Status of the Danish breeding population of the Eider *Somateria mollissima* 1980-83, with notes on general population trends in northern Europe

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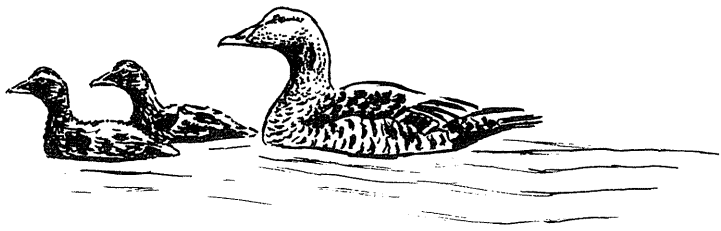

(Med et dansk resumé: Status over den danske ynglebestand af Ederfugl Somateria mollissima *i 1980-83)*

Communication No. 222 from the Game Biology Station, Kalø

During the period 1966-82 the late Niels-Erik Franzmann performed intensive studies on the Common Eider, achieving a large and valuable material. Unfortunately, the results had not been published by the time of his much too early death in 1987. His material is now being studied by Henning Noer, and publications are in preparation.

The present paper formed part of a draft left by Niels-Erik Franzmann. The status of the Danish Eider population by 1980 was the most complete part, and considering the circumstances the best possible solution was to publish it separately. In doing so, we have conserved the original text as far as possible, but some modifications were unavoidable. Errors or misunderstandings that may have arisen during this process are entirely our responsibility.

We had to give up any attempt to reconstruct the correspondence involved in collecting the information. We trust that contributors meriting individual acknowledgment will bear with this omission.

Helmuth Strandgaard
Research Director

Introduction

The Eider is numerous in Danish open waters throughout the year. During the summer, Fenno-Scandinavian migrants moult here, and more than 100,000 individuals have been counted in aerial surveys (Joensen 1973a); following autumn migration in October-November, large numbers of Fenno-Scandinavian immigrants winter in Danish waters, and in January more than 500,000 birds have been counted (Joensen 1974).

In addition to these impressing numbers of immigrants there is a considerable breeding population in Denmark. The topography of the country – numerous small islands and large areas of shallow marine waters – provides ideal habitats, and the species have undoubtedly benefitted from a decreasing utilisation of down and eggs since the turn of the century (Joensen 1973b). Until 1930 the Eider was, however, a rather scarce breeder in Denmark. Spärck (1936) estimated the population size at 1200 pairs. By 1960, this figure had increased to 3000 pairs (Paludan 1962). By 1970, Joensen (1973b) estimated the size of the population at 7500 pairs, and though he argued that earlier figures had probably represented underestimates (it is more likely that there were 1500 pairs in 1935 and 3500 in 1960) it could be concluded that considerable growth was taking place. Though partially migratory, the vast majority of this population stays in Danish waters throughout the year, and it is thus in-

cluded in the figures given above for moulting and wintering populations.

In order to continue the monitoring of the Danish population a new survey was carried out in 1980. The results are presented in this paper which includes notes on general population trends in Northern Europe and a discussion of the possible causes of the increase in numbers of Eiders.

Material and methods

Information on Eiders breeding in wildlife and nature reserves was received from the Wildlife Bureau and the National Forest and Nature Agency, respectively. For the remainder of the country, ornithologists with local knowledge were requested to census the number of breeding Eiders. To check the completeness of the information obtained in this way, the substantial amount of local faunistic reports produced by the Danish Ornithological Society was consulted for additional information.

Results

Fig. 1 shows the registered breeding sites 1980-83. A complete list of known localities in 1969-71 and 1980-83 is given in the Appendix. According to the information presented, counts of Eiders breeding in Denmark 1980-83 reached a total of 17,995-18,536 nesting females. The list of sites presented can be assumed to be nearly complete, and the few places from which no in-

