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The Dovekie, *Alle alle*, as a Spring Migrant in Eastern Lancaster Sound and Western Baffin Bay

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ABSTRACT. The distribution and numbers of dovekies during spring migration were studied by aerial surveys of eastern Lancaster Sound (1976, 1978, 1979) and western Baffin Bay (1978, 1979). Dovekies that nest in northwest Greenland migrated north through the study area during May. Extrapolations of recorded densities indicate that a peak of ~14 million dovekies may have been present in eastern Lancaster Sound and northwest Baffin Bay in mid-May 1978; fewer were present in May 1979, although the migration was more protracted and total numbers migrating through these areas may have been similar. Dovekies preferred offshore pack ice habitats with moderate to heavy ice cover. Possible reasons for the highly variable distributions in the three years are discussed.

Key words: dovekie, *Alle alle*, spring migration, Lancaster Sound, Baffin Bay, aerial surveys

RÉSUMÉ. La distribution et le nombre de mergules nains durant la migration printannière ont été étudiés lors des relevés aériens effectués dans les parties est du détroit de Lancaster (1976-78-79) et ouest de la baie de Baffin (1978-79). Au cours du mois de mai, les mergules nains qui nichent au nord-ouest du Groenland migrèrent vers le nord en passant par la région à l'étude. L'extrapolation des densités migratoires enregistrés indiquent qu'un maximum d'environ 14 millions de mergules nains a pu être atteint à la mi-mai 1978 dans la partie est du détroit de Lancaster, et nord-ouest de la baie de Baffin; moins d'individus étaient présents en mai 1979, quoique la migration était plus prolongée et le nombre total d'individus ayant migré par ces régions aurait pu être le même. Les mergules nains préférèrent les habitats sur les banquises de glace à la dérive en haute mer ayant une etendue de glace de moyenne à élevée. Les explications possibles des fortes variations dans le distribution de cette espèce au cours de ces trois années sont discutées.

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INTRODUCTION

The dovekie (*Alle alle*) is the smallest alcid inhabiting the North Atlantic Ocean. Total numbers are unknown but the dovekie may be the world's most abundant alcid. With such a large population, the dovekie has a central position in the energetics of arctic ecosystems (Norderhaug, 1970). Dovekies are not known to nest in Canada, but very large numbers (roughly 30 million, according to Freuchen and Salomonsen [1958]) nest in colonies along the northwest coast of Greenland (Brown *et al.*, 1975).

In North America, dovekies winter along the edge of the polar pack ice from southwest Greenland to the Gulf of St. Lawrence and northeast United States (Salomonsen, 1950; A.O.U., 1957). Dovekies wintering off southwest Greenland are birds that breed at Spitsbergen, whereas those breeding in northwest Greenland winter off Newfoundland and migrate through western Baffin Bay, at least in fall (Salomonsen, 1967, 1971, 1979; Brown *et al.*, 1975). The exodus from Newfoundland waters occurs in March and April (Tuck, 1971). Dovekies breeding in northwest Greenland migrate through Davis Strait during the latter part of April and early May (MacLaren Atlantic Ltd., 1978).

The remoteness of the areas through which the dovekies pass during northward migration, and the spring ice conditions in these areas, have prevented ship-based studies. Land-based observations have shed little light on spring migration phenology or routes, since during this period the species is primarily pelagic. However, land-based observers have found that at least some dovekies do enter the western Baffin Bay area during spring (Ellis, 1956).

This paper, based on aerial surveys, provides the first published documentation of the magnitude and extent of the spring migration of dovekies through offshore areas of eastern Lancaster Sound and western Baffin Bay.

METHODS

In 1976, weekly surveys of marine birds and mammals in eastern Lancaster Sound were conducted from May to September. In 1978 and 1979, surveys were conducted in much of the eastern Lancaster Sound-western Baffin Bay area (Fig. 1), usually at 1-2 wk intervals, from May through October. Only the early spring (May) surveys pertaining to dovekies are considered here. The procedures used for the aerial surveys, the areas and distances surveyed, and the methods of data analysis are described in McLaren (1982). Figures 3, 4 and 5, appearing later in this paper, show the approximate survey routes in the three years, but coverage varied somewhat from survey to survey.

In general, the surveys provided complete coverage along the edges of landfast ice and along any ice-free coasts that were present, and sample coverage of pack ice and open water seaward of coasts and ice edges. In 1976 and 1978 extensive 'nearshore' surveys were also flown; these were parallel to and 1.2 km from coasts and ice edges. All surveys were flown in deHavilland Twin Otter aircraft with observers in the copilot's seat and a left rear

