

Estimates of Sea Duck Winter Populations of the Western Palaearctic

by
KARSTEN LAURSEN

Med et dansk resumé:
Bestandsstørrelse af
overvintrende havdykænder
i Vestpalæarktis.

Резюме на русском языке:
Численность популяций зимующих морских
уток-нырков в Западной Палеарктике.

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Abstract

K. Laursen, 1989: Estimates of Sea Duck Winter Populations of the Western Palaearctic. - Dan. Rev. Game Biol. 13 (6).

The present knowledge of the flyway populations of five sea duck species wintering in Western Palaearctic is reviewed. The estimates are mainly based on midwinter counts organised by IWRB in collaboration with national coordinators. Additionally information from various surveys is incorporated.

Midwinter population sizes are presently estimated at: Scaup *Aythya marila* 200,000 individuals; Eider *Somateria mollissima* 3 million; Long-tailed Duck *Clangula hyemalis* 2 million; Common Scoter *Melanitta nigra* 800,000, and Velvet Scoter *Melanitta fusca* 250,000 individuals.

The flyway population of Scaup is unchanged compared to the estimate made in the early 1970's while numbers of Eider, Long-tailed Duck, Common Scoter and Velvet Scoter have risen during the same period.

An increase in the population size of Eider has already been documented. More efficient covering of sea areas by aircrafts and boats may be the reason for higher numbers of the other species.

To obtain more exact information about population size, trends and distributions of sea ducks, the following is recommended: (1) intensification of midwinter counts; and (2) inclusion of the utilisation of aircraft and boats in the Eastern and Southern Baltic, in the Southern North Sea, off the Iberian and Northwest African coasts, and in the Black Sea.

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Introduction

Most sea duck species have their main breeding areas in arctic and boreal zones which are remote, thus complicating surveys of their breeding densities.

Information about flyway populations of the different sea duck species is often difficult to obtain. Outside the breeding season the birds are mainly found in marine waters. The majority of sea duck species is found several kilometres offshore, where they cannot be registered from the coast. The sole means of obtaining good accounts of bird numbers, therefore, is by use of boat or airplane. In areas with rocky shores, however, the birds stay near to the coastline and are thus easy to count from the shore.

Population estimates have tended to be few and rather uncertain due to the often remote position of the birds. ATKINSON-WILLES (1976 and 1978) gave estimates of Scaup *Aythya marila*, Eider *Somateria mollissima*, Long-tailed Duck *Clangula hyemalis*, Common Scoter *Melanitta nigra* and Velvet Scoter *Melanitta fusca* based on midwinter counts performed by IWRB from 1967 to 1973 (except for Iceland where counts were organised by the Icelandic Museum of Natural History). These counts were primarily carried out from the ground, but several areas were also covered by use of airplanes. Furthermore, Atkinson-Willes based his estimates on information obtained at the breeding grounds and on numbers of migratory birds.

Midwinter counts have been conducted repeatedly, but they are still mainly based on ground observations. This has led to only modest amounts of information regarding sea ducks. In the revision of the wintering populations of waterfowl, RUGER et al. (1986) excluded sea ducks for the reason that: "Until comprehensive aerial surveys of the main wintering areas are

achieved it is not possible to produce realistic population estimates for the Scaup, Long-tailed Duck, Eider, Common Scoter and Velvet Scoter".

Recently, however, aerial midwinter counts were either initiated or resumed in several countries. Thus, aerial counts were performed for the first time in January-February, 1987 in Sweden, Denmark, the Federal Republic of Germany (off both the Baltic and the Wadden Sea coast) and in the Dutch Wadden Sea. The waters of these countries are some of the most important wintering areas for sea ducks in the Western Palaearctic.

In association with oil and gas exploitation, a monitoring programme was initiated in Norway in 1979 to estimate the numbers and distribution of waterfowl along the entire Norwegian coastline. The estimates have now been compiled and give valuable data about sea ducks (NYGÅRD et al. 1988). Preliminary estimates are given for Iceland on the basis of Christmas Bird Counts which were initiated in 1952 covering approx. 3% of the entire Icelandic coastline (PETERSEN 1983).

Transect surveys from boats have been conducted in the North Sea and in the Baltic Sea. These surveys have resulted in essential information, especially concerning widely dispersed species (BLAKE et al. 1984, LEOPOLD 1987, SKOV et al. 1987, STRAWINSKI 1987).

These reports in combination with other information, provide a new basis for reviewing the estimates of the wintering sea duck populations in the Western Palaearctic. The purpose of this paper is to present the up-dated material and to evaluate and discuss these new estimates which have been included in a recently revised version of population estimates of waterfowl made by IWRB (PIROT et al., in press.).

The King Eider *Somateria spectabilis* and Stellers Eider *Polysticta stelleri* are not treated here as NYGÅRD et al. 1988 are gathering the up-to-date knowledge concerning these species.

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Salmon, C. Swennen and J. Viksne who have all contributed with valuable information. H. Noer has commented on the paper and given fruitful suggestions. Special thanks to J.-Y. Pirot who encouraged this study and provided access to the IWRB midwinter file. P. Hartmann produced the maps and J. Alexandersen, K. Juel Thabasz-Zaluski and E.-M. Nielsen improved the language and typed the manuscript. Janice G. Mather did the English/technical language revision.

Methods

Concerning Sweden, Denmark, the Federal Republic of Germany and the Netherlands, aerial counts were performed in January-February 1987 (severe winter climate) (NILSSON 1987, LAURSEN et al. 1987, G. NEHLS pers. comm., SWENNEN 1987). This information is incorporated, as are estimates of wintering waterfowl in Norway, Great Britain and Iceland (NYGÅRD et al. 1988, OWEN et al. 1986, Æ. PETERSEN pers. comm.).

Concerning Finland, SSR Estonia, SSR Latvia, SSR Lithuania, Poland and the German Democratic Republic, the IWRB midwinter counts were used. For IWRB midwinter counts in general, see RUGER et al. (1986). Results of these counts in the Baltic were affected by winter climate i.e.

cold weather leads to small numbers and vice versa. On that account and due to a general insufficient covering in most countries (counts from the shore), the highest numbers of the last three midwinter counts (1985-1987, all severe winters) were used.

Concerning Belgium, France, Spain, Portugal, Algeria, Tunisia and Rio de Oro, the highest figures from the last three IWRB midwinter counts were used. The highest figure was chosen due to insufficient covering of several sea areas.

Information given by ATKINSON-WILLES (1976 and 1978) was used for countries and areas (e.g. the Black Sea) for which neither midwinter counts nor other figures could be found.

Results and Discussion

Scaup, *Aythya marila*

Estimated number: 200,000.

The Scaup prefers shallow water in bays and inlets. Counts from the coast may,

therefore, under favourable conditions (good visibility, concentrated flocks, close proximity to coast etc.) be considered to contribute reliable figures.

