Tiedonantoja • Brief reports

The size of the breeding Eider population of the Baltic in the early 1980s

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In the early 1970s there were approximately 300 000—350 000 Eider pairs in the Baltic. During flight censuses in late May — early June 1973, covering the whole Baltic breeding range, about 297 000 Eider males were recorded, and the sex ratio is c. 1:1 (Almkvist et al. 1974). About 175 000 of the males were seen in the Finnish archipelagos. Using radar and field studies, Alerstam et al. (1974) estimated the Baltic Eider population at 300 000 pairs, a figure recalculated by Almkvist et al. (1974) as 350 000.

An increase in Eider numbers had been recorded before 1973, especially in areas and archipelago zones where the species had been scarce or missing (e.g. Grenquist 1965, Andersson et al. 1978, Hildén et al. 1978, Andersson 1979, Andersson & Staav 1980). The present report aims at elucidating population trends from 1973 onwards in some Finnish census areas and at estimating the present numbers of pairs breeding in the Baltic.

The census areas (Fig. 1) are briefly described below. References, observers and factors affecting the censuses are also mentioned. Table 1 presents the Eider populations of the census areas from 1973 to c. 1980. Data for 1969—72 are included to indicate how "normal" 1973 was. For the archipelago zones, see Häyrén (1948), v. Haartman (1945) and Stjernberg et al. (1974). The numbers of pairs were established by nest counts, if not otherwise stated.

1. *Lågskär*. An isolated lighthouse island in the sea zone, about 35 km south of Mariehamn. Three small woods exist on the largest, 800×600 m, island, which is surrounded by 20—30 small treeless skerries. Eider data: 1865 1 nest, 1868 4—5 (Palmén 1891—92), 1925 400 (Hortling 1926), 1960s 500 pairs (Sténn 1972 according to Andersson 1978), 1976 1000 (Visa Rauste), 1981 1514 (Vesa Salonen). However, the figures in Table 1 only comprise data from the bird-observatory peninsula: 1973—75 Hannu Tammelin (1975 oil spill), 1976 Visa Rauste, 1977 Visa Rauste and Jörgen Palmgren (presumably a slight underestimate), 1978 Sakari Kauppinen, 1979 Heikki Pakkala (oil cleaning-up in 1979 may have affected the population in 1979 and 1981 Vesa Salonen (parasites ?).

2. *Klåvskär*. An archipelago rich in treeless skerries in the sea zone in southern Föglö. Selected Eider data (annual counts 1921—78: Fazer 1931, Grenquist 1938, 1942, 1965, Stenroos 1979): 1921 993 pairs in the outer part of the archipelago, 1930 1702, 1949 576 and 1959 1272 pairs. Inofficial bird sanctuary.

3. *Trollö*. About 90 treeless skerries or wooded islands in the border region between the *Fjärdzone* (v. Haartman 1945) and inner archipelago zone in the northeastern part of the Gullkrona fjärd. Selected Eider data (annual counts 1948—63, Grenquist 1965): 1948 42 pairs, 1959 122. Recent data from Lemmetyinen 1980, 1981. Censuses by nest and brood counts. The figure for 1973 has been extrapolated from the numbers for 1963 and 1977 postulating an even increase. In 1977, the ice broke up late, perhaps resulting in an unusually low population.

4. *Tvärminne*. The archipelago off the zoological station, between the mainland and the sea zone. Wooded islands alternate with treeless skerries. Nature reserve. Only 13 islands or skerries systematically censused during annual courses on vertebrates or, in 1978—80, by Jörgen Palmgren, are considered in Table 1. For older data, see Sundström 1927, Ahlqvist & Fabricius 1938, Lampio 1946. In 1978, mink *Mustela vison* was suspected and the burrow of a badger *Meles meles* or raccoon dog *Nyctereutes procyonoides* was found on the wooded island Skomakarskär, included in Tables 1 and 2; in 1973 and 1974 this island harboured 163 and 170 Eider pairs, as compared with only 94 and 91 in 1977 and 1978, respectively.

5. *Sommaröarna*. A small isolated archipelago in the sea zone, southwest of the Porkala peninsula. Comprises two main islands (300×150 and 200×100 m) and some treeless skerries. Nature reserve. Annual Eider censuses since 1967; nest and brood counts in the latter part of May (Heikki Lokki).