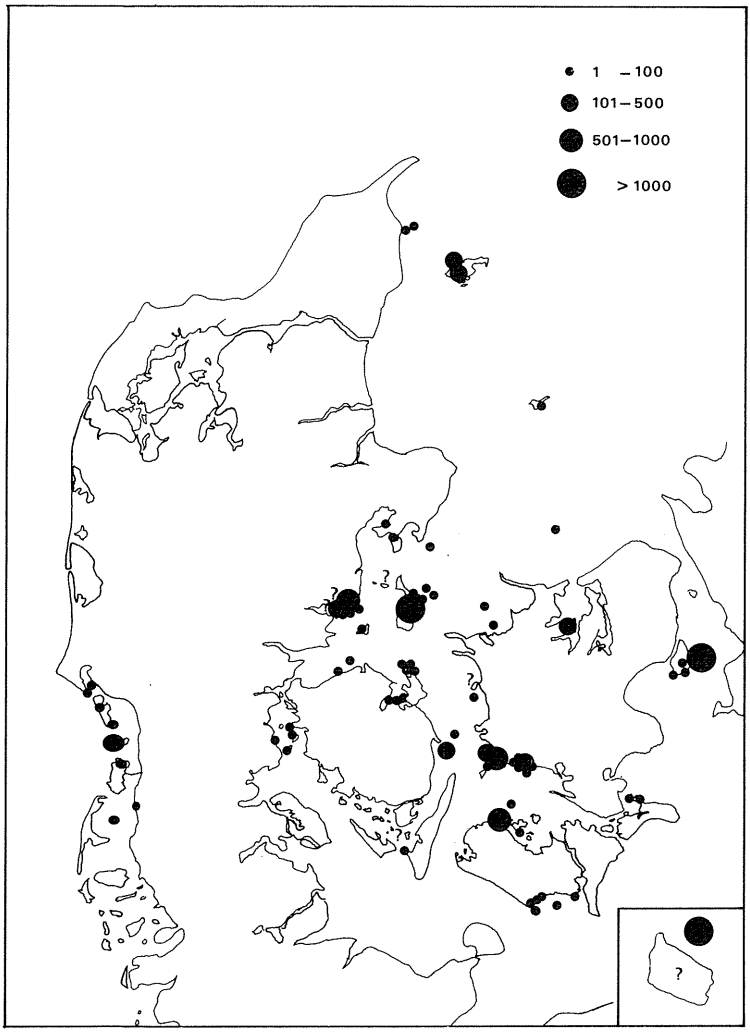

Fig. 1. Distribution of breeding Eiders in Denmark 1980-83.
Ederfuglens yngleudbredelse i Danmark 1980-83.

The Danish breeding population of Eiders is now 19,000-20,000 pairs. Photo: Knud Falk, Biofoto.
Den danske Ederfuglebestand er nu på 19-20.000 par.

formation was obtained held only small numbers. The figures given for the larger colonies are fairly accurate, but the difficulties in mapping Eider nests and the fact that individual females start breeding at somewhat varying times (Joensen 1973b, Franzmann 1980) mean that these figures will tend to represent underestimates. Taking this into consideration, the total Danish breeding population 1980-83 can be assessed to 19-20,000 pairs with reasonable reliability.

Inspection of the Appendix reveals that the growth of the population has led to establishment of few new breeding sites, and in general these hold only small numbers. The most evident exception is the southern parts of Storebælt and Smålandsfarvandet, SW and S of Zealand. Altogether, about 70% of the total growth (7600 pairs) has occurred in the three largest colonies (but see discussion below). The population in the region between Jutland and Samsø has increased by an additional 1000 pairs, while the population in the mentioned parts SW and S of Zealand has increased by more than 2000 pairs.

Discussion and conclusions

A population size of 19-20,000 pairs in 1980 implies that the annual growth rate after 1970 (7500 pairs) has been about 10%. During the period 1935-60 it averaged 3.5%, while it was 7.9% between 1960 and 1970. Thus, it is possible to conclude that the growth in the Danish Eider population continued between 1970 and 1980, and that the growth rate even increased slightly.