ATKINSON-WILLES (1976) estimated the

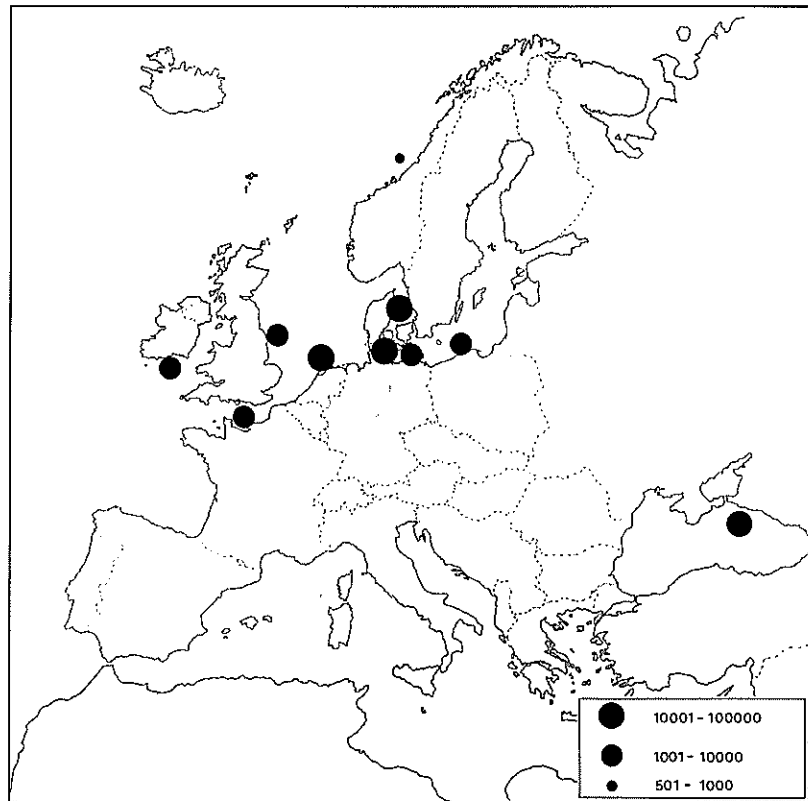


Fig. 1. Midwinter counts (1985-87) for Scaup *Aythya marila*. For details see text and Tab. 1.

population size of Scaup in the Western Palaearctic to be about 200,000 birds. The main part of this population ("rather more than 150,000") winters in North-western Europe, and the rest (about 50,000) in the Black Sea and Mediterranean.

New counts have not changed this estimate. In the present study, new information can only be given for North-western Europe. Aerial counts in January 1987 in Sweden, Denmark, the Federal Republic of Germany and the Netherlands gave an actual number of 114,000 Scaups (Tab. 1). Including counts and estimates from other countries, this number increases to 134,000 individuals. Fig. 1 indicates that Scaup winter quarters are situated in the south-western part of the Baltic Sea, in waters be-

longing to the countries around the North Sea and in the Black Sea. The map reflects the number and distribution in a severe winter. In mild winters the Western Baltic holds more Scaups, e.g. in GDR between 20,000-40,000 (H.W. NEHLS, pers. comm.).

Numbers in Great Britain during mid-winter have been decreasing since 1973, from 23,000 birds down to 2,000 in 1986. It is known that a large part of the breeding population from Iceland winters in Great Britain (OWEN et al. 1986). The decreasing numbers might, therefore, indicate a decline in the Icelandic breeding population. SALMON (1988) examined the wintering population in Britain. He found a decrease from 25,000 Scaups in the early 1970's to 6,000 in 1980-85. The Icelandic

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Tab 1. Scaup *Aythya marila*, numbers counted or estimated at midwinter in the Western Palaeartic.

+ : Between 250-500 birds. References: (1) Æ. Petersen, pers. comm. (2) Nygård et al. 1988. (3) Nilsson 1987. (4) Brewka et al. 1985. (5) IWRB midwinter count file. (6) Laursen et al. 1987. (7) Swennen 1987. (8) Atkinson-Willes 1976.

	Midwinter counts 1985-87 Numbers × 1,000	Atkinson-Willes (1976) Numbers × 1,000
Iceland	+ (1)	
Norway	1 (2)	
Sweden	+ (3)	
Poland	2 (4)	
GDR	10 (5)	4
FRG east coast	30 (5)	14
FRG west coast	+ (5)	
Denmark	26 (6)	68
Netherlands	58 (7)	38
Great Britain	3 (5)	18
Ireland	2 (5)	
France west coast	2 (5)	
North-west Europe, total	134	142
East Mediterranean and Black Sea, total	50 (8)	50
Western Palaeartic, total	184	192

breeding population during the same period also decreased from 35,000 (1960-1970) to 10,000-13,000 (1975), but by 1982 had recovered to 17,000-20,000 individuals. Unlike the trend in Iceland, after 1975 the wintering population in Britain has not increased. He concluded that the decrease in the numbers of Scaups wintering in Great Britain could not be explained by a decrease in the Icelandic breeding population. His conclusion was supported by ringing data and he proposed that a change in the wintering quarters of the Scandinavia-USSR breeders could be the reason, i.e. that some of the continental breeders have moved their winter quarters away from the British Islands.

However, figures from the present study indicate that only 5,000 more individuals were counted in 1987 on the Continent compared to 1975 (Tab. 1). Taking the uncertainty of the counts into consideration, the continental population must be regarded as fairly constant over the past 10 years. Evidently it is necessary to gain more knowledge of the Scaup before introducing

a change to the population estimate made by ATKINSON-WILLES (1976).

Eider, *Somateria mollissima*

Estimated number: 3 million.

On the basis of midwinter counts, the population of Eider is mainly distributed in the Western Baltic, the North Sea and the North-eastern Atlantic (Fig. 2). ATKINSON-WILLES (1978) estimated the number at 2 million birds.

In the midwinter count of 1987, a total of 857,000 Eiders were registered in the Swedish, Danish, West German and Dutch waters (Tab. 2). In Norway, the midwinter population was estimated at 450,000 Eiders (NYGÅRD et al. 1988); likewise, the population in Great Britain was estimated at 70,000 birds and for Ireland 2,000 (BAILLIE 1986).

