus*) population. This count included detailed observations of the demographics. The GFLK personnel and local hunters received training and experience in count methodology and the detailed sexing / ageing of muskoxen.

The Ivittuut region is a ‘round’ peninsula bounded to the west and north by the Arsuk fjord, which ends at the Greenland Ice Cap’s Sermeq Arsuk glacial tongue (Figure 1). To the south and east is the Qoornoq fjord, which after the ‘narrows’ becomes Qinngerlersivaq and also ends at the Greenland Ice Cap with the Nordre Qoornoq glacial tongue.

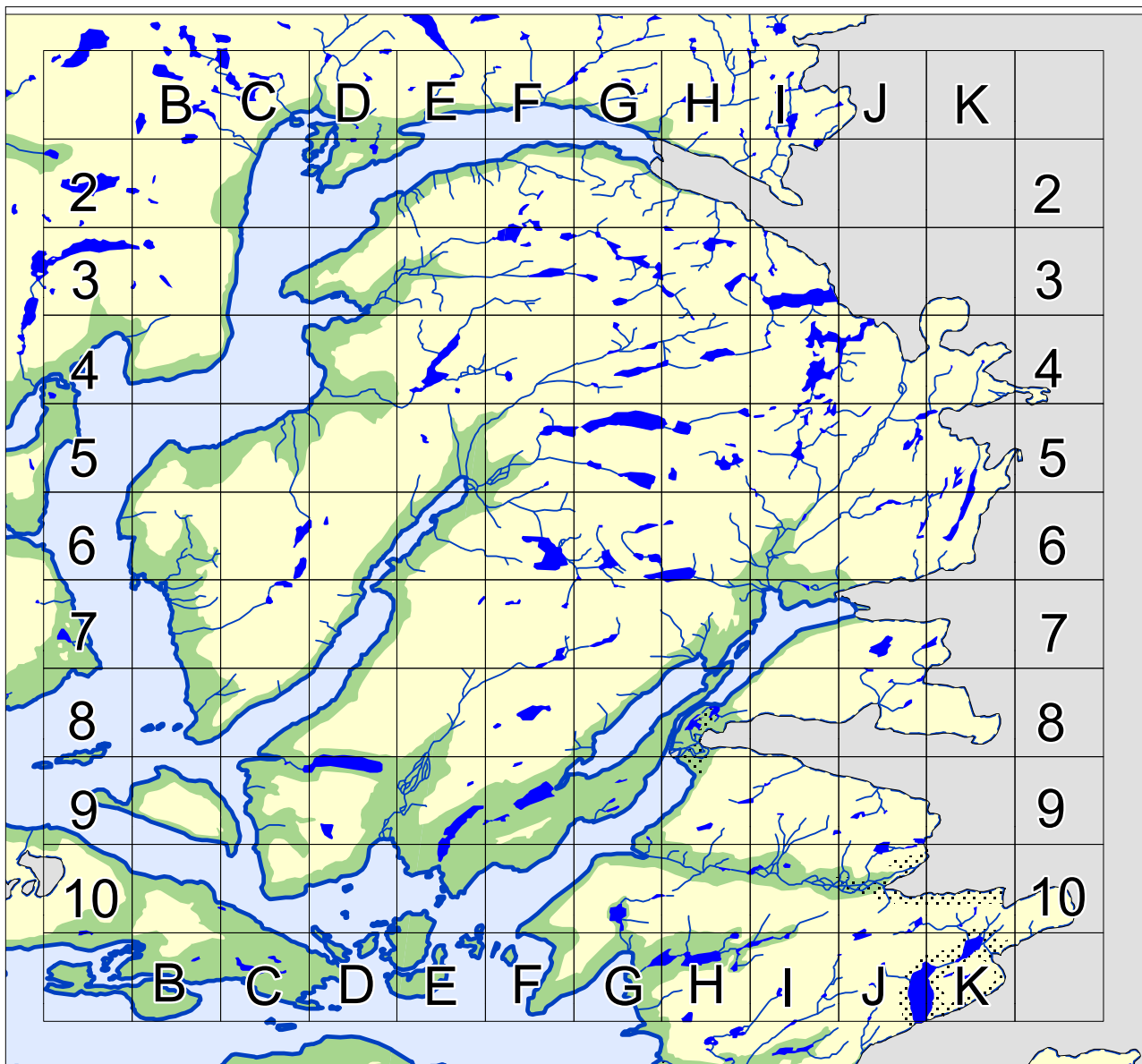


**Figure 1.** Ivittuut place names.

Muskoxen were located sailing open outboard boats along the coast line and by hiking up into the principal valleys and using high elevation points as look-outs. Muskoxen were seldom frightened by our sailing past