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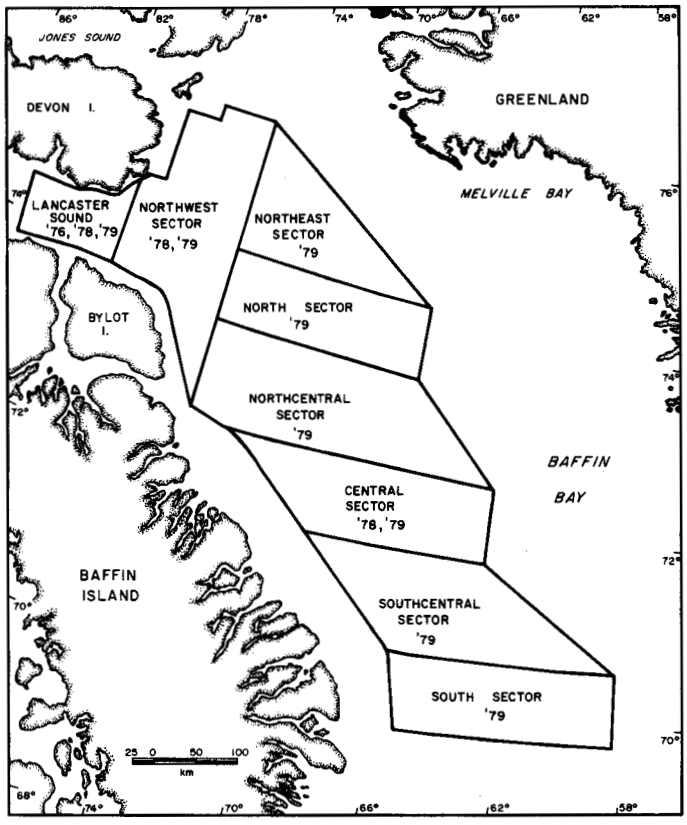

FIG. 1. Sectors of the eastern Lancaster Sound-Baffin Bay area. Shaded areas along the Greenland coast represent some of the nesting areas of dovekies. Years in which each sector was surveyed are shown.

seat behind the pilot. Except where noted below, surveys were flown at altitude 45 m ASL, at ground speed ~ 160-185 km/h. Transect width was 400 m (200 m on each side of the aircraft) but birds seen off-transect were also recorded. A GNS-500 (Global Navigation System) was used in 1978-79, and a GNS-200 in 1976. Observations were dictated into tape recorders. Detailed descriptions of the survey procedures used and the limitations and biases inherent in aerial surveys are presented in McLaren (1982).

Densities and estimated numbers mentioned in this paper are approximate and are probably minimum estimates of actual numbers in the area. They have not been corrected for any survey biases. In 1978 and 1979 densities were calculated as follows:

for lines flown at 45 m ASL (0.4 km transect width),

$$\frac{\text{total number of birds on-transect}}{(0.4)\ (\text{total survey distance})};$$

for lines flown at 90 m ASL (0.8 km transect width),

$$\frac{\text{total number of birds on-transect}}{(0.8)\ (\text{total survey distance}).}$$

The mean densities in each subarea are weighted averages of the specified line densities, and were calculated as follows:

$$\frac{\text{Sum of (length x density) for each line in a sector}}{\text{Total length of all lines in a sector}}$$

The area covered during each survey included only a small percentage of the offshore area being sampled. In 1976 we surveyed an average of 220 km^2 each week, or 3.1% of eastern Lancaster Sound; in 1978, an average of 430 km^2, or 1.0% of eastern Lancaster Sound and northwest Baffin Bay; and in 1979, an average of 1317 km^2, or 0.7% of eastern Lancaster Sound and western Baffin Bay.

ICE CONDITIONS AND HABITATS

Patterns of ice breakup and positions of ice edges in eastern Lancaster Sound and Baffin Bay are similar from year to year. However, the rates at which the pack ice disperses and ice edges break up and recede vary. The presence of the North Water in northern Baffin Bay and Smith Sound (78°25'N, 74°00'W) profoundly influences sea-ice conditions by providing open water early in the year far north of the nearest area of extensive open water in Davis Strait (Muench, 1971). As temperatures moderate in April and May the North Water expands. Eastern Lancaster Sound and the northwesternmost areas of Baffin Bay become progressively clearer of ice as the pack ice drifts southeastward and less new ice is formed (Fig. 2). The extent of pack ice cover in offshore areas changes markedly during May, but most shelves of landfast ice along coasts and in adjacent channels remain intact until mid-summer. Thus most ice edges (the edges of landfast ice) remain intact through the spring migration period.

Table 1 summarizes offshore ice cover in the various parts of the study area. These data are based on our

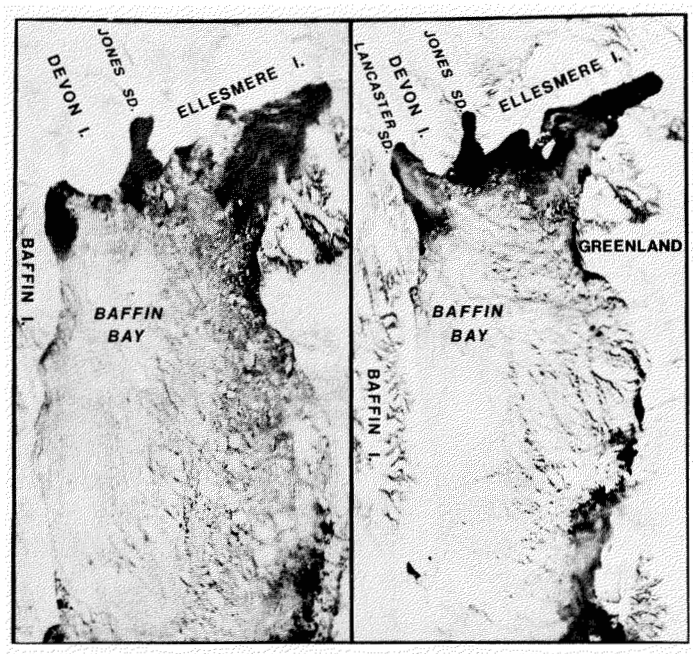

FIG. 2. Ice conditions in Baffin Bay, late May 1978 and 1979 (NOAA satellite imagery).

