

Status of the Danish breeding population of Eiders *Somateria mollissima* 2000-2002

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(Med et dansk resumé: Status over den danske ynglebestand af Ederfugl *Somateria mollissima* 2000–2002)

Abstract A survey of the Danish population of Eider *Somateria mollissima* in 2000–2002 showed that numbers remained virtually unchanged compared with a similar survey during 1988–1993, at about 25 000 nesting females.

Introduction

The Danish breeding population of Eider *Somateria mollissima* increased considerably during the 20th century. Nationwide surveys suggest that the population numbered some 1500 nesting females around 1935 (Spärck 1936), 3500 around 1960 (Paludan 1962), 7500 around 1970 (Joensen 1973), 19 000–20 000 around 1980 (Franzmann 1989) and 25 000 around 1990 (Lyngs 2000).

This paper presents a status of the breeding population around 2000 and concludes that the population then numbered at least 25 000 nesting females, i.e. virtually the same number as in 1990. Major differences between regions were evident in the population trends between 1990 and 2000. In addition the general development of the

Danish Eider population probably reflects a decline in the entire Baltic/Wadden Sea population since the mid 1990s (see Desholm et al. (2002), Kats (2007), and references therein).

Material and methods

The Danish National Environmental Research Institute organised a nationwide survey of nesting Eiders during 2000–2002. The survey involved numerous local ornithologists and several governmental bodies (see Acknowledgements).

Most breeding sites were visited once during early May, where the number of nests/nesting females were counted. In Vadehavet (the Wadden Sea), however, adult males near the breeding sites were counted in late April – early May, and