them. When hiking, muskoxen often fled from our approach, running farther into the valley where they mixed with other groups. Therefore, to avoid double counting when hiking, the count and demographics did not begin until our furthest destination was reached, and from there until we returned to the boats. Similarly, to avoid double counting a coastal or fjord area was only begun if we could finish its length within a few hours on the same day. If any doubt existed, then muskoxen seen were not counted.

Observations of muskoxen were assigned a grid map cell location (Figure 2). We recorded the number of muskoxen groups seen, the total number of animals in each group, and when possible the sex and age of the individuals within a group (Appendix 1, 2). We also noted the location and number of observed arctic fox, arctic hare, feral reindeer and eagles. Photos were taken opportunistically and weather permitting.



**Figure 2.** Ivittuut region grid cells, 3 x 3 km, generated using MapInfo software.



Participants included the author, Per Nukaaraq Hansen (GFLK Hunting Officer from Nuuk), Morten Lyberth (GFLK Hunting Officer Assistant from Maniitsoq), and two local commercial hunters / trophy hunter outfitters from the town of Arsuk, Ejnar Jakobsen and Jørgen Christensen (Figure 3).



**Figure 3.** The participants in the 2015 minimum count and demographics of the Ivittuut muskoxen. From left to right: Ejnar Jakobsen, Jørgen Christensen, Per Nukaaraq Hansen and Morten Lyberth. Photo C. Cuyler

This year's count extended from 4 to 12 June because the late arrival of spring this year made conditions unfavourable. Snow was common at the sea shore. Snow almost totally covered the inner portions of the principal valleys as well as all high elevations. High winds prohibited sailing two full days and the latter portion of a third day. Winter sea ice on the inner fjords dictated counting in the Paradiset Hoveddal, Qinngerlersivaq fjord and the Ika fjord and valleys until the last days. Ataneq Blindtarm fjord was impassable until 12 June.

This year's count resulted in the largest number of individual muskoxen and the lowest calf percentage ever observed. Most muskoxen were at elevations under 100 m. Given the stationary nature of the muskoxen and our method, double counting (i.e., counting the same animal(s) twice) was not possible.

The calf count may have been affected by the late arrival of spring possibly delaying calving, and because their small bodies effectively disappear when in dense thickets or lying down, i.e., pocketed terrain and other muskoxen can hide calves completely or at least until the calves stand up and move about (Figure 4).

**PRELIMINARY RESULTS: Minimum Count & Demographics Ivittuut**

Muskoxen Population: Ivittuut  
Time period: 4-12 June 2015  
Location: Ivittuut Region (portion of Hunt region 11)  
West Greenland

<b>TOTAL muskoxen observed:</b>	<b>1261</b>	
<b>Emigrated muskoxen seen:</b>	<b>5</b>	<b>(north side Arsuk fjord)</b>
<b>Muskoxen for only Ivittuut:</b>	<b>1256</b>	
Number of observations:	228	
Total number muskoxen sexed & aged:	1120	
Maximum muskoxen group size:	27	
Median group size:	4	
AVERAGE muskoxen group size:	4.9 ± 4.1 SD	
Calves:	213	(16.9 % of TOTAL seen)
1 & 2-year olds:	285	(22.6 % of TOTAL seen)
Cows ≥ 3 years:	433	(34.3% of TOTAL seen)
Bulls 3 & 4 years:	95	(7.5 % of TOTAL seen)
Bulls ≥ 5 years:	94	(7.5 % of TOTAL seen)
Unknown sex & age:	141	(11.2 % of TOTAL seen)
Recruitment – Calves per 100 Cows:	49.2	
Ratio – Bulls (≥ 5 years) per 100 Cows:	22	
DEAD muskoxen found:	7	



**Figure 4.** A mature adult cow (age ≥ 4 years) with her calf, 9 June 2015. Photo C. Cuyler

## Field Journal 4-12 June 2015

**Tuesday 2 June:** Departure from Nuuk 14:00 with Sarfaq ittuk coast boat. The cost was kr. 1675,- from Nuuk to Arsuk. The purser gave me an entire room of '*liggepladser*' for 8 persons all to myself. A 1-person cabin would have been kr. 2600 more.