These trends appear to be general throughout the European breeding range of the species. The Dutch Eider population was 1300 pairs in 1968 (Swennen 1972), and 3775 pairs in 1976 (Swennen 1976), corresponding to an annual increase of 14.3%. The Norwegian population is known to have been increasing steadily since World War II (Haftorn 1971), and the total population was estimated at approx. 250,000 individuals by the beginning of the 1970s (Atkinson-Willes 1978). The Oslo Fiord population has been monitored from 1963 onwards and showed an annual increase of 8.2% (Hanssen 1979). It contains approx. 10,000 individuals (N. Røv, pers. comm.). The Swedish west coast population was estimated at 30,000 pairs in the early 1970s (Pehrsson 1978). In a survey of the Bohus and Gothenburg counties an increase from 22,000 pairs in 1966 to 58,000 in 1976 was observed, corresponding to an annual increase of 10.2%. In the early 1970s, the Swedish east coast population was estimated at 125,000 pairs (Almkvist et al. 1974, Atkinson-Willes 1978). In Finland, the population was estimated at 175,000 pairs in 1973 and it is assumed to have doubled by 1980 (350,000 pairs, Stjernberg 1982), giving an annual increase of 10.4%. The Estonian population was approx. 8000 pairs in 1979 (Kullapere 1983). Two different figures have been given for the large Vilsan-

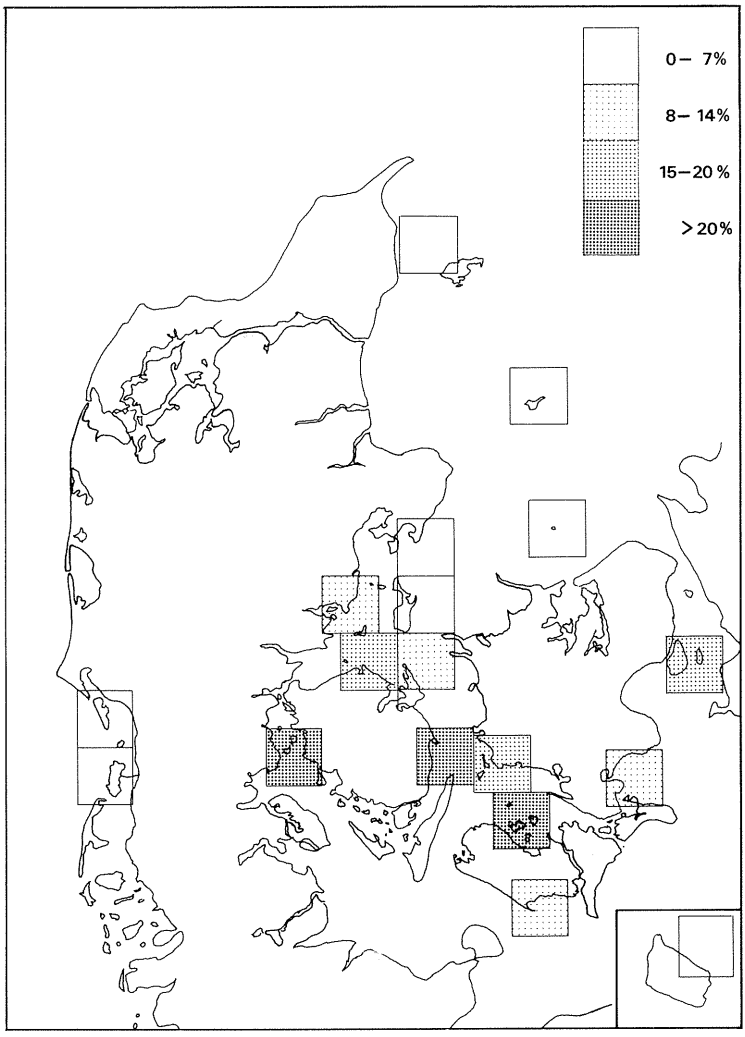

Fig. 2. Annual growth (%) in numbers of breeding Eiders in various parts of Denmark for 1970-80.
Procentvis årlig tilvækst 1970-80 i antallet af ynglende Ederfugle i forskellige dele af landet.

di population (Kullapere 1983). Using these as extremes, the annual rate of increase in the Estonian population has been between 7.6 and 16.0%. Besides these numbers, 15-25,000 pairs breed in the British Isles (Owen et al. 1986).