TABLE 1. Mean ice cover (%) in eastern Lancaster Sound and western Baffin Bay, 1976, 1978 and 1979. See Fig. 1 for sector locations.

Sector	Year	2-9 May	10-15 May	16-21 May	23-26 May	29 May-2 June
Eastern Lancaster Sound	1976	95	93	91	78	52
	1978	72	83	90	81	30
	1979	88	67	16	27	39
Northwest Baffin Bay	1978	94	87	92	82	62
	1979	NS[a]	83	75	64	NS
Northern Baffin Bay	1979	NS	88	91	95	NS
Central Baffin Bay	1978	NS	91[b]	NS	NS	NS
	1979	NS	97	96	96	NS
South Baffin Bay	1979	NS	NS	85	91	NS

[a] NS = not surveyed.
[b] Ice cover based on survey flown at 90 m ASL. All other surveys were at 45 m ASL.

estimates, during aerial surveys, of the percent ice cover in each 2-min segment of each transect. A 2-min segment is about 6 km long. In 1976, when only eastern Lancaster Sound was surveyed, Lancaster Sound contained broken pack ice throughout the winter. This ice began to disperse from the study area slowly, throughout May. Conditions differed markedly in 1978 and 1979 when a stable ice edge was present across eastern Lancaster Sound until late July (Fig. 2). Only the area of pack ice east of this ice edge is considered in Table 1. In eastern Lancaster Sound and northwestern Baffin Bay, the pack ice dispersed much more rapidly in 1979 than in 1976 or 1978 (Table 1); hence in 1979 there was much more open water in northwestern parts of the study area during the period when most dovekies were present. There was significantly more ice in eastern Lancaster Sound during May 1978 (mean cover 85%) than in May 1979 (37% — n = 142 and 204 transect segments, respectively; Mann-Whitney $z = 7.85, P<0.001$ [Siegel, 1956]).

TABLE 2. Densities (no. km^{-2}) of dovekies recorded during aerial surveys in eastern Lancaster Sound and western Baffin Bay, 1976, 1978 and 1979. See Fig. 1 for sector locations.

Sector	Year	2-9 May	10-15 May	16-21 May	23-26 May	29 May-2 June
Eastern Lancaster Sound	1976	0.0	0.3	126.5	184.5	0.0
	1978	0.0[a]	NS[b]	216.4	39.9	0.7
	1979	0.0	0.0	3.2	4.5	0.2
Northwest Baffin Bay	1978	0.0	251.1	64.1	7.2	7.1
	1979	NS	5.3	20.7	57.4	NS
Northeast Baffin Bay	1979	NS	8.2	39.5	11.3	NS
North Baffin Bay	1979	NS	38.4	12.2	6.2	NS
Northcentral Baffin Bay	1979	NS	39.5	9.1	0.4	NS
Central Baffin Bay	1978	NS	7.9[c]	NS	NS	NS
	1979	NS	2.0	22.1	0.1	NS
Southcentral Baffin Bay	1979	NS	NS	25.0	0.6	NS
South Baffin Bay	1979	NS	NS	17.0	0.8	NS

[a] Surveyed twice (5 May, 9 May).
[b] NS = not surveyed.
[c] Density based on results of survey at 90 m ASL. Other surveys were at 45 m ASL.

RESULTS

Distribution and Estimated Numbers

The mean densities of dovekies recorded in various sectors (see Fig. 1) of offshore eastern Lancaster Sound and western Baffin Bay in 1976, 1978 and 1979 are summarized in Table 2.

1976. Beginning on 2 May, we flew weekly surveys along the ice edges bordering eastern Lancaster Sound, along nearshore transects 1.2 km seaward of the ice edges, and along eight cross-sound transects. Dovekies were first seen on 11 May when 436 birds were counted. By 16 May they were abundant. About 71 000 and 75 000 were counted, respectively, during two surveys on 16-20 May and 23-24 May (Fig. 3). Extrapolations of densities recorded during these surveys indidate that about 900 000 and 1 300 000 dovekies, respectively, were present in eastern Lancaster Sound (Table 3). Pan ice cover averaged 85% during this period. By 30 May-1 June, virtually all dovekies had left the area and no birds were observed during a survey on 6-7 June.

Dovekie densities in eastern Lancaster Sound decreased significantly from east to west during the two surveys in the 16-24 May period (Spearman r_s for density *vs.* longitude = -0.769, n = 16 transects, $P<0.001$ [Siegel, 1956]). During both surveys, however, some dovekies were seen as far west as 83°W. Dovekies were rare along coasts and ice edges; the largest concentration seen there was about 800 birds along the ice edge along northwest Bylot Island on 20 May (Fig. 3A).