**Wednesday 3 June:** Met Morten Lyberth on board Sarfaq ittuk today. Arrival Arsuk 13:00 and took small 'ferry' boat from Sarfaq ittuk to shore. Per Nukaaraq Hansen was waiting on the dock. Ejnar Jakobsen arrived just as we got our baggage into Per's open outboard boat. We spoke with Ejnar about the muskox count. We asked whether his son, Hans Jakob, was interested in participating on the muskox count. Ejnar replied that Hans Jakob was on his way to Paamiut tomorrow (Thursday) and will not be joining us. Instead Jørgen Christensen (Trophy outfitter) would like to participate and pay his own expenses. Jørgen is one of the three Trophy Guides in Arsuk (Ejnar Jakobsen is another, the third is Knud Mikaelsen).

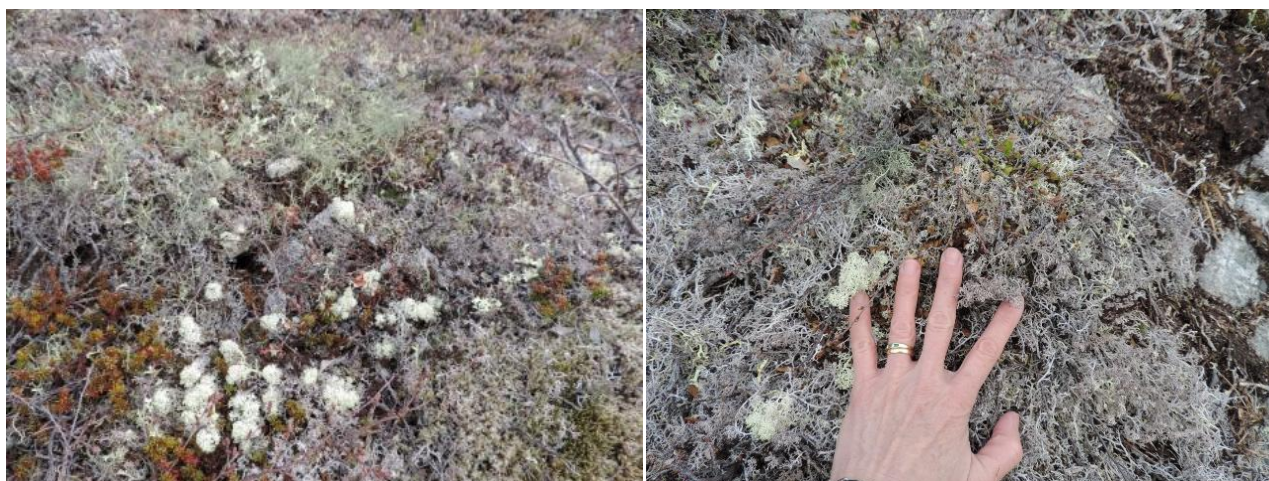
Within an hour of our arrival in Arsuk, Per Nukaaraq sailed Morten and I over to his cabin in Tayler's *Havn* (Utoqqaat), which lies in a tiny protected cove. The trip took only 25 minutes. There were three muskoxen at the gateway into the tiny cove when we arrived, and one more a little further around the cove near the shore. There were also two Sea eagles flying about. While we ate lunch, an arctic fox appeared down in the tidal zone on the point where the three muskoxen had been. We discussed muskoxen demographics and prepared for the field work tomorrow.