The numbers given here add up to 700,000 pairs. Some of the figures, however, represent counts from the beginning of the 1970s, and the populations involved are known to have been growing up to 1980. Taking this into account, the European population in all probability was at least 800,000 pairs in 1980 (Iceland not included).

The total population appears to have been growing at a nearly uniform rate during the past 10 to 20 years.

This apparently general trend suggests that there is a common cause to these increases. The general increase in eutrophication during the period in question is the most likely cause. In Danish waters, at least, studies have shown that phytoplankton production has increased since the mid 1950s, and this increase has accelerated since the mid 1960s (Anon. 1984). Phytoplankton is the principal food source for the mussels that are the dominant prey of fullgrown Eiders (Madsen 1954), and it is reasonable to assume that secondary production of small snails and crustaceans, on which Eider ducklings feed, has increased as well.

The overall pattern of growth in the Danish Eider population (Fig. 2) fits this expectation, as

the smallest growth has been observed in the Wadden Sea and the northern parts of the Kattegat, both being less heavily eutrophicated. In the inner parts of the Danish waters a more complex pattern is found. As already mentioned more than 70% of the population increase has occurred in the three largest colonies, but growth rates have differed. The population at Stavns Fjord, Samsø, increased from 2000 (1971) to 3000 (1980) pairs, the Ertholmene population from 1450 (1970) to 2600 (1982), and the Saltholm population from 1600 (1971) to 6800 (1981). Though the 1600 pairs given for Saltholm in 1971 (Joensen 1973b) was based on rather small transects and thus may have represented an underestimate, growth of this population has undoubtedly been much faster than in the other two large colonies.

These differences have probably been influenced by differences in predation by Herring Gulls *Larus argentatus* on Eider ducklings. The impact of Herring Gulls on survival of ducklings is known to be heavy (Franzmann 1980), at least on Ertholmene. At Saltholm and Ertholmene numbers of breeding Herring Gulls have been reduced from 1970 onwards by spraying of eggs. At Saltholm, the number of breeding pairs has been reduced from approx. 43,000 in 1970 to 10,000 in 1981 and at Ertholmene from 13,000 pairs in 1973 to 5000 in 1982 (Clausager 1983). Though the overall growth rate for the Eider population at Ertholmene has been only 5%, the growth rates of different parts of this colony have varied. At Græsholm, where the Herring Gull colony is situated, the number of Eiders declined from 800 in 1970 to 600 in 1982. At Christiansø and Frederiksø, the number increased from 650 to 2000, corresponding to an annual growth rate of 9.8%.

There has been no reduction in numbers of Herring Gulls at Stavns Fjord.

The large relative increase in some of the smaller colonies may likewise have been facilitated by relatively light gull predation, though the annual rates of increase in some of these colonies suggest that immigration has occurred as well. In conclusion, therefore, changes in levels and patterns of both eutrophication and Herring Gull predation are likely to be the main factors underlying the recent growth of the Danish Eider population.

Acknowledgments

Many observers have kindly assisted in performing counts and in compiling information. I hereby wish to express my gratitude to all contributors. Special thanks are due to the National Forest and Nature Agency for their collaboration and to the Wildlife Reserve Bureau for information from nature and wildlife reserves. The Danish Ornithological Society contributed much information and D. Boertmann took part in preparing the manuscript.

Resumé

Status over den danske ynglebestand af Ederfugl *Somateria mollissima* i 1980-83

Den danske ynglebestand af Ederfugl er vokset jævnt siden begyndelsen af dette århundrede. I 1935 og 1960 opgjordes bestanden til henholdsvis ca 1200 og ca 3000 par. I begyndelsen af 1970erne var antallet vokset til ca 7500 par.

I fortsættelse af de tidligere undersøgelser blev bestandsstørrelsen påny gjort op i årene 1980-83. Fig. 1 præsenterer resultatet, og en liste over samtlige kendte ynglelokaliteter er givet i Appendix. I alt blev der konstateret over 18.000 par, og det må skønnes, at det reelle antal har været mellem 19.000 og 20.000 par. Væksten i den danske Ederfuglebestand er således fortsat – og måske endda tiltaget en smule – mellem 1970 og 1980.