TABLE 3. Estimates of numbers of dovekies in eastern Lancaster Sound, 16-24 May 1976. See Fig. 3 for locations of subareas.

	16-20 May		23-24 May	
Subarea	Mean density[a] (No. km^{-2})	Subarea estimate[b]	Mean density[a] (No. km^{-2})	Subarea estimate[b]
A	0.0	0	0.0	0
B	17.4	18 093	20.4	21 756
C	0.0	0	56.2	52 984
D	15.3	13 764	2.6	2 368
E	0.0	0	18.0	16 354
F	36.2	37 000	62.5	66 082
G	516.8	524 734	1010.6	1 024 567
H	472.1	295 986	169.9	104 654
All subareas	126.5	889 577	184.5	1 288 765

[a] Densities are not corrected for survey biases.
[b] Estimates of total numbers apply to the area of width 104 km between the easternmost and westernmost transects (longitudes 80° to 83°30'W). Subareas A and H are 7.4 km wide; subareas B through G are each 14.8 km wide.

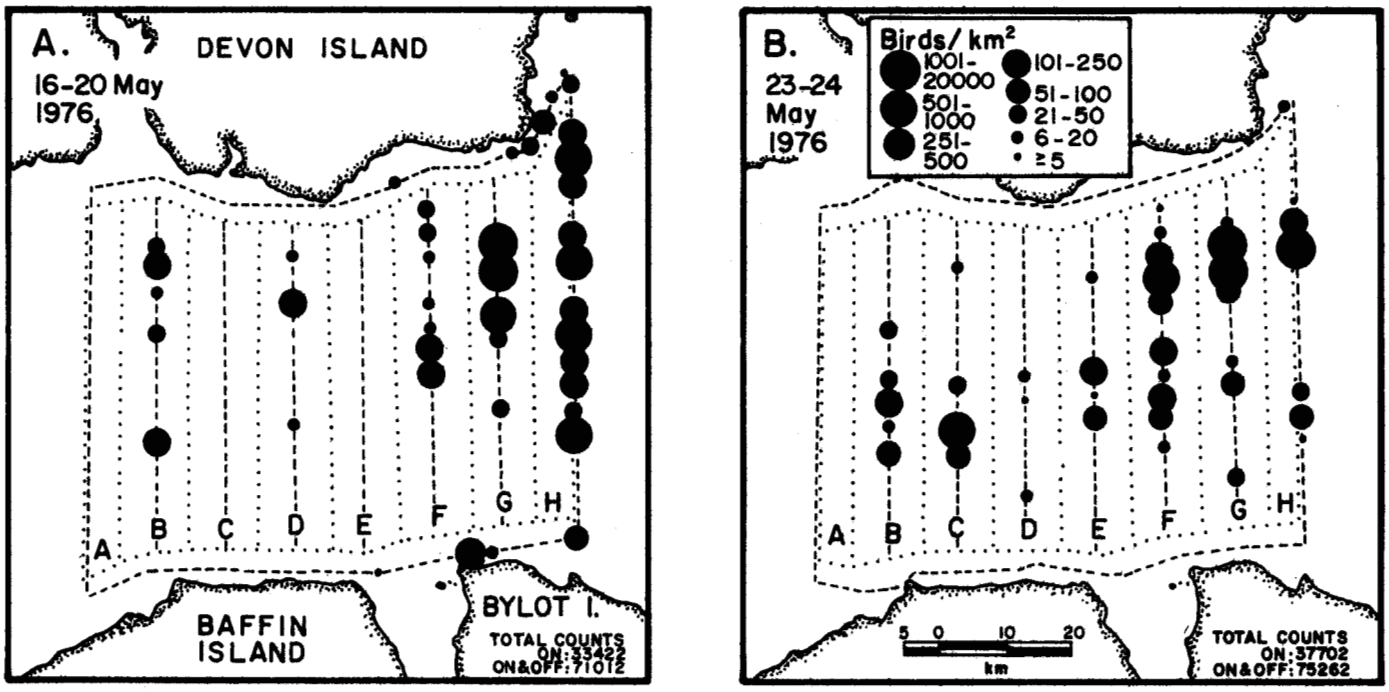

FIG. 3. Distributions of dovekies in eastern Lancaster Sound, 16-24 May 1976. Dashed lines indicate survey route; dotted lines demarcate subareas referred to in Table 3 by capital letters. Symbols indicate densities (no. km^{-2}) of dovekies in 2-min (~6 km) segments of transect.