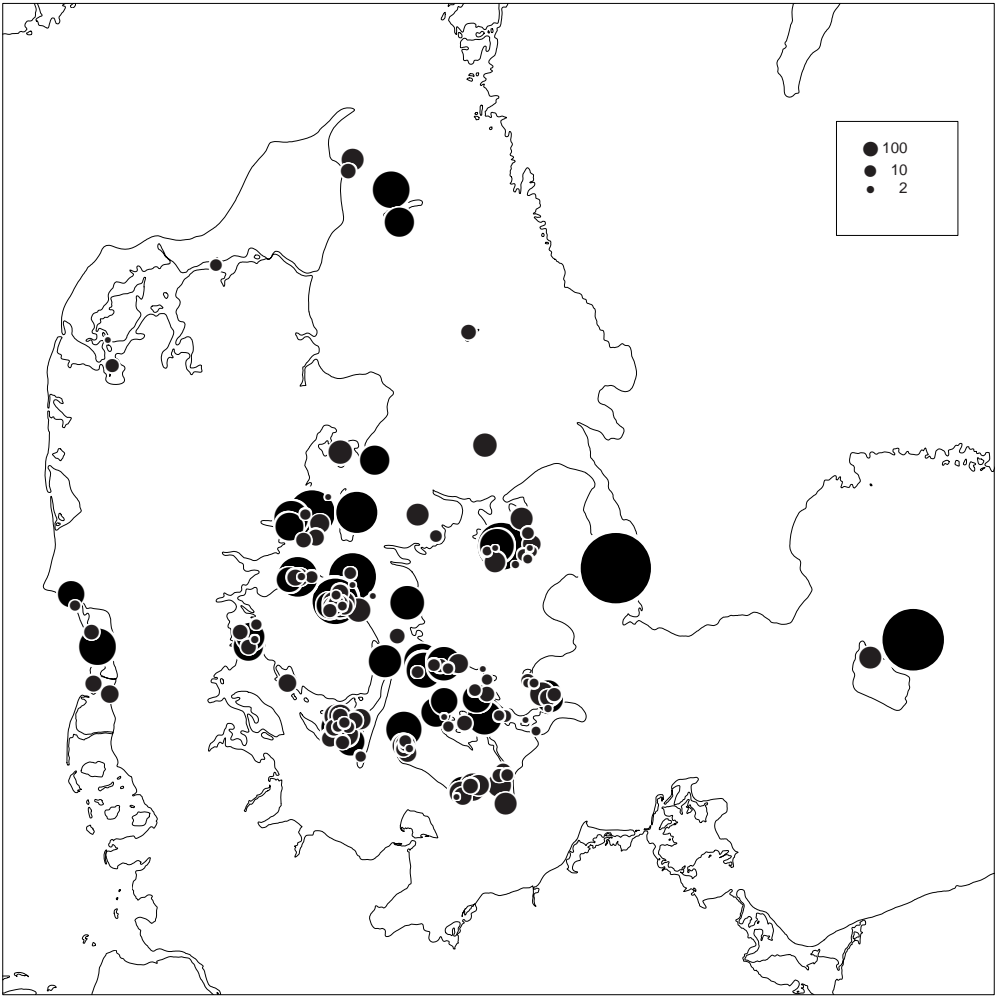


Fig. 1. Distribution of breeding Eiders in Denmark, 2000-2002. *Ederfuglens yngleudbredelse i Danmark 2000-2002.*

the number of breeding females guesstimated by multiplying male numbers by 0.667 (assuming a male/female ratio of 60/40; Noer et al. 1995). On Ertholmene (Bornholm) and in parts of Sydfynske Øhav, two counts of nests were undertaken, one in late April and one in late May. On Saltholm the number of nesting females was calculated from counts of nests done during early May 2000 in seven transects covering 5.4% of the colony (Noer & Christensen 1993, Christensen & Noer 2001); the counts were timed to take place when the numbers of incubating females were at their seasonal maximum. At all sites, counts of nests

included hatched and deserted nests. If counts from several years were available from a site, the most detailed count close to 2000 was chosen.

In the following, 1990 refers to the survey carried out during 1988–1993, while 2000 refers to the 2000–2002 survey.

Results

The sites that had breeding Eiders in 1990 and/or 2000 are listed in Appendix 1, while the geographical distribution of breeding sites in 2000 is shown in Fig. 1. According to Appendix 1, the 2000 survey produced a sum of 22 087–23 113

Table 1. Number of breeding Eiders counted in different regions of Denmark, 1988-1993 and 2000-2002, and the corresponding annual growth rate (r). Only the highest figures for both periods are presented. *Antal optalte ynglende Ederfugle i forskellige områder af Danmark 1988-1993 og 2000-2002 sammen med den tilsvarende årlige tilvækst (r). Kun de højeste tællinger per periode er vist.*

Area <i>Område</i>	1988-1993	2000-2002	Years <i>Antal år</i>	r (%)
Vadehavet	≥457	644	10	3.5
Limfjorden	2	25	11	25.8
Kattegat	1274	1098	12	-1.2
N Sjælland	925	1615	9	6.4
Østjylland	4412	2220	11	-6.1
N Fyn	1588	3266	11	6.8
Lillebælt	244	466	9	7.5
Sydfynske Øhav	113	1690	11	27.9
Storebælt	2321	1936	10	-1.8
Smålandshavet	1092	931	11	-1.4
Nakskov Fjord	118	600	12	14.5
S Lolland	487	774	9	5.3
Øresund	7160	4770	10	-3.9
Bornholm	3000	2503	8	-2.2
Total	23193	22538	10	-0.3

used nests, suggesting an annual growth rate of -0.3% between 1990 and 2000 (Table 1). In 2000, breeding Eiders were recorded at 42 sites where none had been recorded during the 1990 survey. Breeding numbers at these new sites were 1351–1357, corresponding to 6% of all nests counted in 2000. Breeding Eiders were not recorded at nine sites where a total of 142 nesting females were counted in 1990.

The highest average annual growth rates between 1990 and 2000 were recorded in Sydfynske Øhav and in Nakskov Fjord (Table 2), while the largest declines occurred in Øresund (Saltholm) and in Østjylland (Stavns Fjord and Hov Røn). The biggest colonies in Denmark in 2000 were

Saltholm in Øresund (4300 females), Ertholmene off Bornholm (2400 females), Mejlø-Enø at Hindsolm, Nordfyn (1000 females), and Rønø in Isefjorden, Nordsjælland (1000 females).