New information from Iceland is given by Æ. PETERSEN (pers. comm.) who estimates the wintering population to be about 900,000 Eiders on the basis of counts from

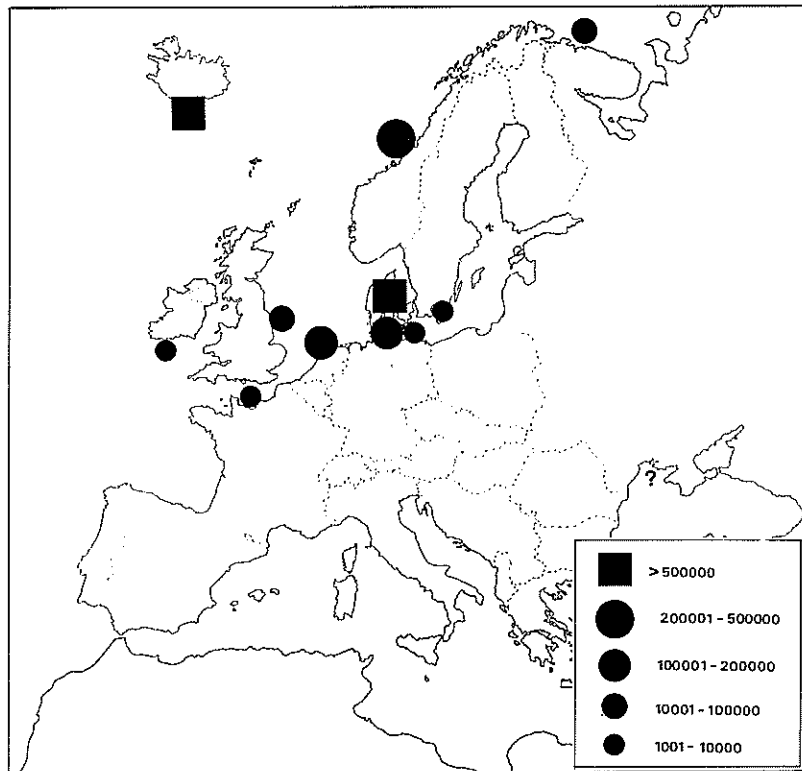


Fig. 2. Midwinter counts (1985-87) for Eider *Somateria mollissima*. For details see text and Tab. 2. ?: No information.

the coast. He stresses that there is a great degree of uncertainty attached to the figure, but it is probably the best up-to-date estimate.

New information has not been gained from the Northern USSR since ATKINSON-WILLES (1978). At that time the number was 100,000 Eiders along the coast of the White Sea in the USSR.

The sum of these figures plus the estimates and the number actually counted result in a total of approximately 2.4 million Eiders (Tab. 2). It seems reasonable to assume that the wintering population in the Western Palearctic is about 3 million Eiders.

In some areas the breeding population of Eider is relatively well documented. This information makes possible another calculation and a check of the winter estimate.

For example, the breeding number of Eider is well known along the coasts of the Baltic, Norway, Denmark, Federal Republic of Germany and the Netherlands.

The wintering quarters of birds from these areas are likewise known, being situated off the coasts of the already mentioned areas, and also France (NOER in prep., SWENNEN 1976).

In the following, the breeding population of Eiders from these particular areas will be calculated. Using information of population dynamics, the number at midwinter will be estimated on the basis of the size of breeding population and compared to the number actually counted during the midwinter count in the relevant areas.

The breeding population in Norway is 70,000-100,000, though probably closest to the latter figure (RØV et al. 1984). In the be-

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Tab 2. Eider, *Somateria mollissima*, numbers counted or estimated at midwinter in the Western Palaearctic. +: Between 250-500 birds. References: 1-8, see Tab. 1. (9) Atkinson-Willes 1978. (10) A. Kuresoo, pers. comm. (11) H. W. Nehls, pers. comm. (12) G. Nehls, pers. comm. (13) Baillie 1986.

	Midwinter counts 1985-87 Numbers × 1,000	Atkinson-Willes (1978) Numbers × 1,000
USSR	100 (9)	100
Iceland	900 (1)	500
Norway	450 (2)	250
Sweden, west coast	3 (3)	
Finland	+ (5)	
Estonian SSR	+ (10)	750
GDR	10 (11)	incl. Denmark
FRG, east coast	111 (12)	
FRG, west coast	56 (12)	
Denmark	540 (6)	
Netherlands	147 (7)	200
Great Britain	70 (13)	55
Ireland	2 (13)	Incl. FRG West
France, west coast	3 (5)	
Switzerland	+ (5)	
Italy	+ (5)	
Western Palaearctic, total	2,392	1,855

ginning of the 1970's the population along the west coast of Sweden was estimated at 58,000 pairs (PEHRSSON 1978). The breeding population in the Baltic (East Sweden, Finland and Estonia) has been estimated at 600,000 pairs (STJERNBERG 1982). G. NEHLS (pers. comm.) judged the number in the Federal Republic of Germany to be 1,000 pairs. In the beginning of the 1980's, the Danish population was estimated at 20,000 pairs (FRANZMANN in press.). In 1981, the breeding population in the Netherlands was estimated at 4,500 pairs (SWENNEN 1983).

The overall breeding population in these countries is therefore about 750,000 pairs in the late 1970's and early 1980's. Twenty percentage non-breeders (ALERSTAM et al. 1974) and on the average 1.4 juvenile/breeding pair (FRANZMANN 1980) must be added to this figure, leading to a grand total of 2.9 million Eiders on autumn migration.

During autumn and winter up to the midwinter count (mid January), about 10% of the adults have died (naturally or by shooting) (FRANZMANN 1980). This gives

about 2.7 million Eiders at the midwinter count. For comparison, about 1.3 million are actually counted in the Baltic, Norway, Denmark, Federal Republic of Germany, the Netherlands and France (Tab. 2).

These two figures do not match very well. Furthermore, it must be taken into consideration that the breeding population of Eiders has increased since about 1980 and up to about 1987. For the Baltic breeding population, A. ANDERSEN (pers. comm.) has judged the increase to be about 50%. This considerably enlarges the difference between the number at midwinter based on calculations from the breeding population and the number actually counted. This difference reflects both a seriously poor coverage of some areas, and an under-estimate in those areas holding large concentrations.

The Baltic coast from Estonia to the Federal Republic of Germany is an example of areas with poor coverage. These areas offer excellent possibilities for wintering Eiders, and due to their considerable size it is reasonable to expect some 100,000 Eiders

there. Observations from the coast off Poland have indicated that several thousand Eiders are wintering there (GORSKI et al. 1983). Even in well covered areas flocks may be overlooked, and it is known that numbers are under-estimated, especially when the birds aggregate in large concentrations (JOENSEN 1968, PRATER 1979).

Long-tailed Duck, *Clangula hyemalis*

Estimated number: 2 million.

There are serious problems connected with population estimates of Long-tailed Duck. In contrast to the other sea duck species, it is usually non-gregarious. The birds often occur widespread, solitarily or a few together in areas with shallow water. Sometimes they lie near the coast, but often they are far offshore.

Some estimates of the population size have been made. The USSR post-breeding population wintering in Western Europe has been estimated at 2 million as well as at 5 million (Isakov 1970 and Uspensky 1970 referred to in ATKINSON-WILLES 1978).