**Thursday 4 June:** Ejnar Jakobsen arrived at 07:50 with his boat. We first discussed methodology and then we all sailed together in the one boat for this first trip. We began the count on the 'point' on the north side of Ika Fjord (Grid Cell 8B). The first group was on the point itself. We sailed slowly back up the coast. We saw many groups of muskoxen, three feral reindeer from Isortoq, and several arctic hares. The latter were numerous at the 'point' where we began the count. We landed twice to check into valleys. It was clear that the amount and extent of caribou lichens (*Cladina rangiferina*) is excellent between the 'point' and Per's cabin at Tayler's *Havn* (Figure 5). The second most favourite caribou lichen (*Cladina Stellaris*) was seldom seen. The broader 'leafed' yellowy lichen (*Cetraria nivalis*) was common. Still it was *C. rangifer* that dominated the ground cover (in addition to grasses/sedges, dwarf birch, dwarf willow and crow berry). Thus the feral reindeer from Isortoq have good lichen range in the Ivittuut region.

Once back at Per Nukaaraq's cabin, we climbed up the hills behind to find the muskoxen in the valley beyond. There were ca. 17. Jørgen Christensen arrived with his boat. We sailed slowly north along the Arsuk fjord coast with three boats. The weather was looking worse, but we made it to the abandoned town of Ivittuut where there was a group of seven muskoxen (including a calf) grazing in and around the houses. The storm winds and rain/sleet began in earnest just as we began sailing back to Per's cabin. It was an uncomfortable trip back, as the boat was slamming down between the several meter high waves white caps and the sleet drove into our eyes. Once back at Tayler's *Havn*, I set up the excel data base and keyed-in today's data. We saw 121 muskoxen today along a relatively short stretch of coastline.

Most groups we observed today are grazing at elevations <100 m, many right above the fjord shoreline. This evening I keyed-in the data from today.





**Figure 5.** Ivittuut region: typical good condition of the two lichens most desired by caribou. Left photo: light coloured bushy *Cladina stellaris* surrounded by *Cladina rangiferina* and assorted other lichens. Right photo: the grey lichen *Cladina rangiferina* and sprigs of *Cladina stellaris* at tip of little finger and to left of hand. Photos C. Cuyler.

**Friday 5 June:** Full storm strength winds and rain lashing the cabin. No field work possible today, so I worked on preparing the power point presentations for the upcoming town meetings in Arsuk and Qaqortoq, as well as this field report. Several muskoxen grazed around the shores of the cove this morning.

**Saturday 6 June:** We sailed to Arsuk early (08:30) for groceries. The weather was windy and rainy. We filled up the boat's gas tank and reserve tank and headed back to Tayler's *Havn*. In the afternoon we sailed for Grønnedal where we met Ejnar and Jørgen ('Anni'). Grønnedal has a huge wharf where ships can dock. We found several muskox along the shore and at least 12 among the building. There were groups on the slopes above the town too. We walked up the valley road, until deep snow cover stopped us. There was a group of 26 up there, among others. Then we went up top to *Brettet*, which is the top of the mountain on north side of Grønnedal. There were many muskox groups up there, also with calves, and two arctic hares. We were up and over the top and down the other side where we also found muskox. We stopped in at the *Udsigsposten* cabin on the way back. This cabin has electricity (from Grønnedal) because it is beside the radio sender. There were bunk-beds for 2-4 people. Even before we reached this cabin the wind was up around 15 m/s and getting worse, while the rain was driving sideways with it. We hurried on down the mountain in that wind and rain, and sailed home before the full force of the storm arrived. It came during the evening and through the night. This evening I keyed-in the data from today.

**Sunday 7 June:** All last night the wind was howling and the rain pelting down. This continued all day making field work impossible. I updated this report and rechecked the data entry made to date.

**Monday 8 June:** In the morning there was low cloud hiding the mountain tops, and little to no wind. However, by mid-day there a cutting cold wind, although the low cloud remained over the mountain tops. It snowed today. Ejnar joined us again; however Jørgen was unable to, due to his job at the public school. We went to Laksebunden, landed and walked up into the valley. There were 4 eagles in Laksebunden. It began to snow heavily while we were up inside in the valley. We saw ca. 128 today and many more cows and calves than bulls. The ammasset fish have begun to 'run'. We saw many at the bow of our boat.

We sailed all the way into the Arsuk fjord today, almost to the Ice Cap's glacier tongue itself. On the north side of the fjord on the last river, Per and Ejnar ran up into the little valley to check out the five muskoxen we saw there. These five were the ones on the north side of the fjord in the little south facing valley. Jørgen saw them last week and told us about them. The bushes were big and tall there, effectively hiding grown muskoxen.