6. *Smultrongrund.* A c. 2-ha islet, rich in *Juniperus,* in the outer archipelago zone, off the Porkala peninsula. Surrounded by other Eider islets. 1969—81 data from Timo Tallgren; 1969 and 1978 late censuses, 1980 oil spill.

7. *Kytökäringen and Söderkäringen.* Two woodless islets, 1.5 and 2 ha, in the sea zone in southern Esbo. Bird sanctuary. The eggs of the Herring Gull *Larus argentatus* colony have regularly been sterilized in recent years. Eider data: 1933—37 annually 4—10 pairs (Bergman 1939). 1969—81 data from Timo Tallgren. In 1980, there were only 4 pairs on one of the islands as compared with c. 40 normally, due to the oil spill.

8. *Söderskär.* A mainly treeless archipelago in the sea zone in southern Borgå. Nature reserve. Selected Eider data (annual censuses since 1949; Paavolainen 1957, Grenquist 1965): 1949 216 pairs, 1959 523. 1964—78 Hario & Stenman (1980), 1979—81 Martti Hario.

9. *Aspskär.* A mainly treeless isolated archipelago in the sea zone off Lovisa. Bird sanctuary. Selected Eider data (annual censuses since 1949; Forsius 1929, Paavolainen 1957, Grenquist 1965): 1949 4 pairs, 1959 19. 1964—78 Hario & Stenman (1980), 1979—81 Martti Hario, Harri Malki and Stig Weckman.

10. *Valsörarna.* A morainic archipelago rich in stones and boulders in the sea zone in the Quark. A large central wooded island is surrounded by dozens of small treeless skerries. Nature reserve. An old Eider area at the northern margin of the species breeding range in the Gulf of Bothnia (Taxell 1934, Hildén 1966): 1949 140 nests, 1960 75. Eider data for 1949—63 (Grenquist 1965, Hildén 1966), 1967—81 (Hildén et al. 1978, Lindström 1981). The figure for 1973 is an extrapolation from the numbers for 1970 and 1977, postulating an even increase.

Table 1 is heterogeneous, mostly because the census areas vary from solitary islands to extensive archipelagos. Although no general pattern seems to emerge, some features can be discerned. (1) In the 1970s, the population increased in old Eider areas allowing expansion, e.g. Klåvskär (average annual increase since 1973, 11 %), Sommaröarna 15 %) and Trollö (17 %). The data from Kustavi (marked with a star in Fig. 1), in the southern part of the Gulf of Bothnia, indicate an average annual increase of 9 % from 1964 to 1979. (2) No increase was recorded from 1973 to c. 1980 in old Eider areas with limited possibilities for expansion, e.g. Lågskär (annual average decrease 5 %;

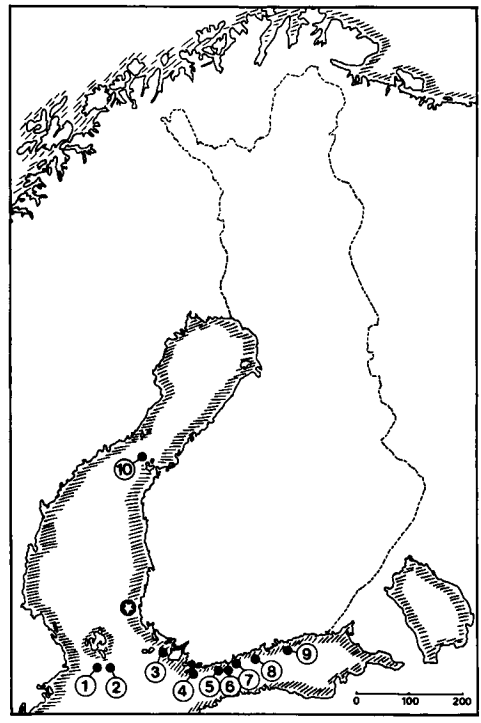

FIG. 1. Census areas. The numbers refer to Table 1. The star marks Kustavi, cf. the text.

however, it must be pointed out that the censused part of Lågskär may not be typical of the whole archipelago, cf. p. 135 where the data indicate an increase). (3) A strong increase since 1973 has been recorded at the margins of the Eider's breeding range: e.g. Valsörarna (10 %), Söderskär (11 %) and Aspskär (24 %).

