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Central & Arctic Region
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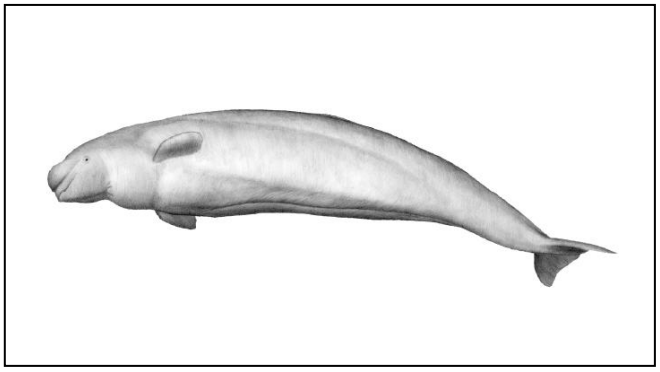
# ADVICE RELEVANT TO THE IDENTIFICATION OF CRITICAL HABITAT FOR CUMBERLAND SOUND BELUGAS



*G. Kuehl*

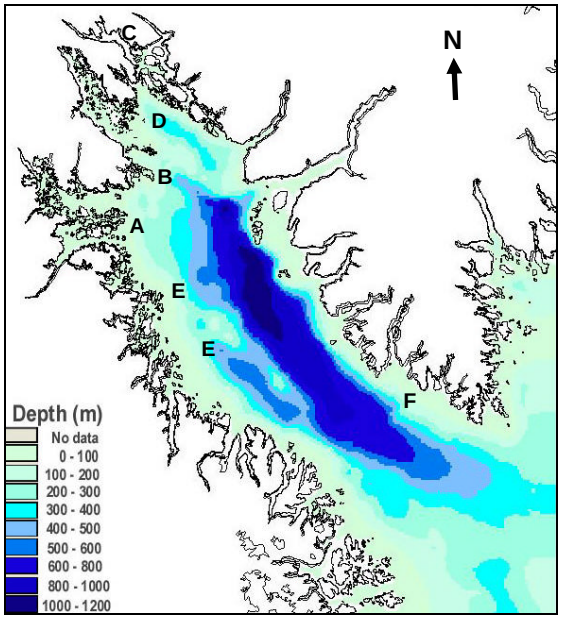



*Figure 1: Cumberland Sound, Southeast Baffin Island. A-Nettiling Fiord; B-Imigen Island and Kangilo C-Clearwater Fiord; D- North end; E-West side; F- Southeast polynia.*

## Context:

*In spring of 2004, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assessed and designated belugas in Cumberland Sound as Threatened. If, after consultation, the population is listed under the Species at Risk Act (SARA), a recovery strategy is required. The Act further requires that critical habitat be identified in the strategy to the extent possible based on the best information available or a schedule of studies be included that, when completed, would allow critical habitat to be identified. In anticipation of possible listing, a Cumberland Sound Beluga Recovery Team was formed in fall 2002 to develop a recovery strategy. In 2005, a Recovery Potential Assessment report was published for the Cumberland Sound beluga population (DFO 2005) which did not include information on habitat. The Team has requested science advice on habitat use that may be considered critical to recovery. The present report documents the science advice on habitat use that may be considered in determining habitat critical for survival or recovery of Cumberland Sound belugas.*

*This report is an addendum to the 2005 Recovery Potential Assessment (DFO 2005).*

## SUMMARY

The Recovery Team should consider the following habitats in its assessment of critical habitat for Cumberland Sound belugas:

- the northern edge of the fast ice (floe edge) opposite Nettiling Fiord (Location A in Figure 1), Imigen Island and Kangilo Fiord from May to June;
- the mouth of Kangilo Fiord (B) in July;
- Clearwater Fiord (C) from late July to late September;
- the north end (D) and west side (E) of Cumberland Sound from October to December; and
- the polynia and open pack areas that occur in, or near, the southeast corner of Cumberland Sound (F) from December to May.

Further research is required to better understand the temporal and spatial use of these areas and more clearly establish their biological functions for this beluga population.

## BACKGROUND

Cumberland Sound belugas were hunted commercially in the 1800s and 1900s, and for subsistence for centuries. The population was depleted as a result of the commercial whaling and assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as Endangered in 1990. In spring of 2004, the structure of the population was redefined, separating the Cumberland Sound population from the Southeast Baffin Island belugas which were included as part of the Western Hudson Bay population. COSEWIC re-assessed belugas in Cumberland Sound as Threatened. If listed under the *Species at Risk Act* (SARA), a recovery strategy will have to be developed. The Act further requires that critical habitat be identified in the strategy to the extent possible based on the best information available or a schedule of studies be included that, when completed, would allow critical habitat to be identified. In anticipation of possible listing, the Cumberland Sound Recovery Team was formed in fall 2002 to develop a recovery strategy. The Team has requested science advice on habitat use that may be considered critical to recovery.