In the inner north side of the fjord on way to glacier tongue, there were many Kittywakes on the bird cliffs, which were south facing.

Very little wind, still overcast and plenty of clouds over the mountain tops. We're hoping for better weather tomorrow and are ready to put in a really long day. Time is running short and we have only counted the Arsuk fjord side of Ivittuut.



**Figure 6.** Willow bushes stripped of bark, *Heksestedet* valley 10 June. Similar stripping also observed in the inner Ika fjord. Photo C. Cuyler.

**Tuesday 9 June:** The weather was good. As we must be in Arsuk for the Town Meeting on Thursday we have only two days remaining to finish the bulk of the Ivittuut region. It was just Per Nukaaraq Hansen, Morten Lyberth and I today. We left Tayler's *Havn* by 07:00 this morning with the intention of doing the coast right around and into Paradise valley, but leaving Ika fjord until Wednesday, after an overnight at *Heksestedet*. Since the 'narrows' to Paradise must be sailed at the height of the high tide we can only enter



or leave at ca. noon and midnight. We don't expect to get out of the Paradise valley area until after midnight. We did the valley at the mouth of Ika fjord first. Found eight bull reindeer there and of course muskoxen. Then we slowly sailed coast to *Heksestedet* and the *Mosk-It Hytten* cabin there. We did not do more than just the coast at *Heksestedet* because time was running short to reach the 'narrows' by noon. By 12:30 we were beyond the 'narrows' and finding our way through the pan ice in the inner Qinngerlersivaq fjord. We saw three seals sleeping atop the ice pans. We anchored at the Paradise cabin and hiked the valleys. The willows look stripped of bark. We opportunistically found three dead muskoxen in the *Hoveddal* valley. There could have been more carcasses. We walked within 3 m of the one carcass (a mature bull) and only I saw it. Muskoxen are abundant in this area. The number of cows far exceeds the number of bulls. Calves are common. Most muskoxen are at elevations under 100 m or at the very least less than 200m.

By evening we were sailing for *Blindtarm* fjord. There was too much sea ice at the narrow entrance for Per's boat to get through. Also beyond the entrance, there was tightly packed pan ice for as far as the eye could see. We anchored the boat and climbed up to view the Kuuki valley, which at the north end of *Blindtarm*. There were many muskoxen in the small Kuuki valley. Most were at elevations under 100 m or at the very least less than 200m.

While waiting for the high tide we visited the bird cliffs. There were many nesting pairs of gulls. We passed through the 'narrows' around 00:15, and saw 10 reindeer. Also, there were many gulls feeding on ammasset that were 'running' with the high tide through the 'narrows'. We reached *Heksestedet* and the *Mosk-It Hytten* cabin around 01:00 and slept there.

**Wednesday 10 June:** Last day to finish this count. The weather was good. It was a cold rather sleepless night for all three of us, as we had only brought blankets and they were not warm enough. So by 06:00 we were already up and hiking to the inner *Heksestedet* valley where we climbed to the saddle to view the inner snow covered valley. The willows looked stripped of bark at several locations (Figure 6). Ejnar Jakobsen showed up at the *Mosk-It Hytten* cabin at 07:30 and joined us for the hike over to the Nuuk Sø (east of cabin), and was with us the rest of today. Once done with *Heksestedet*, we four sailed for Ika Fjord.

We began Ika fjord on the south east side (northwest facing) and sailed our way towards the cabin at the end of the fjord where we anchored. First we had to get through the expanse of winter sea ice that remained. It was beginning to become 'candle-ice' but was still too hard for Per's boat to get through. Ejnar pushed through with his Numiit jolle to break a path for us.

First we hiked *Syddal*, then *Forkærtdal* and finally Tourist *Kloften*. Muskoxen are abundant in this area. The number of cows far exceeds the number of bulls. Calves are common. We found two dead muskoxen, one before and one in the Tourist *Kloften*. The majority of muskoxen were observed at elevations under 100m. Then we sailed the northwest side of the fjord (south east facing) on our way out. Muskoxen are abundant along this shore. The number of cows far exceeds the number of bulls. Calves are common. Most muskoxen were under 100m. We found two dead muskoxen cows within 30 m of the shore and each other (Figure 7). The Ika fjord shoreline, similar to all the fjords, has grassy tussocks at the high water point on the beaches. These were always heavily grazed (Figure 8).

