

Sightings of Belugas and Other Marine Mammals in the North Water, Late March 1993

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ABSTRACT. Surveys of belugas were flown during March 1993 in Lancaster Sound and the North Water of Baffin Bay. Most belugas were observed along the shore leads off southeastern Devon Island and in the polynya at the mouth of Jones Sound. Our results confirm other published winter observations that belugas regularly occupy the North Water's leads and polynyas in winter. Walrus, narwhals, and bowhead whales were also seen during these surveys; their presence confirms the use of the North Water wintering area by several other marine mammal species.

Key words: beluga, *Delphinapterus leucas*, North Water, polynya, aerial survey, winter, ice leads, Baffin Bay, walrus, narwhal, bowhead whale

RÉSUMÉ. En mars 1993, on a effectué des relevés aériens dans le détroit de Lancaster et dans l'Eau du Nord située dans la baie de Baffin. La majorité des bélugas ont été observés dans les chenaux longeant la banquise fixe le long du sud-est de l'île Devon et dans la polynie à l'embouchure du détroit de Jones. Nos résultats confirment d'autres observations publiées sur l'utilisation régulière par les bélugas des chenaux et polynies de l'Eau du Nord en hiver. On a également observé des morses, des narvals et des baleines boréales durant ces relevés, ce qui confirme l'utilisation de l'Eau du Nord comme aire d'hivernage pour plusieurs autres espèces de mammifères marins.

Mots clés: béluga, *Delphinapterus leucas*, Eau du Nord, polynie, relevé aérien, hiver, chenaux de glace, baie de Baffin, morse, narval, baleine boréale

INTRODUCTION

In northern Baffin Bay, areas of open water persist throughout the winter (Finley and Renaud, 1980; Smith and Rigby, 1981). This open water, which expands north and south during spring and early summer, is known as the North Water. Flaw leads and polynyas are thought to be important habitat for the survival and well-being of many species of marine birds and mammals (Stirling, 1981). Interest is growing in research on these open water areas and on the North Water in particular. Finley and Renaud (1980) documented sightings of belugas, narwhals, and walrus during reconnaissance surveys of the North Water in March–April 1978 and in March 1979. Here, we report on the results of surveys flown between 20 and 26 March 1993 in Lancaster Sound, northern Baffin Bay, and Smith Sound (Figs. 1 and 2).

MATERIAL AND METHODS

Ice Conditions

Over 90% of the survey area was covered by dense ice. On 15 March 1993, five days before our surveys, a NOAA satellite image showed a floe edge near Resolute, shore leads along southern and eastern Devon Island and near Pond Inlet,

and polynyas west and northeast of Coburg Island (Fig. 1). Leads and cracks were typically between 20 and 200 m wide. Only a few reached widths between 200 and 600 m.

Survey Methods

Reconnaissance and systematic surveys were conducted from 20 to 26 March 1993, covering a total of about 3390 linear km (Figs. 2 and 3). The surveys were conducted from a De Havilland Twin Otter at an altitude of 305 m (1000 ft) and an air speed of 185 km/h (100 kn). The aircraft was equipped with three bubble windows on each side to provide effective visibility directly beneath the aircraft. At least three researchers made observations during each survey except on 25 and 26 March, when only two observers were available. Residents of Grise Fiord and Resolute also helped make counts during all but the first and last surveys. During reconnaissance flights, the aircraft was flown approximately 300 m to one side of leads and cracks. Systematic line transects were flown along parallel lines. Using a Global Positioning System (Trimble TNL 2000), the co-pilot recorded aircraft northings (latitude) and eastings (longitude) every five minutes on straight headings or any time the flight heading changed. Observers recorded the time of each sighting, the species, the number of individuals, their size class, their behaviour, and their reaction to the aircraft and ice