Det er ikke blot den danske bestand, der er vokset stærkt efter 1960. En gennemgang af litteraturen viser, at væksten er generel for hele den nordeuropæiske ynglebestand, idet tilsvarende vækstrater er konstateret i Holland, Norge, de vest- og østsvenske bestande, Finland og Estland. Den samlede europæiske bestand i 1980 kan således opgøres til minimum 800.000 par (Island ikke medregnet).

Årsagerne til denne vækst i Ederfuglens bestandsstørrelser kendes ikke med sikkerhed, men det er sandsynligt, at eutrofiering har spillet en stor rolle i det mindste i den danske bestand. Voksne Ederfugle lever for en stor del af muslinger, mens ællingerne tager snegle og mindre krebsdyr, og eutrofiering må derfor have medført en forbedring af artens fødegrundlag. Dette passer udmærket med de forskelle, der har været i de enkelte koloniers vækstrater (Fig. 2). Det er kolonierne i de indre farvande, hvor graden af eutrofiering er størst, der er vokset mest. I det nordlige Kattegat og Vadehavet har bestandenes vækst været ringe.

Tiltagende eutrofiering kan imidlertid ikke være den eneste årsag. Størsteparten af den danske Ederfuglebestand yngler i tre store kolonier i de indre farvande (Fig. 1), men væksten i disse tre kolonier har været meget forskellig. Mellem 1970 og 1980 er kolonien i Stavns Fjord, Samsø, vokset fra 2000 til 3000 par, mens kolonien på Saltholm er vokset fra min. 1600 i 1971 til 6800 i 1981. I den tredje store koloni – på Ertholmene – har koloniens enkelte dele vist forskellig vækst. På Græsholm er antallet af par gået tilbage fra 800 i 1970 til 600 i 1982. På Christiansø og Frederiksø er antallet vokset fra 650 til 2000 svarende til en årlig vækst på 9,8%. Årsagen til disse forskelle må formodes at være de store reduktioner i antallet af ynglende Sølvmåger *Larus argentatus*, der er sket ved ægsprøjtning

på Saltholm og Græsholm (Ertholmene). Det er kendt, at Sølvmågen er en voldsom prædator på både Ederfuglens æg og ællinger.

Tiltagende eutrofiering og reduktion af Sølvmåger er således to faktorer, som måske har spillet en væsentlig rolle i Ederfuglens fremgang.

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Appendix

Breeding sites for Eiders in Denmark in 1970-72 and 1980-83; total numbers of counted females

Ederfuglens ynglepladser i Danmark i 1970-72 og 1980-83 med angivelse af antal rugende hunner

? No information
– Probably not breeding
(+) Known to breed, but only few pairs

Vadehavet				
Skallingen	1970	–;	1980	1
Langli	1970	11;	1982	2
Fanø	1972	min. 2;	1982	5-6
Keldsand	1970	–;	1983	25-30
Mandø	1971	400;	1981-83	400-500
Rømø	1971	50-65;	1980	35-50
Jordsand	1960-72	0;	1981	2
Forlandene Højer, Ballum and Ribe	1967-70	(+);	1980	15-20
Kattegat				
Deget	1970	–;	1981	(+)
Hirsholmene	1971	1;	1983	87
Nordre Rønner	1971	200;	1980	220
Læsø	1970	150-160;	1980	200
Anholt	1972	35-60;	1980	50-60
Hesselø	1969	80-100;	1980	50-100
Hjelm	1970-71	1-2;	1980	6-8
Isefjord				
Lindholm and Langø	1967	min. 13;	1982	150-200
Sejerø Bugten				
Sejerø	1970	0;	1980	(+)
Nekselø	1965-71	2-4;	1980	(+)
Østjylland and Samsø				
Samsø (incl. Stavns Fjord)	1971	2000;	1980	3000
Endelave	1969	6-8;	1981	11
Møllegrunden	1972	4;	1980	?
Svanegrunden	1970	8;	1980-83	75-125
Hjarnø	1969	min. 5;	1981	23
Alrø and Polderne	1970	24;	1980-83	150-190
Langøerne (Vårsø)	1972	1;	1980	?
Gylling Næs	1971	35;	1980	?
Søby Rev	1968-71	min. 20;	1981-83	350-375
Hou Røn	1970	520;	1981	828
Tunø	1971-72	(+)?;	1980	?

