

Research Note

Observations on the wader populations at Ny-Ålesund, Spitsbergen, 1982

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During the summer of 1982 waders, Charadriidae, were recorded regularly by FM in the station area of Ny-Ålesund (78°55'N, 11°56'E). From 6 to 18 July waders were censused by HM and JF in a 6.32 km² area around Ny-Ålesund (Fig. 1). Parts of the area were covered each day and all birds seen were mapped. All suitable habitats were covered within a distance of 25–50 m at least once, and early snow-free ridges were surveyed especially.

The habitats are briefly described by Bengtson (1975a) and mapped in detail by Brattbakk (1981).

The first purple sandpiper *Calidris maritima* appeared on 29 May, the first turnstone *Arenaria interpres* on 2 June, the first sanderling *Calidris alba* on 5 June, the first dunlin *Calidris alpina* on 6 June, the first grey phalarope *Phalaropus fulicarius* on 7 June, the first ringed plover *Charadrius hiaticula* on 8 June, and the first red-necked phalarope *Phalaropus lobatus* was seen on 14 June. In early June when snow-free vegetated areas were found practically only in the station area, the number

of pre-breeding waders reached a peak with 120 purple sandpipers and 30 sanderlings on 6 June, whereas no concentrations occurred in the other species. A number of purple sandpipers (15–20) stayed in the station area until extensive melt took place around 20–25 June, whereupon they dispersed. Small groups of knots *Calidris canutus* were present in the period 18 June to 6 July.

Nests or newly hatched young were found of two pairs of ringed plovers, four turnstones, six purple sandpipers, one dunlin, ten grey phalaropes, and one pair of red-necked phalaropes (Fig. 1). The total number of territories was estimated (Table 1) based on finds of nests and young, and on singing or otherwise displaying males and pairs. The extent to which non-breeders were involved is unknown.

The purple sandpipers posed special problems, as they normally do not give alarm calls or react in other ways to human activity in or close to the territory. The flushing distance of incubating birds was normally only 1–5 m (Bengtson 1970). The

Table 1. Numbers of wader broods (1967 and 1973) and territories (1981 and 1982) recorded in the census area at Ny-Ålesund.

Census year Area	1967 (3.1)	1973 (3.1)	1981 3.70	1982 3.70	1982 6.32
<i>Charadrius hiaticula</i>	3	5	4–5	2–3	2–3
<i>Arenaria interpres</i>	0	1	3–5	3	4
<i>Calidris maritima</i>	8	11	13–14	13–15	18–21
<i>Calidris alpina</i>	0	0	1	2	2
<i>Calidris alba</i>	0	1	0	0	0
<i>Phalaropus fulicarius</i>	4–5	4	20–25	15–20	15–20
<i>Phalaropus lobatus</i>	0	0	1–2	1–2	1–2
Total	15–16	22	42–52	36–45	42–52

For 1982 both totals from the area censused during the three previous studies and the grand total for all the area are given. 1967 and 1973 data from Bengtson (1975a). According to the new maps, however, the area censused by Bengtson was 4.7 km².

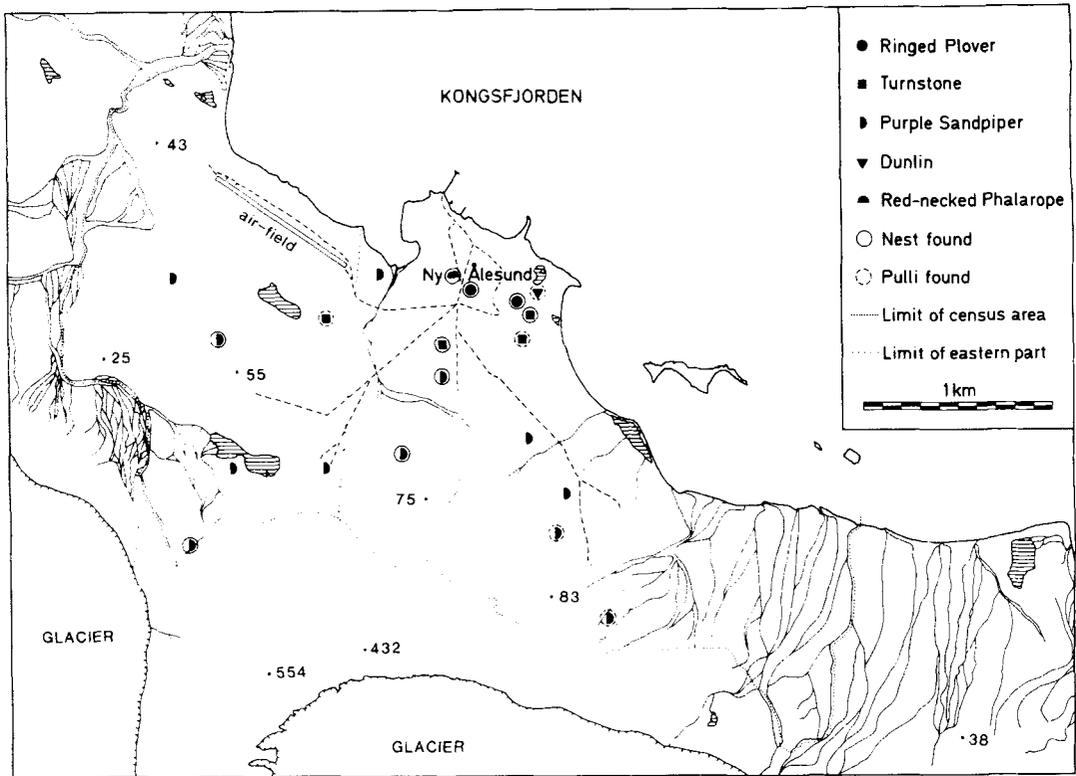


Fig. 1. The census area at Ny-Ålesund with the breeding sites and territories plotted. The eastern part of the area, censused in 1967, 1973, and 1981, is separated with a dotted line. Grey phalaropes are not included. The area censused in 1967 and 1973 includes about one square kilometre more of the alluvial flats east of the indicated area.