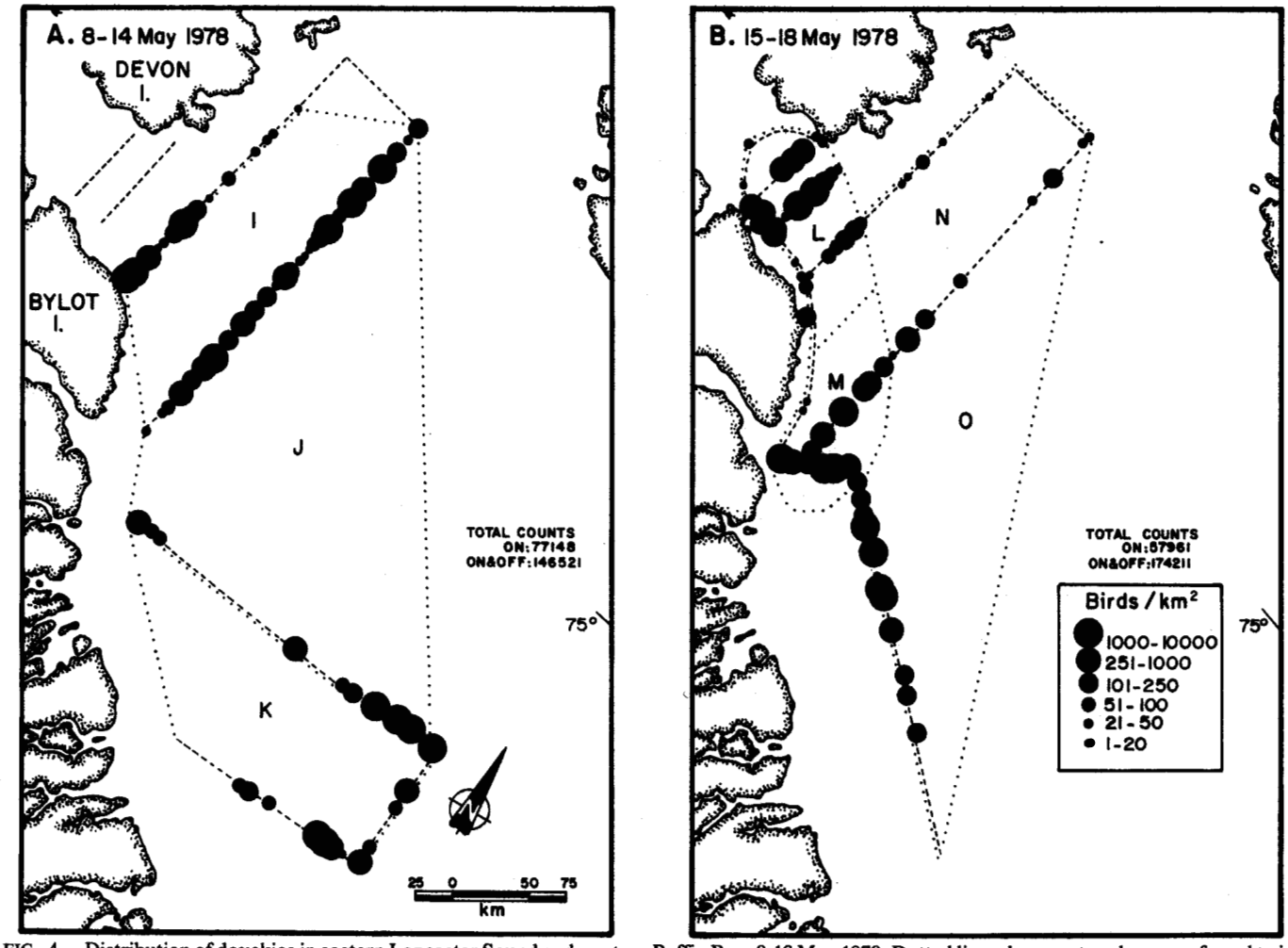

FIG. 4. Distribution of dovekies in eastern Lancaster Sound and western Baffin Bay, 8-18 May 1978. Dotted lines demarcate subareas referred to in Table 4 by capital letters. Otherwise plotted as in Fig. 3.

TABLE 4. Estimates of numbers of dovekies in eastern Lancaster Sound and northwestern Baffin Bay, 14-18 May 1978. See Fig. 4 for locations of subareas.

	14 May		17-18 May		
Subarea	Mean density[a] (No. km^{-2})	Subarea estimate	Subarea	Mean density[a] (No. km^{-2})	Subarea estimate
I	228.9[b]	5 516 490	L	197.2	2 247 790
J	143.0	8 394 100	M	193.3	4 252 600
K	7.9	209 350	N	8.9	142 880
			O	9.3	388 520
All areas	—	14 119 940		—	7 031 790

[a] Densities are not corrected for any survey biases.
[b] This value excludes one flock of 24 000 dovekies seen off northeast Bylot Island; if these are included, the estimated number present in subarea I is 8 194 000 and the estimated total for all areas is 16 797 450 individuals.

1978. Beginning on 4 May, we flew weekly surveys along all ice edges and ice-free coasts and along selected nearshore and offshore transects in a large area of eastern Lancaster Sound and northwestern Baffin Bay (Fig. 4). Only one group of seven dovekies was recorded during extensive surveys on 4-12 May. However, by 14 May a massive influx had occurred into the offshore area of Baffin Bay; over 135 000 dovekies (251.1 birds km^{-2}) were counted along transects in the northwest sector on this date (Fig. 4A). A high-altitude survey (90 m ASL) of the central sector on this date also revealed large numbers of dovekies to the southeast. Extrapolations indicate that 14 million dovekies may have been present in and between the northwest and central sectors on 14 May (Table 4).