Radar studies of birds passing through the Gulf of Finland indicate that 500,000 Long-tailed Ducks leave the Baltic Sea in spring (BERGMAN & DONNER 1964). In autumn, the numbers entering the Baltic Sea were about 1 million. In addition, a large number of birds pass the North Cape to winter along the Norwegian coast (MATHIASSEN 1970). To judge from these figures, which were obtained 15-25 years ago, the wintering population should be 1-2 million birds. However, the highest number counted in one winter in Western Europe during the period 1967-73 was only 113,000 birds (ATKINSON-WILLES 1978). Consequently, ATKINSON-WILLES (1978) estimated the population at ½ million.

In the present study most attention has been paid to the Baltic Sea, as intensive sur-

veys in the North Sea have shown that the Long-tailed Duck is only found there in relatively small numbers (BLAKE et al. 1984, LAURSEN et al. 1987, LEOPOLD 1987, SKOV et al. 1987.).

Counts performed from both sea and air along the southern coast of Sweden and around Gotland have indicated that 120,000-150,000 Long-tailed Ducks are wintering there (NILSSON 1980). Later studies around Gotland (BEINERT 1983) have shown that this figure probably is too low; thus it should be increased to 200,000 birds (L. NILSSON pers. comm.). On the basis of studies of the southern and western part of the Baltic Sea (from Denmark to Gotland), SKOV et al. (1987) found average densities of 70 birds per km² in coastal areas, 50 birds per km² offshore in areas with shallow water (less than 20 m) and 1 bird per km² in areas with deep water. In the Gdansk Bay in Poland, the density of Long-tailed Duck has been estimated at 160 birds per km² (STRAWINSKI 1987).

J. DURINCK (pers. comm.) has contributed with estimates from South-east Denmark, the areas around Bornholm and at Midsjø Banke. The average density of 25 birds per km² has been used for sea levels of 0-20 m in order to estimate the density in the areas along the south coast of the Baltic Sea. This density is much lower than that found in the Gdansk Bay (160 per km² and along the southern coast of Denmark (70 per km²). Although most of the coastal waters along the southern coast of the Baltic Sea are probably comparable to these two areas (shallow water without rocks), it is preferable to choose a relatively low density to prevent over-estimation of the wintering population in these fairly unknown areas.

Wintering numbers of Long-tailed Duck in the inner Danish waters have been estimated on the basis of intensive aerial surveys (LAURSEN et al. 1987).

The estimates indicate that the number

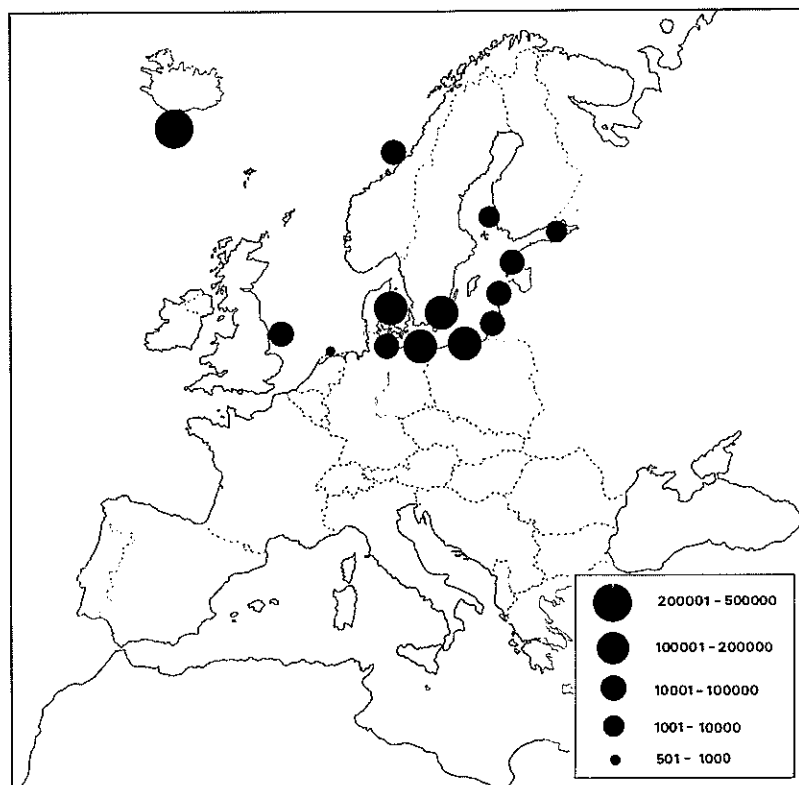


Fig. 3. Midwinter estimates (1985-87) for Long-tailed Duck, *Clangula hyemalis*. For details see text and Tab. 3.

wintering in the Baltic Sea and in Danish waters is 865,000, and it seems reasonable to assume that the real figure is close to 1 million (Tab. 3). In the present study, the total wintering population of the Western Palearctic is judged to be nearly 2 million Long-tailed Ducks, including the wintering birds in Norway and Great Britain and the breeding population in Iceland of 200,000 pairs which corresponds to about 450,000 birds (CRAMP & SIMMONS 1977), though some of them are wintering off West Greenland (Æ. PETERSEN pers. comm.). Fig. 3 indicates that this species is wintering in the Baltic, the North Sea and the North-eastern Atlantic Sea (Fig. 3).

CRAMP & SIMMONS (1977) indicate a degree of uncertainty concerning the

breeding site of the birds wintering in Great Britain. If they are part of the Icelandic population, the birds in Great Britain ought to have been excluded from the estimate. The numbers in Britain are, however, relatively small so it does not seriously affect the total.

Some Long-tailed Ducks are known to winter in the Barents Sea (CRAMP & SIMMONS 1977), but no figures are available for that part of the area.

Common Scoter, *Melanitta nigra*

Estimated number: 800,000

ATKINSON-WILLES (1978) estimated the winter population of Common Scoter at

Tab. 3. Long-tailed Duck, *Clangula hyemalis*, numbers counted or estimated at midwinter in the Western Palaearctic. Numbers are estimated by the author where no references are indicated, see text.
+: Between 250-500 birds. ?: No information. References: 1-13, see Tab. 1 and 2. (14) J. Viksne, pers. comm. (15) Raudonikis et al., in press. (16) Brüger & Nehls 1987. (17) Owen et al. 1986. (18) Nilsson 1980 & Beinert 1983. (19) C. Swennen, pers. comm.

	Midwinter counts 1985-87 Numbers × 1,000	Midwinter estimates Numbers × 1,000	Atkinson-Willes (1978) Numbers × 1,000
USSR	5 (9)	?	5
Iceland	2 (5)	450	2
Norway	95 (2)	95 (2)	3
Sweden	15 (3)	200 (18)	77
Finland	5 (5)	10	5
Estonian SSR	25 (10)	50	6
Latvian SSR	+ (14)	15	
Lithuanian SSR	10 (15)	20	
Poland	+ (5)	170	3
GDR	2 (11)	150	10
FRG east coast	20 (16)	90	5
FRG west coast	+ (12)	+ (12)	
Denmark	6 (6)	160	12
Netherlands	1 (7)	1 (19)	
Great Britain	20 (17)	20 (17)	3
Ireland	+ (5)	?	
Western Palaearctic, total	206	1,431	131

Tab. 4 Common Scoter, *Melanitta nigra*, numbers counted or estimated at midwinter in the Western Palaearctic. +: Between 250-500 birds. ?: No information. References: 1-19, see Tab. 1-3. (20) Yésou & Trolliet 1983.

