

Excerpts from:

REPORT OF THE 22nd SCIENTIFIC COMMITTEE MEETING

[pp4]

Walrus

The assessment and quota advice was updated for the Baffin Bay population. The SC **recommended** that no more than 85 walrus are landed annually in Qaanaaq from 2016 to 2020. Due to inconsistencies between the two reporting schemes (*Piniarneq* and *Særmeldingsskema*) in Greenland, the SC **recommended** that Greenland should streamline their reporting system, and also conduct a study to investigate why the numbers are different between the reporting schemes.

The SC noted that although this is a shared stock, there is no formal agreement on sharing of information between Canada and Greenland for walrus. SC **recommended** that NAMMCO request the Canadian catch data.

The SC also **recommended** a new survey in the North Water Polyna (NOW; Baffin Bay stock) area as a means of monitoring this population. The SC also **recommends** that new age data and struck and lost data be obtained from both Canada and Greenland.

Satellite tagging of walrus continues in Svalbard, and the researchers are training Russian scientists so that they can use these techniques in the Pechora Sea. Genetics studies on walrus in the Pechora Sea indicate that they are similar to the Svalbard-Franz Josef Land walrus. This would mean that the abundance of the Svalbard-Franz Josef Land walrus population is larger than previously thought.

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7.7. Walrus

7.7.1. Review of active requests (R-2.6.3)

R-2.6.3 (ongoing): effects of human disturbance, including fishing and shipping activities, in particular scallop fishing, on the distribution, behaviour and conservation status of walrus in West Greenland.

7.7.2. Disturbance Symposium

A preliminary discussion on the results from the Symposium were discussed under item 6.5. The final report will be available to the SC for discussion at next year's meeting.

7.7.3. Assessment Baffin Bay

Stock structure

The Greenland Institute of Natural Resources (GINR) continued the tagging of walrus in the Qaanaaq area (Baffin Bay stock) in 2015. Open water early in the season allowed for transportation to the Wolstenholme Fjord where large numbers of walrus have been detected during aerial surveys. No tagging has been attempted before in this area due to difficult logistical conditions after closure of the hamlet of Moriussaq. A total of 21 walrus were tagged with satellite transmitters in June 2015 in a collaboration with local hunters from Qaanaaq. The tracking of the walrus showed that they left the Wolstenholme Fjord during June and moved west across the North Water to the east coast of Ellesmere Island. Some walrus moved north along Ellesmere Island, some went far west into Jones Sound and 3 walrus went south of Devon Island into Lancaster Sound where they headed west to Cornwallis Island.

These new tracking data confirm that the Baffin Bay population of walrus extend far west into the Canadian high Arctic.

Abundance

The importance of the North Water polynya in Smith Sound as an overwintering area for marine mammals has been questioned. One way to address the issue is to assess the abundance of selected marine mammals that are present during winter in the North Water. Visual aerial surveys involving double observer platforms were Report of the Scientific Committee conducted over the eastern part of the North Water polynya in April 2014. Four species of marine mammals were included in strip census estimation of abundance. Perception bias was addressed using a double-platform survey protocol, a Chapman mark-recapture estimator for whales, seals and walrus on ice, and a Mark Recapture Distance Sampling estimation technique for walrus in water. Availability bias was addressed by correcting abundance estimates by the percentage of time animals detected in water were available for detection at the surface. The resulting estimates suggested that 2,544 walrus (95% CI 1,513-4,279) wintered in the eastern part of the North Water polynya in April 2014. The walrus estimate is larger than previous summer estimates and it emphasizes the importance of the habitat along the Greenland coast as a walrus wintering ground.

Discussion of the SC

The SC **adopted** this abundance estimate for use in the updated assessment.

Catch Statistics

SC/22/18 presents data on the catch of walrus for the Baffin Bay population. Since 2007, when quotas were introduced in Greenland, catches of walrus have been reduced considerably. Throughout the years, more males than females have been caught. October is the month when most walrus are caught with almost 1/3 (32%) of total catches from the years 1993–2014. The Baffin Bay population is also harvested in the Canadian High Arctic and it is recommended that catches from these areas are included in the catch history.

In this catch history, catches from Upernavik were separated out from the Baffin Bay stock.

Discussion of the SC

The catches in this paper are not corrected for struck and lost. The SC **reiterated the previous recommendation** that Greenland provide information on struck and lost in walrus.

The SC **noted** that in Greenland there are 2 different reporting schemes for quota versus no-quota animals (*Piniarneq* and *Særmeldingsskema*). There are inconsistencies between the numbers that are reported, which creates problems when attempting to determine which numbers are accurate. For any assessment, the SC noted that it is important to obtain accurate removals. It is important to know whether the smaller numbers in *Piniarneq* reflects a general underreporting for all species in this system, as some marine mammal species are only reported under this system. The SC therefore **recommended** that Greenland should streamline their reporting system, and also conduct a study to investigate why the numbers are different between the reporting schemes.