It would be hazardous to assess the magnitude of the increase in Eider numbers in Finland from 1973 to c. 1980 from the data in Table 1 alone. But when these data are combined with observations from other Finnish archipelagos (see below), they seem to justify the conclusion that the Finnish Eider population has doubled since 1973. Hence there should now be c. 350 000 Eider pairs in the Finnish archipelagos, and, if the reasoning is extended to comprise the whole Baltic, the total number should be at least 600 000 pairs. This would imply an average annual increase of 10—11 %, which seems reasonable, especially if one considers that the increase in former marginal areas has been even higher.

TABLE 1. No. of Eider pairs in some Finnish archipelagos 1969—1981. For sources, see pp. 135—136. — = no information.

Census area	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Archipelago sea													
1. Lågskär	—	—	—	—	129	126	112	117	106	125	112	—	83
2. Klåvskär	2629	2438	2520	2549	2284	2612	2704	2754	3391	3823	—	—	—
3. Trollö	—	—	—	—	(207)	—	—	—	229	—	525	—	—
Gulf of Finland													
4. Tvärminne	318	—	362	—	343	—	—	—	—	—	—	298	—
5. Sommaröarna	10	20	30—40	20—25	40	50—60	—	20—30	30	40—50	90	90	120
6. Smultrongrund	90	—	—	—	—	—	—	—	—	155	197	162	189
7. Kytökäringen & Söderkäringen	95	118	—	126	—	—	—	—	—	—	—	—	120
8. Söderskär	750	560	720	700	740	830	1110	1250	1410	1560	1592	1641	1648
9. Aspskär	18	20	19	20	13	13	20	28	43	42	45	40	72
Quark													
10. Valsörarna	150	200	—	—	(250)	—	—	—	305	350	400	—	550

According to Table 1, personal communications and my own observations in the Finnish archipelagos, the Eider numbers have increased rapidly during the 1970s in the inner parts of the archipelagos and the headward parts of the Gulf of Bothnia and the Gulf of Finland. Now Eiders occur in the innermost archipelago zone, even close to the mainland, in the Åland islands, the southwestern archipelago and the Gulf of Finland. This is also the case along the west coast north to the Quark, where the breeding range stops abruptly. Only in the very recent years have some Eider pairs been recorded north of Vasa. Roger Blomqvist, who has surveyed the archipelago around Jakobstad during more than two decades, has never recorded any Eider pair there and has seen only a few migrating individuals. In 1977 and 1978 one Eider nest was found in the Krunnit archipelago in the northern part of the Gulf of Bothnia, after a gap of 50 years (Pulliainen et al. 1979). In the archipelago south of Vasa, a rapid increase in numbers has been recorded and now the species is common, e.g. in the archipelago off Kristinestad and Närpes (Hans Hästbacka). Eiders also breed along the coast of Västerbotten, Sweden, north to the Quark, but are very rare further north (Grenmyr & Sundin 1981).

According to Paavolainen (1957) and v. Haartman et al. (1964), the Eider earlier bred sparsely in the eastern parts of the Gulf of Finland, penetrating to Haapasaari and Virolahti. During a boat expedition on 9—13 July 1981, Ulf Eriksson and Karl-Gustav Widén observed the following numbers of Eider broods: Haapasaari 26, Vehkalahti 28 and Virolahti 6. The true numbers of broods were certainly higher because no systematic check was made of the area. They also recorded broods east of the Finnish border. These observations indicate that the Eider numbers in the headward parts of the Gulf of Finland have risen since the 1950s and 1960s.

The population within an archipelago has often not developed evenly over the whole area (Table 2). In the 1970s, the population in Tvärminne declined on wooded islands rich in *Juniperus,* i.e. on former good Eider sites, presumably mostly due to occurrence of the mink, raccoon dog, badger and possibly also the fox. On the other hand, the numbers of pairs breeding on treeless skerries increased. Hence the total number of pairs in the Tvärminne archipelago does not seem to have changed radically since 1973, although the distribution of the pairs has changed.

What are the reasons for the increase in Eider numbers in the Baltic? Chief among

TABLE 2. No. of Eider nests on wooded islands and treeless islets off the Tvärminne zoological station, SW Finland, 1969—1980.