	Midwinter counts 1985-87 Numbers × 1,000	Atkinson-Willes (1978) Numbers × 1,000
Norway	4 (2)	
Sweden	+ (3)	1
Lithuanian SSR	1 (15)	
Poland	+ (5)	+
GDR	5 (11)	
FRG, east coast	20 (16)	5
FRG, west coast	3 (12)	
Denmark	226 (6)	148
Netherlands	15 (19)	7
Belgium	1 (5)	4
Great Britain	50 (17)	
Ireland	+ (5)	11
France, west coast	40 (5)	31
Spain		
Portugal	54 (20)	17
Morocco		
Algeria	+ (5)	
Rio de Oro	?	
Western Palaearctic, total	419	224

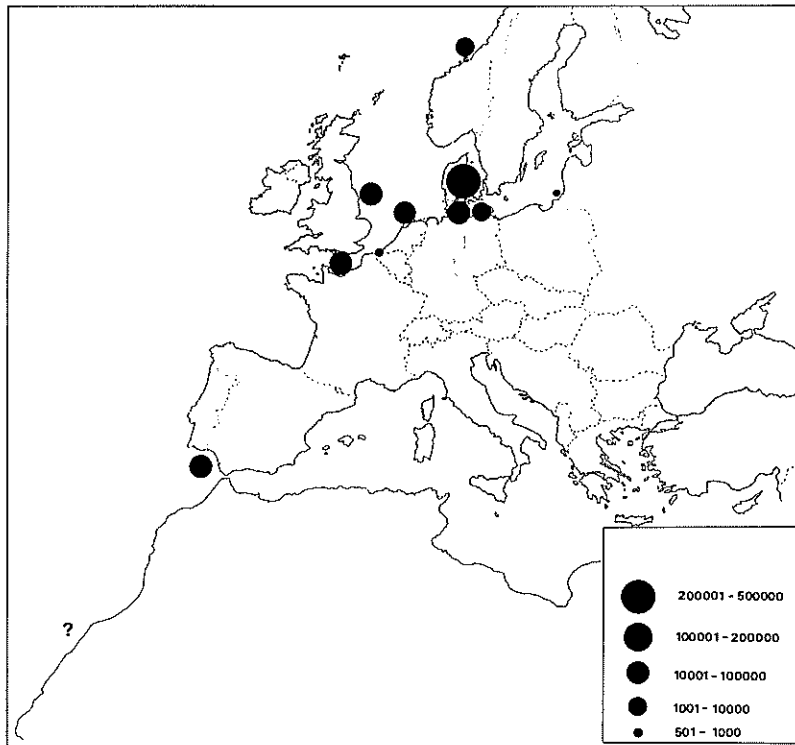


Fig. 4. Midwinter counts (1985-87) for Common Scoter, *Melanitta nigra*. For details see text and Tab. 4. ?: No information.

400,000-500,000 individuals. SCOTT (1980) raised the number to 1 million, but this estimate seems too high in relation to present knowledge of counts and estimates in the countries involved, and to the possibility of finding more birds in potential areas. On this basis, in the present study the wintering numbers have been estimated at 800,000 Common Scoters. Their wintering areas are in the western part of the Baltic, the North Sea and along the Atlantic coast of Europe and North Africa. (Fig. 4).

New figures do fill in some blanks, but the situation is still far from fully elucidated, e.g. reliable figures from the southern coast of the Baltic Sea are missing. On the other hand, blanks have been filled in along the coast of the Federal Republic of Germany and the Netherlands. These

waters were not covered from the air in the survey period 1967-1973, and ATKINSON-WILLES (1978) assessed the number to be about 100,000 birds. Surveys performed in 1987 (Tab. 4) revealed only 35,000 Common Scoters in these two areas (SWENNEN 1987, G. NEHLS pers. comm.).

In Danish waters, however, more birds were recorded in 1987 leading to a total of 226,000 birds compared to a maximum of 148,000 in the period 1967-1973 (ATKINSON-WILLES 1978).

The number counted in France in 1982 (40,000 birds) was similar to that used by ATKINSON-WILLES (1978), although it was higher than the average number (25,000-27,000 birds) given by GIRARD (1987).

There are new figures from Spain, Portu-

gal and Morocco. YESOU & TROLLIET (1983) estimated the number of Common Scoter to be approximately 54,000 birds.

The total number counted in the Western Palaearctic indicates some 419,000 birds (Tab. 4), of which more than half winters in the Danish waters.

Common Scoter is to be found far off the coast, and it may still be possible to find more birds off the German part of the Wadden Sea. It can be mentioned that 161,000 Common Scoters were found off the Danish Wadden Sea in 1987 (LAURSEN et al. 1987), an area that in previous years held large numbers of this species (70,000 in 1973, JOENSEN 1974; 200,000 in 1986, LAURSEN & FRIKKE 1987). However, the chance of finding Common Scoter on the

same scale off the German Wadden Sea is slim.

The sea off West Africa has been poorly surveyed, and more birds may be found there.

Velvet Scoter, *Melanitta fusca*

Estimated number: 250,000

The population of wintering Velvet Scoter has been estimated at 250,000 birds in the Western Palaearctic. Nearly all of these winter in North-western Europe (Fig. 5). The population was estimated at 150,000-200,000 birds by ATKINSON-WILLES (1978), on the basis of counts during the period 1967-1973. This estimate was primarily