Discussion

The 2000-survey covered almost all breeding sites for Eider in Denmark. Based on information from local observers, the number of breeding Eiders on sites not covered during the survey can at most have been a few hundred.

Due to the difficulties of censusing breeding Eiders (see Lyngs 2000), the methods used at most sites in the countrywide Danish surveys since 1935 have underestimated the true size of the

Table 2. Population size (breeding females) and annual growth rates of the Danish breeding population of Eiders, 1935-2000. *Bestandsstørrelse (ynglende hunner) og den årlige procentuelle vækst i den danske bestand af ynglende Ederfugle, 1935-2000.*

Year <i>År</i>	Population size <i>Bestandsstørrelse</i>	Annual growth rate (%) <i>Årlig tilvækst (%)</i>	References
1935	1200-1500		Spärck 1936, Joensen 1973
1960	3000-3500	3.5-3.7	Paludan 1962, Joensen 1973
1970	7500	7.9-9.6	Joensen 1973
1980	19000-20000	9.7-10.3	Franzmann 1989
1990	23000-25000	2.3-2.8	Lyngs 2000
2000	23000-25000	-0.3	This study

breeding population. However, the surveys reflect the general trends in the development of the Eider population (see discussion in Lyngs l.c.). Incidents of extensive non-breeding among Eiders in the Netherlands during periods of low food availability have recently been described (Kats 2007; see also Coulson 1984). If widespread non-breeding occurred in the Danish population during the survey years, the nest counts will further have underestimated the population size. However, except for Saltholm (Noer & Christensen 1994) no data exist to elucidate the proportion of non-breeders in the Danish Eider population.

Correcting the counts from 1980, 1990 and 2000 by factors of 1.15–1.30, as suggested by Lyngs (2000), gives likely ranges of the Danish Eider population of 21 000–23 300 nests in 1980, 25 800–28 800 in 1990, and 25 300–28 400 in 2000. In conclusion, the Danish Eider population remained practically stable between 1990 and 2000, for the first time after 65 years of continued growth (Table 2).

In many ways, the population trends observed in the 1980s continued during the 1990s: high growth rates were found at breeding sites in fiords and sheltered, shallow waters, whereas declines were the rule at sites in the open-water areas where, during the 1960s and 1970s, a majority of the Danish Eiders bred. Annual growth rates exceeding 5% were noted at Sydfynske Øhav, Nordfyn, Nakskov Fjord, Roskilde Fjord, Isefjord and Lillebælt, while the Eider population in Øresund, Østjylland and Bornholm declined (Table 1, Appendix 1). The increasing importance of the sheltered areas and fiords for the Danish Eiders are nicely illustrated by the growth around Fyn (mainly Det Sydfynske Øhav, Odense Fjord and Hindsholm) – approx. 2% of the breeding population were found here in the 1970s, 8% in the 1980s, and 24% in the 1990s. The proportion of the population breeding at the old, big colonies of Ertholmene, Saltholm, Stavns Fjord and Mandø decreased from 70% in 1980 to 35% in 2000.

The highest declines were observed in Øresund (-4% annually; mainly Saltholm) and in Østjylland (-6% annually; mainly Stavns Fjord and Hov Røn). The population in Østjylland were halved during the 1990s. The Stavns Fjord population had already been halved during the 1980s due to the presence of red foxes *Vulpes vulpes* at the colonies, and the Eiders at these sites, and at Hov Røn and Svanegrunden, were furthermore hit by outbreaks of avian cholera in 1996 and 2001 (Christensen et al. 1997, Pedersen et al. 2003). An

outbreak of avian cholera in Isefjord (Nordsjælland) in 2001 did not affect the numbers recorded during the 2000-survey, as the counts of breeding birds from this area derive from the year 2000.