Type of island	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Wooded islands ($N = 3$)	227	—	280	235	246	—	—	—	—	—	—	154
Treeless islets ($N = 11$)	91	—	82	—	97	—	—	—	—	130	134	144

them is presumably the fact that shooting Eiders in spring was banned in Sweden in the 1950s. Alerstam et al. (1974) have shown that c. 90 % of the Eiders passing southern Sweden in spring migrate along the Blekinge coast and through the Kalmar sound. Shooting in spring was especially intense in these regions and must have affected a considerable part of the Baltic Eider population. The spring shooting in the Finnish archipelagos has decreased and collection of Eider eggs for food, earlier widespread, has now ceased. The founding of associations for waterfowl protection and establishment of bird sanctuaries in the archipelagos have also contributed to the increase (cf. Grenquist 1952, Bergman 1971).

The salinity of the Baltic has increased during the last few decades (Melvasalo et al. 1981). The conditions for the sea mussel *Mytilus edulis* may therefore have improved, since it requires a salinity of at least 4 ‰ (Lassig 1965), and its range may have shifted farther east in the Gulf of Finland. The rapid increase in Eider numbers on Valsörarna and the numerous observations in the Haapasaari-Vehkalahti region may be due to a change in the feeding conditions. However, in the regions where *Mytilus* is small-sized, Eiders must eat other food as well (cf. also Bagge et al. 1970).

During the 1970s, several winters were mild and the absence of ice barriers may have promoted expansion into the inner parts of the archipelago and towards the heads of the Gulfs of Finland and Bothnia (cf. Paavolainen 1957, Hildén 1964, 1966). During the period 1963—82 the number of Eiders fledging in the Gulf of Finland has been very high in only two years (Göran Bergman, pers. comm.). But the average number of fledglings must have exceeded the figure needed to compensate for adult mortality, in spite of heavy predation by Herring Gulls, intensive shooting in Danish waters, shooting in spring in Finnish waters, and oil spills.

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Sammanfattning: Ejderstammens utveckling i Östersjön 1973—80

Enligt flygtaxeringar fanns det år 1973 ca 300 000 ejderpar i Östersjön (Almkvist et al. 1974). Utgående från tio finländska skärgårdsområden (Fig. 1, Tab. 1), vilka taxerats både år 1973 och ca 1980, samt från andra fältobservationer, bedöms stammen att ha fördubblats. Detta skulle förutsätta en genomsnittlig årlig tillväxt om 10—11 %, dvs. värden som konstaterats för flere av de taxerade områdena. I samband med antalsökningen har ejdern trängt allt längre in i skärgårdarna, samt mot de inre delarna av Finska viken och Bottniska viken. Orsakerna till antalsökningen diskuteras kortfattat: upphörandet av den svenska vårjakten på 1950-talet och förbättrade näringsbetingelser pga. ökad salt- och trofihalt i Östersjön anses vara de främsta orsakerna.

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Speed of autumn migration of birds ringed in Finland

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Data on the speed of migration are most easily obtained from birds ringed and recovered on passage. Other methods, e.g. comparison of arrival dates of migrants or records of migration waves passing different localities along the main flyway, give only approximate and thus less reliable information.

In Finland, on average 200 000 birds are ringed annually. Of these, more than half are captured as adults, mainly at bird observatories in the outer archipelago during migration. Some of them are recovered shortly afterwards, when probably still on passage, and their average speed can be calculated from the time interval and distance covered. This report summarizes the data on the speed of autumn migration obtained for birds ringed in Finland up to August 1982. Smaller sets of data have been reported earlier by Linkola (1958) and Hildén (1974, 1978).

To exclude atypical or unreliable data, the following criteria were used:

(1) The bird should be ringed and recovered within the migratory season of the species in question. For this purpose, time limits were determined for each species, based on the present knowledge of the onset and termination of autumn migration. In spite of this, a few birds ringed outside the bird observatories may not yet have started their departure at the time of ringing, and others may have been some days in their winter quarters before being recovered.

(2) The time elapsed from ringing to recovery should not exceed 50 days. This criterion, together with the previous one, is assumed to exclude most birds that have remained stationary for prolonged periods between ringing and recovery. One recovery was accepted in spite of this rule: a Willow Warbler *Phylloscopus trochilus* found in the Congo 56 days after ringing, at a distance of nearly 8 000 km, the only bird in this material recorded south of the equator.

(3) The distance between ringing and recovery should be at least 50 km.

(4) The date and place of recovery should be accurately reported. This does not, however, completely rule out the possibility of a fault, caused by, for instance, the "month