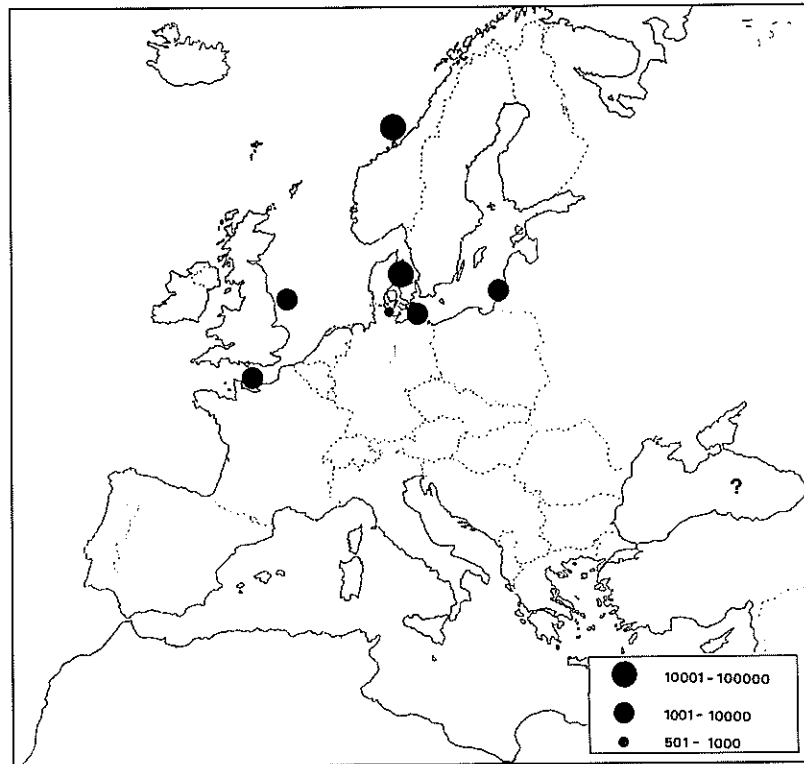


Fig. 5. Midwinter counts (1985-87) for Velvet Scoter, *Melanitta fusca*. For details see text and Tab. 5. ?: No information.

based on observations in Danish waters where 23,000 birds were recorded. Tab. 5 shows that in the 1987 midwinter count about 41,000 Velvet Scoters were recorded in the same area.

Compared to the results presented by ATKINSON-WILLES (1978), a more careful coverage and consequently better estimates have been achieved during recent years in several countries. In Norway, new surveys have shown that 30,000 Velvet Scoters regularly winter there (NYGÅRD et al. 1988).

In Lithuania, the number of Velvet Scoter has been estimated at 2,000-3,000 birds (Tab. 5) but in mild winters it can be as high as 15,000 (RAUDONIKIS et al. in press). No numbers are available from midwinter counts in Poland, but observations from both coast and boat indicate that large numbers of Velvet Scoter may be expected there (BREWKA et al. 1985, STRAWINSKI 1987).

In the German Democratic Republic, 3,000 Velvet Scoter were counted in Greifswalder Bodden (H.W. NEHLS, pers. comm.) which confirms the theory that a larger number of birds may be found there, although during the last 3 years only up to

200 Velvet Scoters have been recorded in midwinter counts.

The Baltic part of the Federal Republic of Germany was covered from aircraft during the midwinter count of 1987, but only 500 Velvet Scoters were recorded. In the Wadden Sea area off the Federal Republic of Germany no Velvet Scoters were recorded, and only few occurred in the Netherlands, though both of these areas were covered from the air (SWENNEN 1987, G. NEHLS pers. comm.). It is nevertheless possible, as suggested by ATKINSON-WILLES (1978), that larger numbers of Velvet Scoter are wintering in the North Sea off the Wadden Sea.

However, the Danish part of the North Sea, off the Wadden Sea, was surveyed for this species both in January 1986 and in January 1987 without any records (LAURSEN & FRIKKE 1987, LAURSEN et al. 1987). Furthermore, surveys performed at sea in part of the North Sea off the Dutch Wadden Sea gave no records of this species (LEOPOLD 1987). Even so, although the flanks of the potential area have been examined without any records, there still remains a large area to be investigated.

Tab. 5. Velvet Scoter, *Melanitta fusca*, numbers counted or estimated at midwinter in the Western Palaearctic. +: Between 250-500 birds. ?: No information. References: 1-20, see Tab. 1-4.

	Midwinter counts 1985-87 Numbers × 1,000	Atkinson-Willes (1978) Numbers × 1,000
Norway	30 (2)	3
Sweden	+ (3)	2
Estonian SSR	+ (10)	
Lithuanian SSR	3 (15)	
Poland	+ (5)	+
GDR	3 (11)	
FRG, east coast	1 (12)	1
Denmark	41 (6)	23
Netherlands	+ (7)	
Great Britain	3 (17)	1
France, west coast	8 (5)	1
Black Sea	?	
Western Palaearctic, total	89	31

The numbers of Velvet Scoter counted in the waters around Great Britain are probably low, too. Some areas are poorly covered (OWEN et al. 1986), and it seems likely that a significant number of birds may have been overlooked.

In the Black Sea area, only a very small wintering population is known (SCOTT 1980), but again the area is poorly covered.

Actual counts and estimates amount to 89,000 Velvet Scoters (Tab. 5), compared to the actual number of 31,000 birds counted

in the period 1967-1973 (ATKINSON-WILLES 1978). It is, however, likely that more birds could be found off the coasts of Poland and the German Democratic Republic. In addition, areas in the southern part of the North Sea, which were suggested by ATKINSON-WILLES (1978) to hold large numbers of Velvet Scoter, are still not surveyed. On this basis, it seems reasonable to estimate the number of Velvet Scoters at 250,000.

Recommendations

The estimates of the wintering sea duck populations in the Western Palaearctic presented here are based on counts and estimates from various sources which are obtained by use of different methods and equipment during different years. This leads inevitably to some inaccuracy when calculating population numbers, and the study must be considered as an attempt to update present knowledge.

More reliable estimates could be obtained with a better coverage in the Baltic Sea. This is particularly important for sea areas off the Estonian SSR, the Latvian SSR, the Lithuanian SSR, Poland and the German Democratic Republic. Great efforts have been made, and encouraging plans for the future have been presented to several of these countries by IWRB. Furthermore it must be recommended to conduct surveys from aircraft, and when that is impossible from boat. The newly established Nordic-Baltic Sea Duck Survey Group under IWRB will continue to encourage a better coverage in both the Nordic and the Baltic countries.

Another unexamined area is found in the North Sea off the West German Wadden Sea. This area might harbour large numbers of Common and Velvet Scoter. It is recommended, therefore that West Germa-

ny, the Netherlands and Denmark, i.e. all countries bordering the Wadden Sea, collaborate in monitoring birds in this area.

The waters off Great Britain (especially off South-east Scotland, England and Wales), Ireland, Spain and Portugal have been inadequately covered, and it is recommended that counts from aircrafts should be initiated in these areas. The same must be recommended for the waters off the coast of West Africa, about which practically nothing is known.

The Black Sea probably harbours more birds than indicated here. In this area counts should be initiated either from boat or airplane.

In the northern part of the region, more information is needed about the breeding and wintering populations in Iceland, the Faroes, the Svalbards and along the coast of the White Sea and the Kola Peninsula.

Obviously, there are many unsolved problems. Better coverage is desirable, even for those countries not mentioned.

The estimate of wintering numbers of sea ducks presented in this paper is based on relatively poor coverage in general. It is believed that the estimated numbers are well within the lower part of the actual numbers present. This may become evident when better counts are achieved.

Dansk resumé

Bestandsstørrelse af overvintrende havdykænder i Vestpalæarktis.