Red foxes were recorded at 11 sites during the 2000 survey (Appendix 1) and had a strong influence on the local Eider population. On Rågø in Smålandshavet almost 1000 Eider females bred in 1990, but only about 200 in 2000; at least some of the birds appear to have moved to Vensholm (Nakskov Fjord; 16 km WSW) where the population increased from about 60 females in 1988 to almost 400 in 2000. Other Rågø birds may have moved to Suderø (Smålandshavet; 25 km ESE), where the population increased from 35 females in 1988 to about 340 in 2000. Similar displacements related to the presence of foxes were observed at Æbelø & Holmene (Nordfyn), where 850 females bred in 1990 but only 40 in 2000. Many of these birds apparently moved to Dræet, where no birds bred in 1990 but 550 in 2000.

Eiders have been considered as the epitome of "site fidelity" (e.g. Baillie & Milne 1989, Swennen 1990). The present data, however, suggest that a high degree of site fidelity is maintained only as conditions permit.

Apart from the rather obvious influences of disease and foxes, little is known about the factors underlying the observed population changes in Denmark. It is, however, clear that the Danish breeding population of Eiders is in a state of change, and more knowledge is needed to evaluate the significance and the reasons behind these changes.

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The Danish Eider population remained stable between 1990 and 2000, after 65 years of continued growth. *Fremgangen i den danske ederfuglebestand er gået i stå, og der er problemer i flere kolonier.*

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Resumé

Status over den danske ynglebestand af Ederfugl *Somateria mollissima* 2000-2002

Denne artikel beskriver kort resultaterne af en landsdækkende optælling af ynglende Ederfugle foretaget i 2000–2002. Som det ses af Tabel 1 taltes der 22 538–23 113 reder (primært registreret som rugende hunner). På grund af vanskelighederne ved at optælle ynglende Ederfugle (se Lyngs 2000) er de fundne tal nok noget for lave, og et gæt på bestandstørrelsen for 2000 er 25 300–28 400 rugende hunner.

Der fandtes 42 nye ynglelokaliteter med i alt 1351-1357 reder (ca 6% af bestanden). De fire største kolonier var Saltholm (Øresund; 4300 hunner), Ertholmene (Bornholm; 2400 hunner), Mejlø-Enø (Hindsholm, Nordfyn; 1000 hunner), og Rønø (Isefjorden, Nordsjælland; 1000 hunner).

For første gang siden optællingerne af ynglende Ederfugle startede i 1935, steg den danske bestand ikke, men var nærmest stabil. Dette dækker dog over betydelige regionale forskelle. Der var betydelige bestandsstigninger i de fjorde og lavvandede områder, som også i 1980'erne havde en betydelig vækst – f.eks. Nakskov Fjord og Sydfynske Øhav. Derimod var der en tilbagegang på lokaliteterne ved de mere åbne havområder, såsom Østjylland, Øresund og Ertholmene,

som i 1960'erne og 1970'erne husede størstedelen af den danske bestand. Som eksempel på denne omrokering kan nævnes, at farvandede omkring Fyn (især Sydfynske Øhav, Hindsholm og Odense Fjord) omkring 1980 husede 2% af den danske ynglebestand, i 1990 8% og i 2000 24%. Omvendt faldt andelen af bestanden i de fire gamle, store kolonier Ertholmene, Saltholm, Stavns Fjord og Mandø fra 70% i 1980 til 35% i 2000.

At den danske bestand af ynglende Ederfugle har undergået betydelige ændringer i de seneste årtier fremgår tydeligt af de landsdækkende optællinger. Nogle steder har udbrud af fuglekøler (f.eks. i Østjylland i 1996 og 2001) og tilstedeværelsen af ræv haft betydelig indflydelse. Ræv blev konstateret på 11 ynglelokaliteter under den aktuelle optælling, og på Rågå i Smålandshavet faldt antallet af rugende hunner fra næsten 1000 i 1990 til omkring 200 i 2000, da der kom ræv på øen. Mange af disse fugle synes at været flyttet dels til Venholm 16 km fra Rågå (hvor bestanden steg fra 60 i 1988 til 400 i 2000), og dels til Suderø 25 km fra Rågå (fra 35 reder i 1988 til 340 i 2000).