There are Canadian catches included for up until 2011. The SC **noted** that although this is a shared stock, there is no formal agreement on sharing of information between Canada and Greenland for walrus.

Assessment

SC/22/16 used the new abundance estimate and the updated catch history to update the assessment for Baffin Bay walrus. It used the Bayesian model that has been used by NAMMCO WGs in past assessments of walrus, beluga and narwhal, with the prior distributions on the biological parameters being those of the 2013 assessment of walrus.

Estimates of animals that were struck and loss were added to the catch history of landed catches. A field study in the area in 1977/78 estimated loss rates between 15% and 25% from 34 hunts with a total of 112 landed animals (Born and Kristensen 1981), and more recent estimates by hunters indicate much lower loss rates of no more than five percent (APNN 2014; Born unpublished). The assessment used the span of these estimates as a uniform prior from a low catch history with a loss rate of 5%, to a high catch history with a loss rate of 25%. The sex ratio in the major part of the catch history was assumed to be even, except for catches after 2007 where gender identification by hunters estimated an average fraction of 34% females.

The analysis included also age estimates for 376 animals that were landed in Qaanaaq from 1987 to 1991. The fit of models to the age data showed an under-representation of animals younger than ten years, in agreement with a hunt that takes mainly adult animals. NAMMCO Annual Report 2015

The magnitude of the decline in the Baffin Bay stock caused by historical catches is unclear due to incomplete catch reporting, but four different models showed an initial decline until around 2005, and an increasing population thereafter, reflecting a decline in the annual landed catches from about 150 from 1999 to 2003, to about 80 from 2004 to 2008.

An exponential model estimated a stock that declined from 3,120 (90% CI: 2,640-3,730) animals in 1960, to 1,410 (90% CI: 1,220-1,670) in 2006, and then increased to 1,820 (90% CI: 1,420-2,330) in 2015. The models that were fitted to the age data showed a relatively precise estimate of the annual growth rate to about 7.9% (90% CI: 6.5-9.3%), while an exponential model with no age data had a much less precise estimate of the growth rate (7.1%; 90% CI: 3.9-10%).

While there are no reasons to question the growth rate estimate from the age data, the SC noted that these data are almost 30 years old, and the growth may thus no longer apply. It was therefore decided to use the exponential model with no age data for the management advice. This model that relied only on the trend in the three estimates of spring abundance from 2009 to 2014, provided a better reflection of the uncertainty on the present growth in the population.

The SC noted also that the Greenlandic quota for the area is given in terms of landed animals, assuming a loss rate of no more than 3%. But with the upper end of the loss rate in the assessment being based on data from the area, the SC found that an assumed loss rate of 3% was unrealistically low. It was therefore decided to give the advice in terms of landed animals with the point estimate of the loss rate (14.4%) from the assessment subtracted from the total removal. This provides the estimated trade-off in Table 1 between the annual landed catches and the probability of an increase in the population from 2016 to 2020, with an annual catch of 92 walrus being recommended as the maximum take that will allow a 70% chance of increase during this time period.

The recommended annual take of 92 walrus includes the Canadian catches in the high arctic. With the average annual take in three locations in Canada (Grise Fjord, Craig Harbour and Resolute Bay) being seven from 2007 to 2011, and the SC therefore **recommended** that no more than 85 walrus are landed annually in Qaanaaq from 2016 to 2020.

Table 1: The estimated probabilities of increase in the Baffin Bay stock of walrus from 2016 to 2020 given a range of annual landed catches (total landings in Qaanaaq and the Canadian High Arctic).

Probability	0.70	0.75	0.80	0.85	0.90	0.95
Catch	92	86	80	73	66	57

Discussion of SC

SC **recommended** that NAMMCO request the Canadian catch data. The SC also **recommended** a new survey in the North Water Polyna (NOW; Baffin Bay stock) area as a

means of monitoring this population. The SC also **recommends** that new age data and struck and lost data be obtained from both Canada and Greenland.

7.7.4. Update

The SC **noted** that the abandoned village in Greenland used as a field camp in the tagging study (Moriussaq) did not have many walrus present when it was habited. However, after it was abandoned, walrus are moving into the area, suggesting that the presence of humans affects walrus distribution.

Lydersen presented information on tagging walrus in Svalbard. Their research group have also trained Russian researchers on their tagging techniques and they conducted similar tagging work in the Pechora Sea.

Genetics studies on walrus in the Pechora Sea indicate that they are similar to the Svalbard-Franz Josef Land walrus. This would mean that the abundance of the Svalbard-Franz Josef Land walrus population is larger than previously thought.