On 17-18 May, high densities of dovekies were still present in offshore areas and many had moved into eastern Lancaster Sound (Fig. 4B). Of the estimated 7.0 million in the surveyed area, about 6.5 million were in a broad crescent extending from Lancaster Sound south to about 72°30′ N and extending about 100 km off the coasts of Bylot and Baffin islands (Table 4).

Numbers and densities of dovekies in offshore areas of eastern Lancaster Sound and northwestern Baffin Bay had declined markedly by 23 May. During a survey on 23-24 May, 6000 dovekies were recorded on-transect and an estimated 500 000 were present offshore. On 30 May-1 June, only 2100 were counted offshore. During both these surveys, many of the dovekies seen were in the extreme northeastern part of the surveyed area, closest to Greenland.

As in 1976, few dovekies were present along ice edges and coasts in spring. One exception was along northwest Bylot Island on 15 May, when more than 60 000 were seen along the coastal and nearshore transects along a 16-km stretch of the landfast ice edge. These were evidently part of the large concentrations present in adjacent offshore waters at the same time (Fig. 4B).

1979. In mid- and late May, we flew three surveys of offshore areas in eastern Lancaster Sound and western Baffin Bay. Ice edges and the few ice-free coasts were surveyed twice in mid-May. Dovekies were widely distributed in moderate numbers in offshore Baffin Bay during the first offshore survey on 12-15 May (Fig. 5A). None were seen in Lancaster Sound. Densities were highest in an area east of 75°W and between 72°30′N and 74°30′N (39.0 birds km^{-2}). Many thousands of dovekies in flocks of up to 600 birds were flying north, as opposed to swimming or flushing from the water.

Although the overall density of dovekies during a survey on 17-21 May was similar to that during the prior survey, distribution was markedly different. Hundreds of thousands of dovekies had moved into the northern and southern portions of Baffin Bay, whereas much smaller numbers were noted in the central areas (Fig. 5B, Table 5). The low values in the central areas may be attributable to the fact that there was virtually no open water there; indeed many of the dovekies seen there were in large flocks flying strongly to the north at altitudes above the aircraft (>50 m ASL). An estimated 4.3 million dovekies were in the surveyed area at this time.

During a third complete survey on 24-26 May, an estimated two million dovekies were in the northwest sector of Baffin Bay and adjacent Lancaster Sound. Elsewhere, densities and estimated numbers were much lower than in the previous survey. Almost 90% of the estimated 2.4 million dovekies in western Baffin Bay during this survey were in the northwest and northeast sectors (Table 5, Fig. 5C).

TABLE 5. Estimates of numbers of dovekies in eastern Lancaster Sound and western Baffin Bay, 12-26 May 1979. See Fig. 1 or 5 for locations of sectors.

	12-15 May		17-21 May		24-26 May	
Sector	Mean density[a] (No. km^{-2})	Sector estimate	Mean density[a] (No. km^{-2})	Sector estimate	Mean density[a] (No. km^{-2})	Sector estimate
P (Lancaster)	0.0	0	3.2	23 964	4.5	33 812
Q (NW)	5.3	178 806	20.7	695 080	57.4	1 931 689
R (NE)	8.2	185 416	39.5	889 729	11.3	253 372
S (N)	38.4	1 182 816	12.2	376 099	6.2	190 051
T (N Central)	39.5	1 457 524	9.1	334 592	0.4	12 912
U (Central)	2.0	62 893	22.1	693 889	0.1	4 163
V (S Central)	—	—	25.0	745 190	0.6	17 261
W (S)	—	—	17.0	588 333	0.8	28 411
All areas	18.9	3 067 455	19.1	4 346 876	10.1	2 471 671

[a] Densities are not corrected for any survey biases.

Dovekies were observed infrequently along coasts and ice edges in May 1979. All 5300 seen in such areas were along the landfast ice edge along the east coast of Baffin Island on 13 and 17 May. Most were south of 71°N (Fig. 5).