Ændringerne i den danske ynglebestand er så betydelige, at de ikke udelukkende kan forklares ud fra mere eller mindre enkeltstående lokale påvirkninger, og de falder i nogen grad sammen med de tilbagegange, som er registreret i hele den bestand, der betegnes som Baltikum/Vadehavs-bestanden; dvs. fugle ynglende fra Vadehavet over Danmark til Finland. Men vi mangler viden om en række forhold såsom demografi, fødeudbud osv. for nærmere at kunne forklare de observerede ændringer i den danske bestand.

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Appendix 1

Breeding sites for Eiders in Denmark 1988–93 (Lyngs 2000) and 2000-02, and the counted number of nesting females.

Ynglesteder for Ederfugl i Danmark 1988–93 (Lyngs 2000) og 2000-02 med angivelse af det talte antal rugende hunner.

? No information *Ingen information*

- Probably not breeding *Ynglede sandsynligvis ikke*

(+) Known to breed, but only few pairs *Ynglede, men kun få par*

(F) Fox noted on the site *Ræv konstateret i yngleområdet*

Vadehavet ¹

Højer, Ballum & Ribe forland	1991	15	2001	35
Rømø	1991	23	2001	26
Mandø	1991	300	2001	425
Fanø	1991	2-3	2001	7
Keldsand	1991	100	2001	20
Langli	1991	15	2001	131
Total		456-457		644

¹ 2001 calculated by multiplying the number of counted males at the breeding sites around 1 May by 0.667. 2001 beregnet ved at gange antallet af hanner ved ynglelokaliteterne omkring 1. maj med 0,667.

Limfjorden

Nørskov Vig, Venø	1990	2	2001	15
Gjøl Vildreservat	1990	-	2001	9
Rotholme	1990	-	2002	1
Total		2		25

Kattegat

Hirsholmene	1989	126	2001	75
Deget	1988	?	2002	20
Nordre Rønner	1989	533	2001	400
Læsø	1987-90	360	2002	<i>est. 200-250</i>
Anholt	1988	15-25	2001	20
Hjelm	1990	15-30	2001	176-233
Hesselø	1990	200	2002	100
Total		1249-1274		991-1098

Nordsjælland

<i>Isefjord & Roskilde Fjord</i>				
Eskilsholm	1991	45	2000	1
Holme i Tempelkrog	1991	6	2000	65
Lindholm & Langø	1991	7	2000	325
Rønne	1991	-	2000	3
Rønø	1991	850	2000	1000
Blak	1991	-	2000	5
Elleøre	1991	-	2000	3
Eskilsø	1991	-	2000 (F)	1
Jyllinge Holme	1991	-	2000	40
Køholm	1991	-	2000	10
Langholm, Lejre Vig	1991	-	2000	2
Ægholm	1991	-	2000	10
Øksneholm	1991	15	2000	75
<i>Sejerøbugten</i>				
Sejerø	1990	(+)	2000	75
Nekselø	1990	(+)	2000	(+)
Total		925		1615

Østjylland & Samsø

Helgenæs	1990	1-3	2000	0-5
Begtrup Røn	1990	100	2001	96
Stavns Fjord, Samsø	1990	1575	2002	520-700
Tunø	1991	2		?
Hov Røn	1990	1800	2001	825
Søby Rev	1990	9	2001 (F)	5
Hjarnø	1991	50	2001	175
Alrø & Polderne	1991	547	2001	315
Møllegrunden	1990	5-10	2002	20
Endelave	1990	13	2002	25
Svanegrunden	1990	303	1999	54
Total		4405-4412		2035-2220