Det er forbundet med store vanskeligheder at fastlægge bestandsstørrelsen af havdykænder. I yngleperioden er de fleste arter spredt over store dele af det arktiske område, hvortil mennesker kun vanskeligt har adgang. I vinterhalvåret opholder fuglene sig i havområder, hvor de er vanskelige eller umulige at observere fra kysten. For at få pålidelige optællinger af fuglene må der derfor anvendes flyvemaskine eller skib.

På grund af havdykændernes specielle levevis i vinterhalvåret har det gennem en årrække kun delvist været muligt at få et overblik over deres bestandsstørrelser gennem de midvintertællinger, der organiseres af IWRB (International Waterfowl Research Bureau), da de hovedsagelig er baseret på optællinger fra land. Det har imidlertid vist sig, at flere lande omkring Nordsøen og den vestlige del af Østersøen har genoptaget eller påbegyndt optællinger fra fly eller skib. Disse farvandsområder udgør en vigtig del af havdykændernes vinterkvarter. Optællinger gør det muligt at foretage en vurdering af bestandsstørrelsen af de havdykænder, der overvintrer i det vestlige Palæarktis (dvs. Europa, Nordafrika og Nærorienten).

I forbindelse med midvintertællinger i januar 1987 blev der foretaget optællinger af andefugle fra flyvemaskine i Sverige, Danmark, Vesttyskland og Holland. Det var første gang, så store dele af disse landes havområder blev optalt samme vinter. I Norge har man afsluttet en årelang inventering af den henved 20.000 km lange kyst og sammenstillet resultaterne. En tilsvarende sammenstilling er foretaget for farvandene omkring Storbritannien. Disse optællinger og sammenstillinger udgør kernen i de bestandsvurderinger, der præsenteres her. Fra de øvrige lande og farvandsområder er der indgået oplysninger fra IWRB's database suppleret med optællingsresultater fra forskellige undersøgelser.

Bjergand, *Aythya marila*:

Bestanden er vurderet til 200.000 fugle. Det er samme antal, som bestanden blev vurderet til i slutningen af 1970'erne. Der er i alt optalt og

estimeret 134.000 fugle i Vesteuropa; dertil kommer 50.000 i Sortehavet (Tab. 1). Bjergændernes vinterkvarter er koncentreret til den vestlige del af Østersøen og langs den sydlige del af Nordsøen og Kanalen (Fig. 1).

Der er konstateret en markant tilbagegang i antallet af overvintrende fugle i Storbritannien fra 1973 med 23.000 til 2.000 i 1986. Den islandske ynglebestand, der overvintrer i Storbritannien, er efter en kraftig nedgang i midten af 1970'erne atter steget i antal, så der synes ikke at være en direkte sammenhæng mellem bestandene i disse 2 lande. Den del af bestanden, der overvintrer langs kontinentets kyster har tilsyneladende været ret konstant.

Ederfugl, *Somateria mollissima*:

Bestanden er vurderet til 3 mio. fugle. Det er 1 mio. mere, end da bestanden sidst blev opgjort i slutningen af 1970'erne. Der er dokumentation for, at denne fremgang skyldes en reel fremgang i ynglebestanden i store dele af artens udbredelsesområde.

Ved midvintertællingerne er der optalt og estimeret i alt 1,9 mio. ederfugle i Vestpalæarktis, hvoraf ca. ¼ blev registreret i de danske farvande (Tab. 2). Vinterkvartererne er beliggende i den vestlige del af Østersøen, i Kanalen, Nordsøen og det nordøstlige Atlanterhav (Fig. 2).

For at undersøge midvintertællingernes effektivitet er der foretaget en sammenligning mellem antallet af fugle i en kendt ynglebestand (det Baltiske område, Norge, Danmark, Vesttyskland og Holland), og antallet af fugle i disse bestandes overvintringsområde. Ynglebestanden inden for dette område er ca. ¾ mio. par. Det skulle medføre en midvinterbestand på ca. 2,7 mio. fugle, men ved midvintertællingerne blev der i alt kun registreret 1,3 mio. ederfugle. Det antyder, at der ved midvintertællingerne kun registreres ca. halvdelen af det forventede antal ederfugle.

Denne store forskel tillægges især, at der er havområder, der er dårligt dækket. Dette er f.eks. tilfældet i den sydlige del af Østersøen.

Havlit, *Clangula hyemalis*:

Bestanden er vurderet til 2 mio. Havlitten er vanskelig at optælle, fordi den forekommer meget spredt over store havområder, hvilket er forskelligt fra de øvrige havdykænder, der oftest ligger mere eller mindre koncentreret i store, tætte flokke. På grund af den spredte forekomst undervurderes antallet af havlitter ved de almindelige optællingsmetoder. Derfor er midvintertællingerne kun tillagt mindre værdi i denne sammenhæng. I stedet er der foretaget vurderinger af tætheder ud fra transektoptællinger fra skib og flyvemaskine i forskellige farvandsområder. En forsigtig vurdering tyder på, at der i Østersøen og de indre danske farvande er 25 havlitter pr. km² i farvandsområder med en dybde under 20 m. Dette giver ca. 0,8 mio. havlitter for Østersøen og de indre danske farvande. Samlet giver det for Vestpalæarktis 1,4 mio. fugle (Tab. 3). Østersøen er et centralt område for havlits vinterudbredelse (Fig. 3).

Sortand, *Melanitta nigra*:

Bestanden er vurderet til 800.000 fugle. Det er næsten en fordobling i forhold til bestandsopgørelsen i slutningen af 1970'erne. Denne forøgelse skyldes ikke en reel stigning i bestanden, men snarere en bedre dækning og optællingsteknik. Sortandens vinterkvarter strækker sig langs Europas og Nordafrikas Atlanterhavskyst

(Fig. 4), og arten er på grund af en stor udbredelse som helhed dårligt dækket. De danske farvande udgør en vigtig del af sortandens vinterkvarter.

Fløjlsand, *Melanitta fusca*:

Bestanden er vurderet til 250.000 fugle. Det er 50.000-100.000 flere end ved bestandsopgørelsen i slutningen af 1970'erne. Også for fløjlsanden gælder det, at denne forøgelse kan tilskrives en bedre dækning af områderne. Vinterkvarteret strækker sig fra Kanalen, over Nordsøen til Norges vestkyst og ind i den sydlige del af Østersøen (Fig. 5). Forskellige rapporter antyder, at der er betydelig flere fløjlsænder i den sydlige del af Østersøen, men det må konstateres, at området er dårligt dækket. De danske farvande udgør også for denne art en vigtig del af vinterkvarteret.

Den vurdering af bestandene af havdykænder, der her er sammenstillet, er på mange måder ufuldstændig. Hvis der ønskes en bedre vurdering, er det nødvendigt i højere grad at benytte flyvemaskiner eller skibe til midvintertællingerne. Dette må specielt anbefales for områder som de østeuropæiske lande langs Østersøen, Storbritannien, Spanien, Portugal, farvandet ud for Nordafrikas kyst og Sortehavet, hvor dækningen er dårlig.