Finished counting the Ika fjord at 20:05 and sailed for Tayler's *Havn*, a big supper and a good night's sleep.



**Figure 7.** One of two dead cows observed 10 June on shore of Ika fjord (NW side): little decomposition indicated recent death.



**Figure 8.** Typical fjord shoreline at the high tide mark. Grasses exhibit heavy grazing pressure. Photos C. Cuyler.



**Thursday 11 June:** Typed in some of the data and then packed up my gear. We sailed to Arsuk just before noon. I met Øystein Slettemark from APNN (*Direktoratet for Fiskeri Fangst og Landbrug*) and Martin Enghoff (Nordic Foundation for Development and Ecology, Denmark) and began the Local Management portion of this trip. Per Nukaaraq Hansen and Morten Lyberth participated in the Arsuk Town Meeting this evening and then they sailed back to Tayler's *Havn* (Figure 9). I remained in Arsuk at the Hotel Ruby (i.e., a private home).

**Friday 12 June:** Per Nukaaraq Hansen together with Morten Lyberth sailed into *Blindtarm* fjord and counted the muskoxen there. The ice plug at the entrance was gone. They found 64 muskoxen. The June count of muskoxen is now finished for this year.



**Figure 9.** Per Nukaaraq Hansen's cabin in Tayler's *Havn* and the little protected cove. Photo C. Cuyler.



**Appendix 1: Data ark (Greenlandic / Danish)**

**Umimmaat / Moskus IVITTUUT 61°N Vestgrønland – JUNI 2015** Ikinnerpaamik kisitsineq + katersat sannaq / tælling+floksstruktør

Ulloq	Sumiiffik	#	Umimmaat Amerlas- suiat	Inersimasut ?	Piaaraq inunngorpoq 2015	Inuusuttut 1 & 2 ikiut inunngorpoq 2014-2013	Arnaviaq Køer ♀♀	Angutiviaq TYRE ♂♂				Allat
Dato	Kort Nr.	#	Total Antal i gruppen	Ukendt Køn / Alder	Født: 2015 KALV	Født: 2014 - 2013 1 & 2 år	Ukiut år ≥ 3	ukiut / år 3	ukiut / år 4	ukiut / år ≥ 5	ukiut / år ≥ 10	Andet
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**Note:** Print out 20-25 pages on water resistant paper, but first add page numbering and sequential observation numbering (3rd column) giving 300-375 individual group observations.

**Appendix 2: Data Sheet (Greenlandic / English)**

**Umimmaat / Muskox IVITTUUT 61°N West Greenland – JUNE 2015** Ikinnerpaamik kisitsineq + katersat sannaq / Count+Demographic

Ulloq	Sumiiffik	#	Umimmaat Amerlas- suiat	Inersimasut ?	Piaaraq inunngorpoq 2015	Inuusuttut 1 & 2 ikiut inunngorpoq 2014-2013	Arnaviaq Køer ♀♀	Angutiviaq TYRE ♂♂				Allat
Date	Grid Nr.	#	Total # in group	Unknown Sex / Age	Born: 2015  CALF	Born : 2014 - 2013  1- & 2-yr old	Ukiut age ≥ 3-yrs	ukiut / age  3-yr	ukiut / age  4-yr	ukiut / age  ≥ 5-yr	ukiut / age  ≥ 10-yr	Andet
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## Appendix 3

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### Telephone numbers

Christine Cuyler:	48 23 23 (Project leader/researcher) +8816 – 414 822 85 (satellite telephone)
Per Nukâraq Hansen:	48 73 68 (GFLK Hunting Officer Nuuk)
Morten Lyberth:	48 76 40 (GFLK Hunting Officer Assistant Maniitsoq)
Ejnar Jakobsen:	54 86 65 (Commercial hunter & Trophy outfitter)
Jørgen 'Anni' Christensen:	53 81 57 (Commercial hunter & Trophy outfitter)
Peter Sørensen:	27 75 39 (Hotel Ruby, Arsuk)



**Figure 10.** A mature cow at the Arsuk fjord shore observed from boat, 4 June 2015. Photo C. Cuyler.