Nordfyn				
<i>Odense Fjord</i>				
Dørholm	1991	29	2000	74
Esbechholme	1989	10	2000	28
Flintholm	1989	7	2000	62
Hasseløre	1989	-	2000	138
Hennings Holm	1989	-	2000	14
Hvenegaards Holm	1989	-	2000	28
Kyholm	1989	11	2000	3
Lindø Værft Øerne	1988	-	2000	3
Mågeø & Sorteø	1989	4	2000	135
Pludderholm	1988	1	2000	39
Roholm	1989	4	2000	19
Sandøen	1988	-	2000	18
Stenøerne	1989	3	2000	27
Trindelen	1988	2	2000 (F)	-
Vigelsø	1991	85	2000	816
Ægø	1989	1	2000 (F)	-
<i>Hindsholm</i>				
Bogø	1990	100	2000 (F)	-
Mejlø/Enø	1990	250	2000	1000
Tornen	1989	15	2000	10
Vejlø	1989	5	2000	-
Vejlø Kalv	1989	5	2000	1
<i>Nordfyn</i>				
Dræet	1990	-	2000	550
Drættegrund	1990	-	2000	29
Ejlinge	1990	-	2000	2
Mågeøerne	1990	206	2000	123
Nørre Nærå	1990	-	1997	10
Æbelø & Holmene	1990	850	2000 (F)	37
Kerteminde	1990	-	2000	100
Total		1588		3266

Lillebælt				
Egholm	1988	110	2000	175
Bågeø	1988	2	1998	2
Bastholm	1991	59	2000	200
Brandsø	1990	-	1998	20
<i>Flægen & Eskør</i>				
Inddæmning	1991	-	2000	6
Småholme	1991	19	2000	23
Årø	1990	6	2000 (F)	-
Linderum	1990	43		?
Illumø	1990	3-4	1998	40
Horsehoved	1991	0-1		?
Total		242-244		≥466

Sydfynske Øhav²				
Mejlholm	1989	1	2001	82 (20)
Græsholm v. Drejø	1992	1	2001	22 (10)
Drejøl	1992	-	2001	35
Hjelmshoved	1992	2	2001	94 (30)
Odden	1989	1	2001	150 (12)
Buddiken	1989	2	2001	-
Birkholm	1988	1	2002	5
Nyland	1988	3	2001	26 (25)
Store Egholm	1990	3	2001	190 (76)
Lille Egholm	1989	4	2001	120 (50)
Halmø	1990	1	2001	45
Lille Græsholm	1988	15	2001	100 (40)
Bredholm	1991	46	2001 (F)	123 (100)
Grensholm	1991	16	2001	125 (55)
Bondeholm	1989	1	2001	140 (7)
Vogterholm	1989	2	2001	10
Strynø Kalv	1991	2	2001	90 (40)
Storeholm	1989	11	2001	183 (110)
Monnet	1990	0-1	2001	5
Lille Rallen	1990	-	2001	30
Lilleø	1990	-	2001	30
Siø	1990	-	2001	68
Tryggelev Nor	1990	-	2002	5
Langholm	1991	-	2001	12
Total		112-113		1690 (575)

² At several sites two counts were undertaken (late April and late May). Numbers in brackets give the results of the late May counts. *På et antal lokaliteter blev der talt både i slutningen af april og i slutningen af maj. Antal-let i parentes viser tallet for den sene tælling.*

Storebælt				
Romsø	1990	-	2001	1
<i>Musholm</i>				
& Nordholm	1994	≥60	2001	225-375
Sprogø	1995	8	2000	15-18
Lejodden	1992	10	2002	0
Vresen	1991	326	2001	280
Smørstakken	1990	10		?
Skælskør Fjord	1990	16		?
Agersø, Helleholm	1990	620	2000	385
Agersø, Egholm	1990	500	2000	est. 350
Omø	1990	1-5	2004	5-10
<i>Stignæs Vejle, Draget</i>				
& Sevedø Fed	1990	20	2000	12
Næbbet & Stenfed	1990	≥525	2000	300
Glænø Vesterfed	1990	20	2000 (F)	5
Sandholm	1990	130		?
Glænø Østerfed	1990	45	1996	50
Total		≥2321		1781-1936