Begtrup Røn	1970	26;	1980	30
Tved and Degret Øhoved	1970	–;	1980	15
Nordfyn				
Bogø	1970	15;	1980	18
Mejlø	1970	8-10;	1980	60
Enø	1970	2-3;	1980	3
Vejlø Kalv	1970	2-3;	1980	?
Stenøerne	1970	–;	1980	2
Dørholm	1970	–;	1980	1-2
Flintholm	1970	–;	1980	3
Æbelø and Holmene	1972	min. 22;	1980	42-88
Mågeøerne, Bogense	1970	5;	1980	69
Lillebælt				
Bågø	1967	1;	1980	2
Egholm	1971	3;	1980	24
Linderum	1970	–;	1980	1
Årø	1970	–;	1980	5
Sydfynske Øhav				
Småholme	1970	–;	1980	2
Storeholm	1970	–;	1980	3
Birkholm	1970	–;	1980	(+)?
Storebælt				
Reersø	1969	(+);	1980	?
Musholm and Nordholm	1970	22;	1980	12
Sprogø	1971	min. 16;	1980	1
Vresen	1969	25;	1980	300
Egholm	1971	25;	1983	200
Agersø	1971	45-50;	1983	630
Omø	1971	75;	1980	50
Halten, Sylten, Stigsnæs Vejle, Draget, Sevedø	1970	–;	1980	40
Sevedø Fed	1972	5;	1983	25
Næbbet, Stenfed, Basnæs Nor	1970	–;	1983	360
Glænø Vesterfed	1971	10;	1980	58
Sandholm	1970	–;	1983	35
Glænø Østerfed	1970	–;	1983	13
Dybsø	1970-71	1;	1980	?
Smålandshavet				
Vejrø	1972	51-60;	1980	50-100
Avernakhage, Fejø	1970	–;	1980	1?
Rågø Kalv and Rågø Sand	1971	min. 10;	1981	700
Skalø	1970-71	min. 3-4;	1980	?
Suderø	1972	(+);	1980	?
Store Skåne	1970	–;	1980	1
Sydlolland				
Rødsand	1970	5-10;	1980	10
Hyllekrog	1971	25;	1980	40-100
Storeager	1970	1;	1980	18
Kalveholm	1970	1;	1980	1
Tjørneholm	1970	2;	1980	?
Hylleholm	1970	?;	1980	5-10
Øresund				
Saltholm	1971	min. 1600;	1981	6800
D. indd. areal, Amager	1970	40;	1980	25
Aflandshage	1970	0-1;	1980	5
Dragør Sydstrand	1970	–;	1980	1
Ølsemagle Revle	1968	1;	1980	?
Højstrup Strand and Roneklint	1969-71	(+);	1981	?
Nyord	1971	5;	1981	15-40
Ulfshale	1970	–;	1980	4-5
Ægholm, Nyord	1970	16;	1980	30
Bornholm				
Ertholmene				
Græsholm	1970	800;	1982	600
Christiansø and Frederiksø	1970	650;	1982	2000
Coasts of Bornholm	1970	100-125;	1980	?

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20th INTERNATIONAL ORNITHOLOGICAL CONGRESS 1990

Final Notice

The 20th International Ornithological Congress will take place in Christchurch, New Zealand, on 2-9 December 1990. The Congress programme will include 7 plenary lectures, 48 symposia, contributed papers (spoken and posters), workshops, round-table discussions and films. There will be a mid-Congress excursion day. Longer tours are planned to interesting ornithological sites in New Zealand before and after the Congress, including the post Congress cruises to sub-antarctic islands.

The Second and Final Circular of the Congress will be available from 1 October 1989 and will include the registration papers and forms for submitting papers. In late 1990 New Zealand will also host the 20th World Conference of the International Council for Bird Preservation in Hamilton on 21-27 November 1990 and a Pacific Festival of Nature Films in Dunedin on 27 November - 1 December 1990. Requests for this Final Circular, which includes information on the above events, should be sent to:

Dr Ben D. Bell, Secretary-General,
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