

The mid-winter distribution of wildfowl in Europe, northern Africa and south-west Asia, 1967 and 1968

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Regular counts of wildfowl are now being undertaken in many parts of Europe and south-west Asia, and in a few districts of northern and central Africa. In some countries, including Britain, the counts have been made at monthly intervals throughout the winter for periods of up to 20 years; in most others, the studies began quite recently and are often more limited in scope.

The counts are organised by the Duck Research Group, which was set up by the International Wildfowl Research Bureau in 1966, to co-ordinate—and extend—the studies already being undertaken in some countries. Prior to that each country had conducted its own investigations, without any real attempt being made to examine the problems on an international scale. This insularity was basically unsound: in dealing with a migratory group of birds, such as wildfowl, it is essential to consider the populations as a whole.

The new international programme of research is designed specifically to enable countries which have not previously undertaken work of this nature to provide useful information at the earliest possible stage. The primary project is the organization of synchronized counts throughout the winter range. Ideally these should be made at monthly intervals between September and March, but in many countries this intensive programme is impracticable. A special effort is therefore made to obtain as many records as possible on one particular occasion each winter, the period selected being the Sunday nearest to 15th January, and the seven days before and after. The first of these annual censuses took place in January 1967.

The investigation covers all the species of ducks and swans which breed in the western half of the Palaearctic region, and winter in Europe, Africa and south-west Asia, eastwards to about 90° East. Coots are also included. The geese and waders are dealt with by separate research groups.

The primary aim of the censuses is to detect and measure changes in the levels of wildfowl population, and to determine the amount of protection which ought to be afforded to each species. This is essentially a long term study which cannot begin until comparable data are available over a series of several years. Thanks to the generous help of the Nature Conservancy, the records obtained since 1967

are now being transferred on to punch tape for subsequent analysis by computer. The first of these analyses is planned for 1970, when four seasons of data will be available.

Meanwhile the results of the initial censuses are being used to define the main centres of wildfowl population, and to assess the importance of the individual sites. In particular, they have been used to compile a set of distribution maps, showing the number of birds recorded in each area. These maps will help to demonstrate to Governments the extent of their responsibilities in the field of wildfowl conservation, and are perhaps a first step towards the establishment of an effective international system of reserves.

The scope of the census

In 1967 records were received from 4,500 sites in 31 countries, and produced a total of 6,581,000 ducks and 108,800 swans. In 1968, 33 countries took part and counts were made at 5,440 sites, producing a total of 9,468,000 ducks, 114,500 swans and 3,971,000 coots. Table I shows the number of places at which counts were made in each country, and gives a summary of the results. The data are grouped in accordance with the main geographical populations of wildfowl, defined by Isakov (1965).

The totals in Table I are compiled solely from data obtained during the prescribed periods, 7th-22nd January 1967 and 6th-21st January 1968. This limitation is imposed in order to reduce the likelihood of the same birds being recorded on two or more occasions in different areas. It would, of course, be preferable if the census could be confined to a single day, but this would greatly reduce the number of counts, and result in a much less satisfactory sample.

The results of the counts made outside the census period, from mid-December until mid-February, are contained in Table II. None of the sites concerned was also covered during the period of the census, and in most cases the records can probably be regarded as additional to those in Table I.

In northern Europe records have been received from most of the more important centres of wildfowl population, and from many hundreds of lesser sites. Compre-

hensive counts are also being made in several regions of central and southern Europe, and throughout the southern parts of the U.S.S.R., eastwards to 85° East. In most other districts of south-west Asia, and also in Africa, the counts

are still at the exploratory stage, and many important areas have not yet been surveyed. The problems here are much greater than in Europe, due partly to the shortage of observers, and partly to the changing pattern of distribution under

Table I. The number of sites visited, and the total numbers of wildfowl (in thousands) recorded in each country during the census periods 7th-22nd January 1967 and 6th-21st January 1968. Unidentified ducks and swans are included. Additional counts were made in countries marked * (see Table II).

+ = less than 100. — = nil.