Smålandshavet

Knudshoved	1988	2	2000	10
Suderø	1988	35	2000	340
Enø Overdrev	1988	1	2000	-
Vigsø	1990	66	2000	158
Femø	1988	(+)	2000	22
Avernakke Hage & Fejø	1988	10	2001	5
Skalø	1988	3	2001	1
Råggø Kalv & Råggø Sand	1990	973	2000 (F)	215
Vejrø	1990	(+)	2002	140
Onsevig Sand	1988	2	2001	0
Avnø Røn	1990	(+)	2001	17
Dyrefod, Storstrømmen	1990	-	2001	7
Lindholt, Karrebæk	1990	-	1999	1
Masnedø Kalv, Storstrømmen	1900	-	2000	6-10
Dybsø		-	2000	5
Total		1092		927-931

Nakskov Fjord

Vensholm	1988	58	2000	366
Albuen	1988	10	2000	-
Enehøje	1988	5	2000 (F)	-
Vejlø	1988	1	2000	8
Rommerholm	1988	9	2000	74
Slotø	1988	2	2000	8
Munkeholm	1988	8	2000	19
Dueholm	1990	21	2000	48
Smedeholm	1990	3	2000	34
Kåreholm	1988	1	2000	41
Barneholm	1988	-	2001	2
Total		118		600

Sydjylland

Hyllekrog	1988	150	2000	38
Drummeholm	1991	1	2000	(+)
Storeager	1991	105-130	2000	180
Lilleager	1991	57-60	2000	72
Hylleholm	1991	9-15	2000	21
Tjørneholm	1991	56-70	2000	100
Kalveholm	1991	7-15	2000	89
Store Skåne	1991	12	2000	92
Lindholt	1991	1-3	2000	63
Rødsand	1991	30	2000	70
Kalvø	1988	1	2000	25
Barholme	1991	-	2000	8
Kejlsø & Lilleø, Guldborgsund	1991	-	2001	16
Total		429-487		774

Øresund & Guldborgsund

Malurtholm, Fanefjord	-	2001	3	
Lilleø, Ulvsund	-	2001	1	
Lindholt, Stege	-	2001	2	
Ægholm	1989	120	2001	134
Tyreholm	1992	49	2000	131
Nyord	1990	8	2001	29
Degneholm	-	2000	95	
Sækkesand	1989	-	2001	16
Ulvshale	1989	4-5	2000	-
Lilleholm, Præstø	-	2000	3	
Maderne, Præstø	-	2000	13	
Vestamager	1990	1	2000	-
Saltholm	1993	6977	2000	4343
Total		7159-7160		4770

Bornholm

Græsholm	1992	420	2000	400
Christiansø & Frederiksø	1992	2580	2000	2028
Bornholm	1992	(+)	2001	60-80
Total		3000		2503

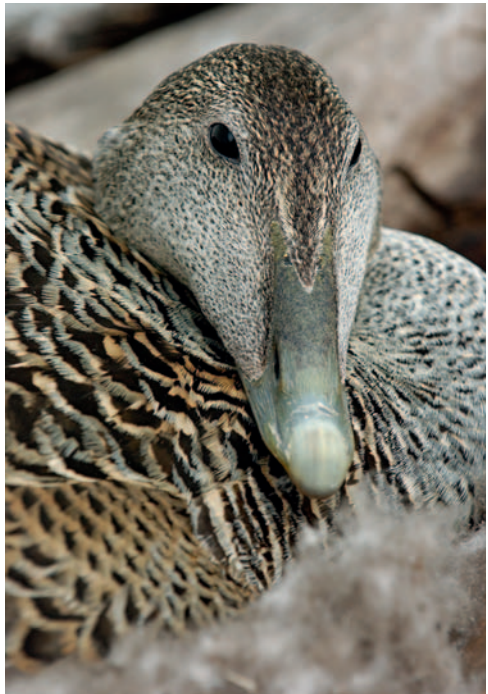


Photo: Peter Lyngs.