Резюме на русском языке:

Численность популяций зимующих морских уток-нырков в Западной Палеарктике.

Определение численности морских уток-нырков связано с большими затруднениями. В периоде гнездования большинство видов рассеяно по большим частям арктической области, к которым доступ для людей труден. В зимнем полугодии птицы обитают на морских пространствах, где их трудно или невозможно наблюдать с берега. Поэтому для получения надежных подсчетов птиц необходимо применять самолет или корабль.

Вследствие специального образа жизни морских уток-нырков в зимнем полугодии, в течение ряда лет было только частично возможно составить себе обзор численностей их популяций при помощи подсчетов в середине зимы, организуемых IWRB (Между-

народным Бюро Исследования Водоплавающих Птиц), так как они главным образом основаны на подсчетах с берега. Однако оказалось, что несколько стран вокруг Северного моря и западной части Балтийского моря возобновили или начали подсчеты с самолетов или кораблей. Эти морские пространства являются важной частью зимнего района обитания морских уток-нырков. Подсчеты предоставляют возможность оценить численности популяций тех из морских уток-нырков, которые зимуют в западной палеарктике (т. е. Европе, Северной Африке и на Ближнем Востоке).

В связи с зимними подсчетами в январе 1987 г. проводились подсчеты утиных с

самолетов в Швеции, Дании, ФРГ и Голландии. Этим впервые был проведен подсчет на морских пространствах этих стран одной и той же зимой. В Норвегии окончена длившаяся несколько лет инвентаризация по берегу длины около 20.000 км, и составлены её результаты. Соответствующее сопоставление результатов предпринято для вод вокруг Великобритании. Эти подсчеты и сопоставления служат исходным материалом оценок популяций, представленных в настоящей статье. Из остальных стран и морских пространств получены сведения от базы данных IWRB, дополненные результатами подсчетов при разных исследованиях.

Морская чернеть, *Aythya marila*: Популяция оценивается в 20.000 птиц. Это то же число, как по оценке популяции в конце 1970-х годов. Общим числом подсчитано и предположено 134.000 птиц в Западной Европе; к этому следует прибавить 50.000 в Черном Море (Табл. 1). Зимняя область обитания морской чернети концентрирована в западной части Балтийского Моря, вдоль южной части Северного Моря и в Ла-Манше (Фиг. 1).

Констатировано резкое понижение численности птиц, зимующих в Великобритании, с 23.000 в 1973 на 2.000 в 1986 г. Численность популяции, гнездящейся в Исландии и зимующей в Великобритании, после сильного понижения в середине 1970-х годов снова повысилась, так что между популяциями в этих двух странах повидимому нет непосредственной связи. Та часть популяции, которая зимует вдоль берегов материка Европы, повидимому была довольно постоянной.

Обыкновенная гага, *Somateria mollissima*: Популяция оценивается в 3 милл. птиц. Это на один миллион больше, чем при прошлой оценке её численности в конце 1970-х годов. Имеется документация того, что это повышение является результатом реального увеличения гнездящей популяции в больших частях области распространения этого вида.

При зимних подсчетах подсчитано и по смете предположено итого 1,9 милл. обыкновенных гаг в Западной Палеарктике, из них около 1/4 были зарегистрированы на датских водах (Табл. 2). Области зимов-

ки находятся в западной части Балтийского Моря, в Ла-Манше, Северном Море и в северо-восточной части Атлантического Океана (Фиг. 2).

Для выяснения эффективности зимних подсчетов произведено сравнение между числом птиц в известной гнездящей популяции (в Балтийском Море, Норвегии, Дании, ФРГ и Голландии) с числом птиц в области зимовки этого вида. Гнездящая популяция в пределах этих областей составляет прибл. 3/4 милл. пар. Этому соответствовала-бы зимняя популяция в прибл. 2,7 милл. птиц, но при зимних подсчетах зарегистрировано только 1,3 милл. гаг. Это дает основание предполагать, что при зимних подсчетах регистрируется только около половины ожидаемого числа гаг. Такая значительная разница может объясниться тем, что некоторые морские пространства недостаточно охватываются. Так это обстоит напр. в южной части Балтийского Моря.

Морянка, *Clangula hyemalis*:

Популяция оценивается в 2 милл. Морянок трудно подсчитывать, так как они наблюдаются сильно рассеянными по обширным морским пространствам, чем они отличаются от остальных морских уток-нырков, которые более или менее концентрируются большими, густыми стаями. Вследствие этой разбросанности, численность морянок при подсчетах обычными способами недооценивается. Поэтому, зимним подсчетам в связи с настоящей оценкой придается только небольшое значение. Вместо этого произведены оценки густоты на основании поперечно-проходных подсчетов с самолетов или кораблей на разных морских участках. По умеренной оценке, в Балтийском Море и на внутренних датских водах встречаются по 25 морянок на км² на морских участках глубины менее 20 м. В результате получается 0,8 милл. морянок в Балтийском Море и на внутренних датских водах. Для всей Западной Палеарктики получается итого 1,4 милл. птиц (Табл. 3). Для зимовки морянок, центральным районом является Балтийское Море (Фиг. 3).

Синьга, *Melanitta nigra*:

Популяция оценивается в 800.000 птиц. Это почти вдвое больше, чем по оценке

численности в конце 1970-х годов. Это увеличение не вызвано реальным ростом популяции, а скорее более охватывающей и усовершенствованной техникой подсчета. Область зимовки синьги простирается вдоль атлантических берегов Европы и Северной Африки (Фиг. 4), и этот вид вследствие его широкого распространения в общем плохо охвачен подсчетами. Датские воды являются важной частью области зимовки синьги.

Черный турпан, *Melanitta fusca*:
Популяция оценивается в 250.000 птиц. Это на 50.000 - 100.000 больше, чем по оценке численности в конце 1970-х годов. Что это повышение может быть результатом более основательного охвата районов, действительно также для черного турпана.

Область зимовки простирается от Ламанша через Северное Море до западного

берега Норвегии, а также в южную часть Балтийского Моря (Фиг. 5). По разным рапортам вероятно, что в южной части Балтийского Моря значительно больше черных турпанов, но следует заметить, что этот район плохо охвачен. Также и для этого вида внутренние датские воды являются важной частью области зимовки.

Составленная в настоящей статье оценка численностей популяций морских уток-нмрков во многих отношениях неполна. Если желается более точная оценка, то для зимних подсчетов необходимо более широко применять самолеты и корабли. Это особенно рекомендуется для таких областей как восточно-европейских стран вдоль Балтийского Моря, Великобритании, Испании, Португалии, а также вод у североафриканских берегов и Черного Моря, где охват подсчетов неудовлетворителен.

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