Habitat Utilization

Most of the dovekies seen during spring were in dense

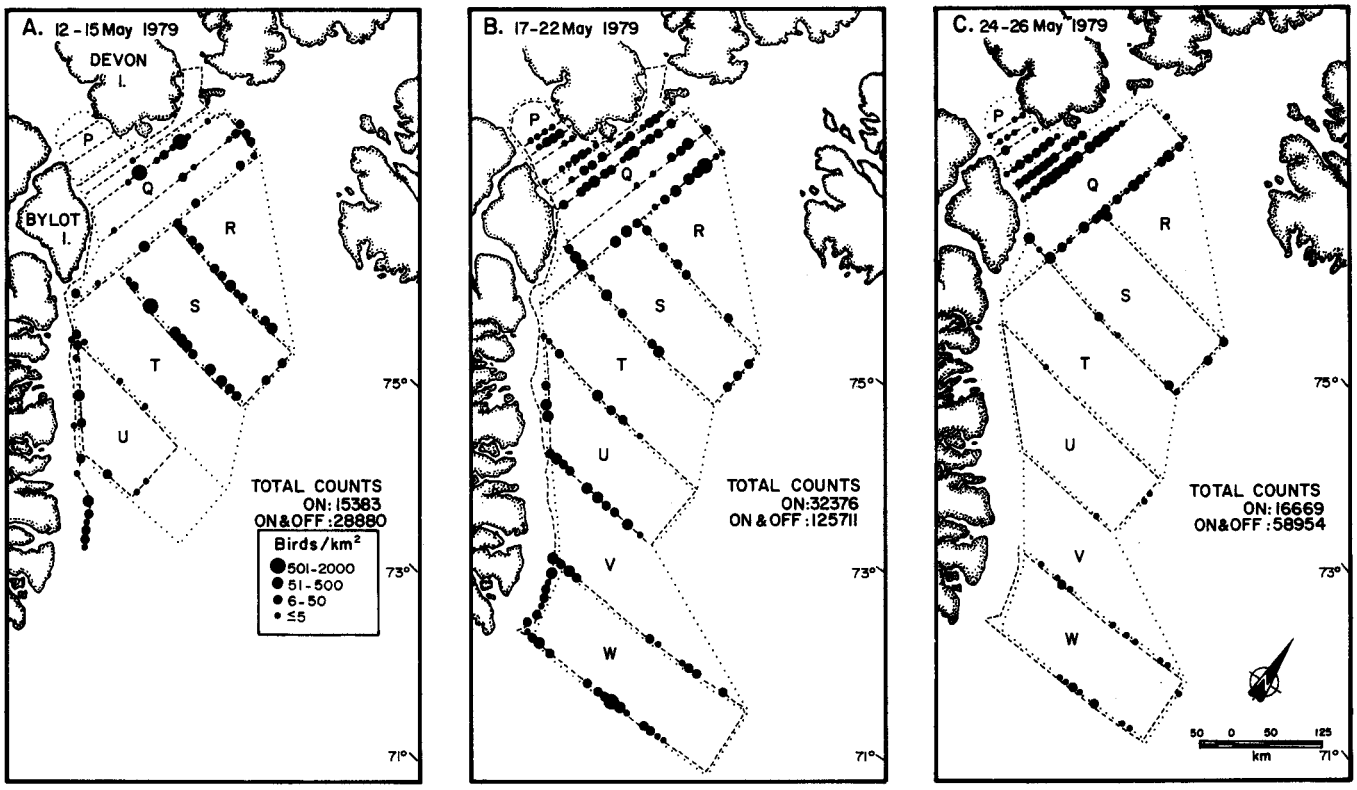

FIG. 5. Distribution of dovekies in eastern Lancaster Sound and western Baffin Bay, 12-26 May 1979. Dotted lines demarcate subareas referred to in Table 5 by capital letters. Otherwise plotted as in Fig. 3.

TABLE 6. Habitat utilization by dovekies in eastern Lancaster Sound and Baffin Bay in May 1976, 1978 and 1979

Habitat	No. of transect segments[a]	% of segments[a] with dovekies	No. of segments with density: 0	0.1-2.0	2.1-10.0	10.1-100.0	100.0+	Mean density (no. km^{-2})
1. Fast ice edges	725	5	686	5	10	18	6	3.6
2. Nearshore	165	7	153	2	2	5	3	8.6
3. Offshore	2048	25	1543	76	102	204	123	50.3

Statistical comparisons (chi-square contingency tests based on density categories [Siegel, 1956]).

Comparison	P	χ^2	df	Coefficient of contingency
1 *vs* 2	NS	2.0	4	0.047
1 *vs* 3	<0.001	127.0	4	0.209
2 *vs* 3	<0.001	25.8	4	0.107

[a] A transect segment represents 2 min of survey and includes about 6 km of transect.

TABLE 7. Offshore habitat utilization by dovekies in eastern Lancaster Sound and Baffin Bay in May 1978 and 1979

Pan ice cover	No. of transect segments[a]	% of segments[a] with dovekies	No. of segments with density: 0	0.1-2.0	2.1 10.0	10.1-100.0	100.0+	Mean density (no. km^{-2})
1. 0-5%	113	34	75	13	13	12	0	4.2
2. 6-25%	39	59	16	7	8	7	1	10.7
3. 26-50%	58	41	34	4	6	12	2	24.4
4. 51-75%	68	47	36	9	3	14	6	73.8
5. 76-90%	282	38	174	12	29	43	24	37.8
6. 91-99%	1056	20	844	28	35	85	64	46.3
7. 100%	208	2	204	0	1	3	0	0.6

[a] A transect segment represents 2 min of survey and includes about 6 km of transect.

aggregations on small areas of open water in the cracks between pans of ice. During the periods of peak migration through Baffin Bay and Lancaster Sound in all three years, dovekie densities in offshore habitats were significantly higher than in ice edge or nearshore areas (Table 6). In offshore habitats, dovekies occurred in higher densities in areas with moderate to heavy pan ice cover (Table 7). Ice-free areas and areas with total ice cover were generally avoided. In 1979, when areas with all categories of present ice cover were surveyed, densities were highest in areas of 51-90% ice cover. In 1978, densities were highest in areas of 76-99% pan ice cover, although there were very few transect segments with less than 75% pan ice cover. Ice conditions in 1976 were assessed differently and have not been included in Table 7.