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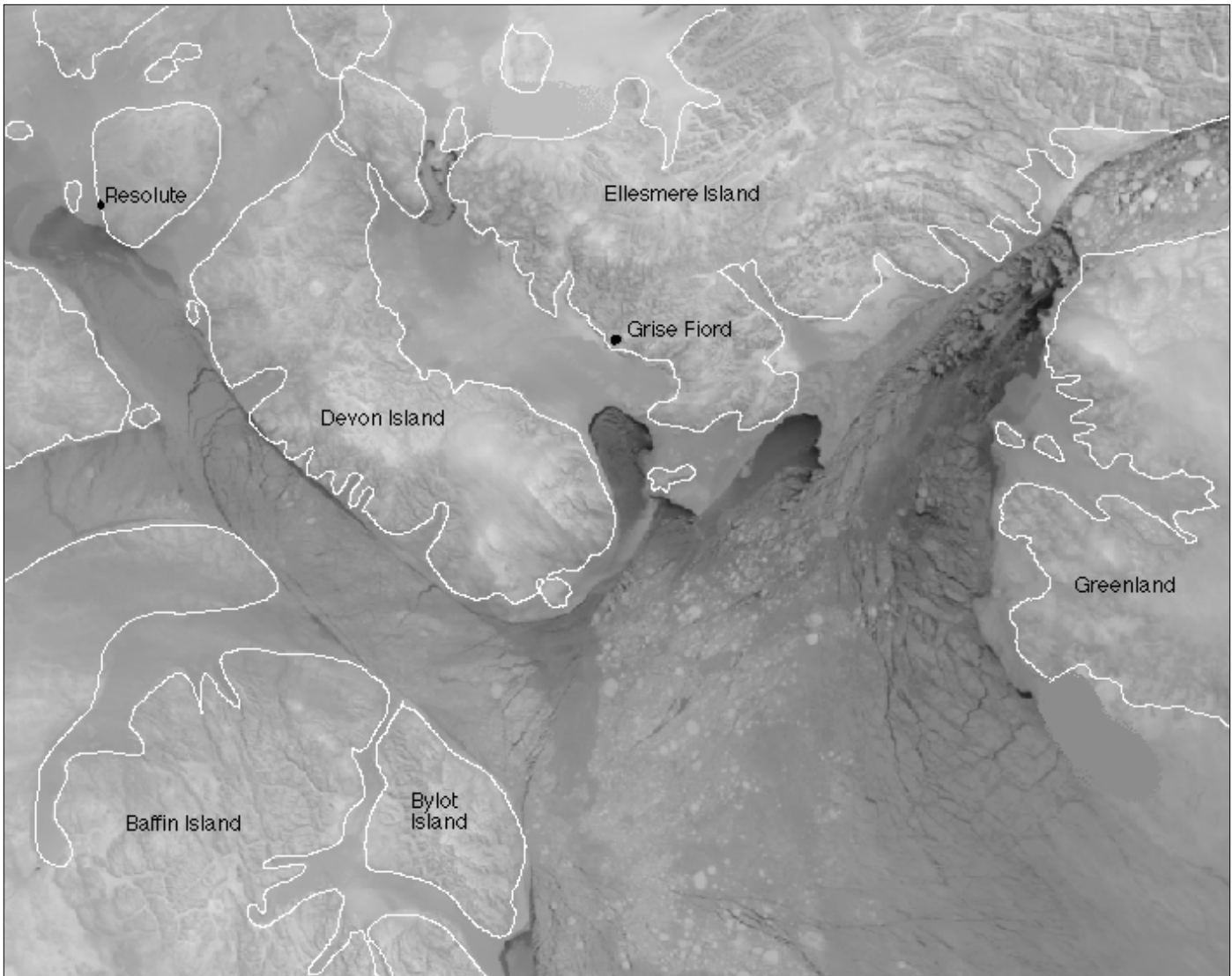


FIG. 1. NOAA-11 Satellite AVHRR IR image of the study area taken on 15 March 1993.

conditions. When large groups could not be counted exactly, observers recorded approximate numbers. The sum of all non-repeat counts of belugas from all observers was used to map distribution. Repeats were determined on the basis of recorded time (in hours, minutes, and seconds) given by each observer. Observers also noted sightings of other species of marine mammals.