## ANALYSIS

Belugas do not have any known dwelling-place similar to a den or nest during any part of their life cycle, hence the concept of “residence” as defined in the Species at Risk Act does not apply.

There are two sources of information on the habitat use of this population: traditional ecological knowledge and the results of scientific studies, including satellite-linked tracking, and aerial surveys. These data indicate that this population is relatively sedentary, inhabiting Cumberland Sound year-round. In spring, these whales are found in the northern portion of Cumberland Sound, reportedly feeding actively along the floe edge on Arctic Cod (*Boreogadus saida*) and Greenland Halibut (*Reinhardtius hippoglossoides*). When the ice is sufficiently open, they move into Clearwater Fiord where they mainly spend the summer, though they also range over adjacent areas of the north end of the Sound, possibly seeking protection from killer whales in that complex coastline. In autumn, they range mostly over the shelf on the west side of the Sound, where they prefer waters with depths between 200 and 500 m. Occasionally they make excursions into deeper waters presumably to take advantage of prey species which inhabit

those depths. Prey species identified as important are Arctic Cod and Greenland Halibut but other marine species may also be used. Later in the season, they move further south to the mouth of the Sound, especially the southeast side, for the winter where a recurring polynia forms each year. The southeast polynia may help belugas avoid entrapment, a potentially important source of mortality, as the ice forms over almost the entire Sound but remains lighter in that area. In mid-winter, when ice cover is at its greatest, many belugas are still found in the southeast polynia though some animals occur further west in the pack ice. In spring they return to the northern portion of the Sound.

Further studies would be required to quantify the value of these seasonal use areas to survival and fecundity, hence to recovery, of Cumberland Sound belugas, including research on prey species, predator-prey dynamics and the circumstances of ice entrapments.

## CONCLUSIONS AND ADVICE

Currently available knowledge indicates that the Cumberland Sound beluga population consistently uses the northern edge of the fast ice (floe edge) opposite Nettiling Fiord (Location A in Figure 1), Imigen Island and Kangilo Fiord from May to June; the mouth of Kangilo Fiord (B) in July; Clearwater Fiord (C) from late July to late September; the north end (D) and west side (E) of Cumberland Sound from October to December; and the polynia and open pack areas that occur in, or near, the southeast Cumberland Sound (F) from December to May.

The Recovery Team should consider these habitats in its assessment of critical habitat for Cumberland Sound belugas.

Further research, requiring at least a decade to complete, is required to improve our understanding of the temporal and spatial use of these areas and more clearly establish their biological functions for this beluga population.

## OTHER CONSIDERATIONS

Climate change has the potential to significantly affect the Arctic environment over the next few decades. The predicted reduction of available sea ice due to climate change could affect beluga negatively by reducing the availability of sea ice habitat. Climate warming will alter the quantity and quality of particular habitats. For example, continued loss of annual sea ice could result in an extension of beluga habitat while providing the opportunity for other competing whale species to extend their geographic range into Cumberland Sound. Positive effects might include greater food availability as primary productivity increases with warmer temperatures and negative effects may include heightened risk of predation due to reduced periods of sea ice as a predator refuge.

Development of a Cumberland Sound inshore fishery in summer has begun. If gill nets are used in the turbot fishery, although presently considered to be very unlikely, the potential for entanglement of belugas should be carefully considered. There is also potential competition for prey species (e.g., turbot and shrimp) eaten by belugas.

Noise from motorized boats was considered to be the main factor causing a decline in numbers of whales seen at outpost camps and in Cumberland Sound (Kilabuk 1998). The development of fisheries in Baffin Bay and Davis Strait has also resulted in some increased vessel noise in Cumberland Sound. Ship traffic will likely remain at its current level, but could change if the harbour at Pangnirtung undergoes further development in the future.

## SOURCES OF INFORMATION

DFO. 2005. Recovery Potential Assessment of Cumberland sound, Ungava Bay, Eastern Hudson Bay and St. Lawrence beluga populations (*Delphinapterus leucas*). DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2005/036.

Richard, P.R. and Stewart, B. 2008. Information relevant to the Identification of Critical Habitat for Cumberland Sound Belugas. DFO Can. Sci. Advis. Sec. Res. Doc. 2008/085.

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