DISCUSSION

The first dovekies are reported to arrive at nesting sites along northern Melville Bay, northwest Greenland, on 5

May, and at the northern portions of the breeding range on 8 May (Bruemmer, 1978). In this study, migrants were first recorded during aerial surveys on 11 May in 1976 and 7 May in 1978. In 1979, dovekies were present on 12 May, the first day of survey. Thus, large numbers of dovekies may not arrive in western Baffin Bay and Lancaster Sound until slightly later than the first birds reach the breeding colonies in Greenland. That the birds seen by us were en route to their Greenland colonies, rather than arriving in the area from the colonies, is suggested by the fact that large flocks were seen to be migrating north.

Peak numbers and densities of dovekies in offshore eastern Lancaster Sound were virtually identical in 1976 and 1978: 1.3 million dovekies (216.4 birds km^{-2}) on 17 May 1978, and 1.3 million dovekies (184.5 birds km^{-2}) on 23-24 May 1976. In 1979, on the other hand, the peak estimates were substantially lower: 34 000 dovekies (4.5 birds km^{-2}) on 26 May. Peak numbers in the northwest sector of Baffin Bay were also lower in 1979 than 1978; an estimated 5.5 million dovekies (228.9 birds km^{-2}) were present on 14 May 1978, but in 1979 the maximum was only about 1.9 million birds (57.4 birds km^{-2}) on 25 May. (This was the only part of Baffin Bay in which low-altitude surveys were flown in both 1978 and 1979). Although the largest numbers in eastern Lancaster Sound and the northwest sector of Baffin Bay occurred on 25-26 May in 1979, peak numbers in the entire area surveyed in 1979 were recorded on 17-21 May when dovekies were widely distributed throughout all of the surveyed parts of Baffin Bay. During that survey, the total estimated number was 4.3 million dovekies, or about one-third of the number in a smaller area on 14 May 1978.

Although recorded densities and estimated numbers were apparently quite different in 1978 and 1979, the total numbers of dovekies migrating through the area in the two years may not have been very different. The dovekie influx in 1978 was very sudden and of very short duration. Of the estimated 14 million dovekies present on 14-18 May 1978, only a small fraction was still present by 23-24 May. In 1979, on the other hand, millions were present at least from 12 to 26 May. The average flock size of dovekies during the period of peak migration was about twice as large in 1978 as in 1979 (513 *vs.* 276 birds). Thus, the migration in 1979 apparently consisted of lower densities and smaller flocks of dovekies moving through the area during a much longer period of time than in 1978.

During spring migration through western Baffin Bay, the vast majority of the dovekies occurred in offshore areas with extensive pack ice, and not along or near landfast ice edges or coasts. The association of dovekies with pan ice has been recognized previously (Salomonsen, 1950). In all three years of study, the distribution of dovekies was apparently closely related to that of pack ice in offshore Baffin Bay and eastern Lancaster Sound. On transects surveyed in at least two years (i.e. in the northwest sector of Baffin Bay and in eastern Lancaster Sound), densities in 1979 were only a fraction of those recorded in 1976 and 1978. In both these areas significantly less pan ice was present in 1979 than in 1978 (see *Ice Conditions and Habitats*). This was especially true of eastern Lancaster Sound, where pan ice cover averaged 91% on 15-22 May 1976, 90% on 17 May 1978, but only 16% on 21 May 1979.

During summer, the dovekie diet consists primarily of soft-bodied crustaceans (including amphipods, mysids and copepods), and fish (see Bradstreet, 1976 for review). In Lancaster Sound during late summer amphipods and fish predominate (Bradstreet, 1976). However, little is known about diet during spring migration. Of 94 dovekies collected in the offshore pack ice of Baffin Bay east of Bylot Island in mid-May 1979, 24 had empty stomachs; those with recognizable food remains contained well-digested copepods, primarily *Calanus glacialis*, an invertebrate equally common in ice-rich and ice-free waters (Bradstreet, 1982). *C. glacialis* is a planktonic, not epontic, copepod (Cross, 1982). Thus, there is no definite evidence that dovekie distribution in May is directly related to the presence of a cryophilic food source. If *C. glacialis* is the primary food in spring, and if it is equally abundant in open water and below heavy pack ice, the strong association of dovekies with pack ice may reflect a tendency to seek sheltered areas to feed and rest.

Our results indicate that in some years at least 14 000 000 dovekies may be present in western Baffin Bay at one time in spring; 1 000 000 to 2 000 000 may be present in eastern Lancaster Sound. Total numbers that migrate through the area each spring may be much larger. Although no reliable estimates are available, colonies in northwest Greenland may contain >30 000 000 individuals (Freuchen and Salomonsen, 1958). Northwestern Baffin Bay and, at least in some years, eastern Lancaster Sound, is an important migration route and staging area for much, if not all, of the northwest Greenland dovekie population.

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