RESULTS AND DISCUSSION

Distribution of Beluga Sightings

Belugas were first seen on the 21 March reconnaissance survey along the shore lead off the east coast of Devon Island (Fig. 2). A total of 382 belugas were counted during the first survey (A) in this area (Table 1; Fig. 2). The largest counts were made along the southern end of the lead. A total of 71 belugas in smaller groups were later sighted during a reconnaissance (B) of leads and cracks in the new ice

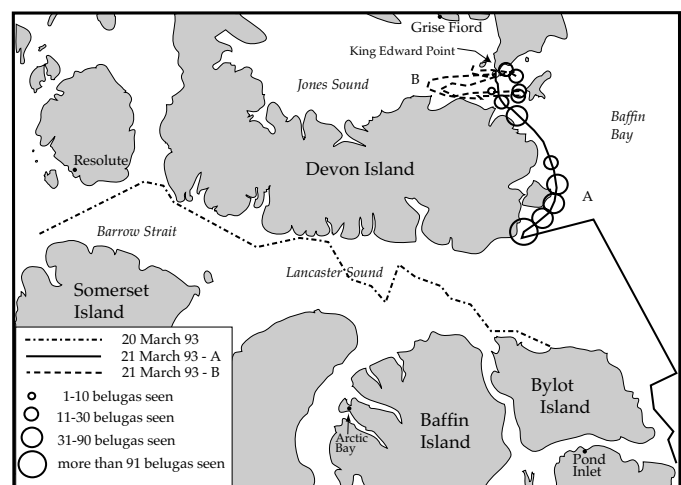


FIG. 2. Survey tracks and beluga sightings, 20 and 21 March 1993.

covering the recently frozen polynya at the mouth of Jones Sound (Table 1; Fig. 2).

TABLE 1. Beluga counts per survey by all observers during the North Water aerial surveys of March 1993.

Date	Area surveyed	Type of survey	Approx. survey distance (km)	Beluga count	Sighting rate (#/km)
20 March 93	Barrow Strait & Lancaster Sound (Fig. 2)	Reconnaissance	350	0	0.00
21 March 93					
A	E Pond Inlet – E Devon I. (Fig. 2)	Reconnaissance	520	382	0.73
B	E Jones Sound polynya (Fig. 2)	Reconnaissance	270	71	0.26
23 March 93	N Baffin Bay – Smith Sound (Fig. 3)	Reconnaissance	600	9	0.02
24 March 93					
C	N Baffin Bay near S Ellesmere I. (Fig. 3)	Systematic	560	33	0.06
25 March 93					
D	NW Baffin Bay near E Devon I. (Fig. 3)	Systematic	480	70	0.15
E	NW Baffin Bay near Coburg I. (Fig. 3)	Reconnaissance	210	33	0.16
26 March 93		Reconnaissance	400	135	0.34
Total			3390	733	0.22

No belugas were seen along the Ellesmere Island shore lead or along most of the Greenland shore lead (Fig. 3) during the reconnaissance survey of 23 March 1993. Observers saw only one beluga just north of the Carey Islands. A group of eight belugas was later seen in a crack approximately halfway between the Carey Islands and the coast of Ellesmere Island (Fig. 3).

A total of 33 belugas were seen during the systematic survey of the frozen polynya and offshore pack ice (C) northeast of Coburg Island on 24 March (Fig. 3). On 25 March, the systematic survey off the eastern coast of Devon Island (D) and the subsequent reconnaissance (E) east of Coburg Island (Fig. 3) yielded respectively 70 and 33 sightings of belugas in the pack ice (Table 1). On 26 March, observers saw a total of 135 belugas during the reconnaissance survey of the shore lead east and south of Devon Island (Fig. 3).

The size and colour of 228 of the belugas seen during the surveys were noted by observers. Of those, 185 (81%) were classified as large white animals, 31 (14%) as medium-sized grey animals, and 12 (5%) as small calves. In comparison, Finley and Renaud (1980) reported that, of the belugas classified during their March–April 1978 and March 1979 surveys, between 55% and 62% were adults and 38% to 45% were immatures.