estimated total of 18–21 territories is based on nests and broods found and on singing or otherwise displaying males or pairs. But some birds were only registered once, and at 3–4 of the six nests/broods found, no song or other activities were ever recorded. Hence, the figure is probably a minimum, and 20–30 territories is perhaps a better estimate, giving 3.2–4.7 pairs per square kilometre.

To achieve a more exact and reliable figure for this species, it is necessary to follow the population from dispersal to the territories until after hatching (Meltofte 1976, 1979). More birds may be present in a favourable area during the territory establishing phase than later on, but it is important to know where the birds settle to make it easier to trace them during the incubation period. The 'successful' pairs are easy to register after hatching, but the situation gets more difficult when broods start wandering widely over the area.

The most fixed territories are plotted in Fig. 1. The purple sandpiper appeared to be the only species breeding extensively outside the station area, while all other wader species concentrated at the early snow-free and extremely fertile station area. This is the only species for which a density calculation can be made with certainty, therefore.

One ringed plover clutch hatched on 19 July (first young either observed or estimated from measurements of pulli found), four turnstones on 5, 7, 12, and 22 July, three purple sandpipers on 12, 15, and 22 July, four grey phalaropes in mid July (the first on 7 July), and one red-necked phalarope on 18

July. The 1982 season seems to have been a relatively early season (see Bengtson 1968, 1975b), while hatching dates in 1981 apparently were somewhat later (Mehlum unpubl.).

The eastern 3.70 km² of the area were even censused for wader broods during the first half of August in 1967 and 1973 (Bengtson 1975a), and breeding territories and broods were mapped in the same area in June and July 1981 (Mehlum unpubl.). The results of the four studies are not readily comparable. In 1967 and 1973 only successful breeding pairs were included, while all territories and nests were included in 1981 and 1982. Considering these differences, the results are in fair correspondence, except for the grey phalaropes and to some extent the turnstones, breeding in larger numbers at the station now than at the time when the first two censuses took place. The grey phalaropes may take advantage of the protection given by the large colony of arctic terns *Sterna paradisaea* in the station area at Ny-Ålesund. This colony increased from some 80 pairs in 1967 (Bengtson 1968, 1971), to about 300 pairs in 1981 and 1982. The dunlin has been seen breeding at Ny-Ålesund on a few previous occasions (Kålås & Byrkjedal 1981), while the red-necked phalarope has never before been found breeding this far north in Svalbard.

The population density of purple sandpipers in this area is significantly higher than reported from elsewhere in Svalbard. On the extensive foreland areas at Nordenskiöld Land, the breeding density was estimated to 0.3 pairs per square kilometre in 1975 (Kålås & Byrkjedal 1981). In Adventdalen 1.5 pairs

per square kilometre were reported in 1976 (Alendal *et al.* 1982). Alendal *et al.* (1982) estimated 0.6 pairs per square kilometre on Reinsdyrflya on the northwestern part of Spitsbergen in 1976. Even lower densities have been found on Frans Josef Land where P. S. Tomkovich (pers. comm.) found 12–14 pairs of purple sandpipers on 420 km² of tundra on Graham Bell Island in 1981. Considerably higher densities are found in West Greenland, where the purple sandpiper dominates together with the red-necked phalarope. Here Joensen & Preuss (1972) found about five pairs per square kilometre near Prøven at Disco Bay in 1965.

The relative abundance of wader species breeding in Greenland and Svalbard is different in the two areas. The ringed plover, the turnstone, the knot, the dunlin, and the sanderling dominate in Northeast Greenland, while the purple sandpiper is only found along the outer coasts (Meltofte unpubl.). The outer coasts of Northeast Greenland where the latter breed apparently have ambient conditions similar to those along much of the barren, cool, foggy, and late-thawing coasts of Svalbard (Meltofte *et al.* 1981). What is probably of more direct significance, however, is the relatively sparse and late emerging invertebrate life on the tundras of Svalbard, compared to Greenland. A striking fact is that waders other than the late-breeding purple sandpiper found at Ny-Ålesund concentrated in the relatively early snow-free and extremely fertile station area, while the same species breed extensively over the tundras of Northeast Greenland. The vegetation is indeed more lush in the Ny-Ålesund region than in most areas in high arctic Greenland, and on most of the coasts of northern and eastern Svalbard.

The breeding schedule of the waders at Ny-Ålesund is not much different from that found in similar late-thawing areas in high arctic Greenland.

Based on quantitative studies of the invertebrate life in different habitats at Ny-Ålesund and on analyses of the stomach contents of purple sandpipers, Bengtson & Fjellberg (1975) conclude that the food of the tundra is so limited that the purple sandpiper to a large extent is dependent on feeding possibilities in the littoral zone. Hence, the limited food resources on the tundras of Svalbard seem to be the main reason for the relatively poor wader fauna of this archipelago, as compared to most other arctic areas.

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