Several other authors have reported that belugas occupy the North Water in winter. Vibe (1967) reports the observation by Hans Nielsen of Inglefield Bay, North Greenland, that small numbers of white whales spend the winter in the northern part of Baffin Bay. Freeman (1968) observed 150–200 belugas trapped in ice in eastern Jones Sound, an entrapment which lasted from late November 1965 until early April 1966. In the same paper, Freeman refers to Holtved (1967), who reported two winter observations of belugas in the Smith Sound region: one group of 80 and a second group of unspecified number. Freeman (1973) reports on a polar bear kill of three belugas that a Grise Fiord hunter discovered in March 1970 at King Edward Point (Fig. 2). Renewable Resource Consulting (1977) made numerous beluga sightings

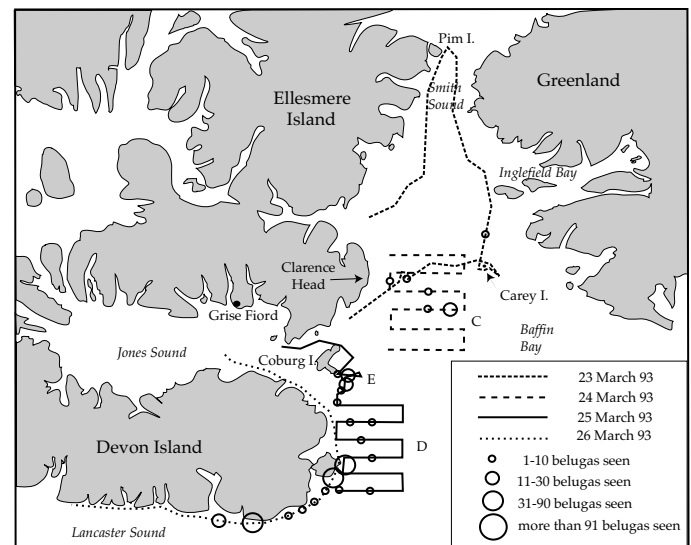


FIG. 3. Survey tracks and beluga sightings, 23 to 26 March 1993.

in the lead off southeastern Devon Island during aerial surveys in February, March, and April 1976. A recent study of the local knowledge of five elder hunters of Grise Fiord reported that they have observed belugas at the floe edge of Jones Sound and around Coburg Island (Fig. 2) during the Inuk seasons *ukiu* (January and February) and *upingoaksak* (March through mid-May) (Stewart et al., 1995). Our results, combined with those of Finley and Renaud (1980) and the above references, confirm that belugas regularly occupy the North Water's flaw leads and polynyas in winter.

Distribution of Sightings of Other Species

Bowhead whales (*Balaena mysticetus*), narwhals (*Monodon monoceros*) and walrus (*Odobenus rosmarus*) were also seen during these surveys (Fig. 4). Two bowhead whales were sighted: one at the mouth of Jones Sound, and the other northeast of Coburg Island and east of Clarence Head. A single narwhal was seen near the coast of Ellesmere Island

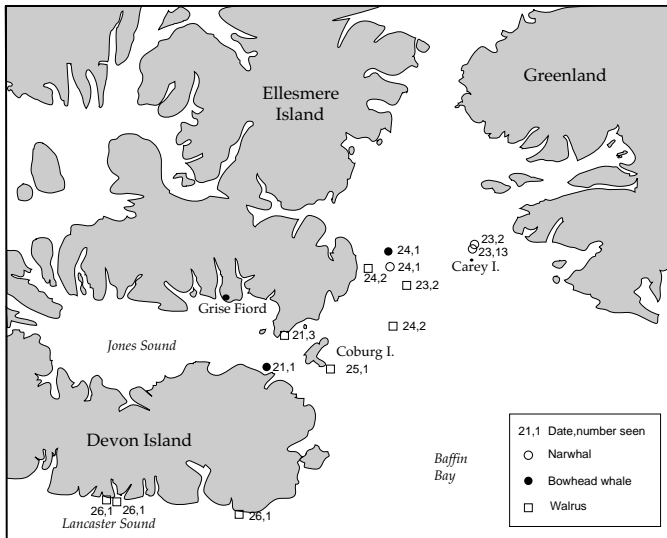


FIG. 4. Sightings of bowhead whales, narwhals, and walrus, 21 to 26 March 1993.

at the latitude of the Carey Islands, and 15 narwhals were sighted in Greenland waters north of the Carey Islands. A total of 13 walrus, either alone or in small groups, were seen dispersed throughout the survey area from the ice of southern Ellesmere Island to the shore lead of southeastern Devon Island. Finley and Renaud (1980) observed five walrus in the area in March 1978, 31 in April 1978, and over 700 in March 1979. These observations confirm the regular winter use of the North Water by several marine mammal species.

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