	No. of sites		Ducks		Swans		Coots
	1967	1968	1967	1968	1967	1968	1968
A: Europe/Black Sea/Mediterranean							
U.S.S.R. North-west:							
White Sea/Barents Sea	24	22	105.1	66.2	—	—	—
Baltic region	437	509	28.7	31.1	0.1	0.1	+
North and central European Russia	6	26	2.0	0.1	—	—	—
Finland	—	64	—	14.3	—	+	—
Sweden	353	394	107.7	98.2	6.9	5.2	3.1
Norway	26	49	11.8	26.3	0.3	0.2	—
Denmark	162	465	198.5	518.8	13.3	52.2	124.4
Poland	78	246	21.6	49.8	0.2	0.4	5.5
East Germany (D.D.R.)	144	243	346.1	122.2	20.5	10.3	61.3
West Germany (F.D.R.)	126	338	240.3	263.1	3.0	5.6	120.8
Netherlands	275	358	452.3	476.7	4.4	4.9	103.2
Belgium	103	63	38.1	31.4	0.3	0.1	3.3
Luxembourg	5	—	0.1	—	+	—	—
Great Britain	1347	1047	483.0	442.7	10.8	9.0	42.5
Ireland*	132	7	92.0	13.6	5.0	0.4	0.1
France*	205	261	231.1	262.1	0.1	0.1	57.6
Spain*	—	42	—	90.8	—	—	17.8
U.S.S.R. South-west:							
Byelorussia and Ukraine (inland)	84	144	13.0	31.5	+	+	+
Ukraine (Black Sea)	83	101	698.7	124.8	15.0	13.5	3.6
Sea of Azov	111	45	210.4	570.0	0.7	1.1	173.4
Caucasia	53	68	223.2	42.7	0.1	0.3	11.0
Turkey (west of 35° E.)	19	17	46.5	81.3	—	+	54.3
Cyprus	3	—	3.1	—	—	—	—
Roumania	7	—	2.2	—	+	—	—
Hungary	40	31	4.0	5.5	—	—	0.1
Greece*	1	20	16.1	172.9	—	+	73.5
Yugoslavia*	—	11	—	19.4	—	—	2.5
Austria	20	37	17.3	22.3	0.5	0.6	9.6
Switzerland	327	334	84.5	108.7	2.8	3.0	79.6
Italy	6	21	78.8	18.0	—	—	29.5
Tunisia	9	27	27.1	49.7	—	—	48.8
Libya	—	4	—	+	—	—	—
Nigeria	32	12	9.3	3.6	—	—	—
Total	4222	5006	3792.6	3757.8	84.0	107.0	1025.5
B. West Siberia/Caspian/Nile							
U.S.S.R.							
North Caspian	11	40	32.1	50.3	3.9	1.5	3.1
Daghestan	37	24	241.6	133.9	1.6	0.7	11.7
Azerbaijan	23	21	1257.6	1480.5	4.3	2.0	469.2
Armenia	20	2	12.8	12.0	+	—	—
East Caspian	15	21	441.4	709.5	4.1	1.8	319.1
Turkey* (east of 35° E.)	10	10	129.4	2380.5	—	—	1830.2
Israel*	—	7	—	20.5	—	—	28.6
Jordan (Azraq)	—	1	—	18.5	—	+	1.5
Iraq*	4	29	84.3	77.9	—	—	20.8
Iran*	10	19	18.5	345.7	—	0.1	4.1
Trucial Oman	—	2	—	—	—	—	—
Ethiopia	1	—	0.3	—	—	—	—
Total	131	176	2218.0	5229.3	13.9	6.1	2688.3

Table I (cont.).

	No. of sites		Ducks		Swans		Coots
	1967	1968	1967	1968	1967	1968	1968
<i>C. Siberia/Kazakhstan/Pakistan/India</i>							
U.S.S.R.							
S. Turkmenia	16	40	176.2	221.4	+	+	175.9
mid- and lower Amu-darya	18	57	11.8	26.6	—	0.2	1.7
Zeravshan	10	10	44.6	18.6	+	0.1	15.3
Surkhan dar'ya	5	14	4.3	23.4	+	—	28.8
Sur-dar'ya: mid	7	19	5.9	69.9	+	—	21.1
upper	15	41	14.8	20.5	—	+	1.4
Issyk-kul	2	15	18.6	42.4	0.9	1.1	2.9
Alakol	1	4	0.2	2.0	—	—	—
West Pakistan*	28	13	64.7	20.0	—	—	8.3
India*	37	20	208.1	13.3	—	—	1.9
Ceylon*	3	20	2.3	10.3	—	—	—
East Pakistan/Assam	8	9	18.9	12.7	—	—	—
Total	150	262	570.4	481.2	0.9	1.4	257.3

Table II. Additional counts made outside the census period, from mid-December to mid-February. The sites are different to those in Table I.

+ = less than 100. — = nil.

	No. of sites		Ducks		Swans		Coots
	1967	1968	1967	1968	1967	1968	1968
<i>A: Europe/Black Sea/Mediterranean</i>							
Ireland	28	—	22.8		2.8		—
France	20	2	7.2	0.1	—	—	—
Spain	1	19	16.8	113.3	—	—	21.2
Turkey (west of 35° E.)	14	4	406.4	55.8	—	—	16.2
Bulgaria	4	—	2.8		—		—
Greece	—	7		50.5		0.4	10.5
Yugoslavia	—	2		+		—	—
<i>B: West Siberia/Caspian/Nile</i>							
Turkey (east of 35° E.)	7	1	246.6	0.9	—	—	—
Iran	3	24	10.7	287.0	—	—	2.5
Iraq	1	—	1.7		—		—
Israel	64	—	18.5		—		—
<i>C: Siberia/Kazakhstan/Pakistan/India</i>							
West Pakistan	4	8	2.6	18.6	—	—	5.3
India	5	3	5.0	0.7	—	—	+
Ceylon	1	4	1.0	13.2	—	—	—

varying conditions of drought and flood. Nevertheless, the recent work has shown that these problems can be overcome, and that even a small cadre of enthusiasts can contribute a very great deal of information.

In a number of instances, in both Europe and Asia, small teams of visiting ornithologists were able to assist the national organizers by surveying areas which could not otherwise have been covered. Expeditions of this nature cannot be repeated annually, but have proved extremely valuable in helping to establish the numerical distribution of the species, and in stimulating the interest of local observers.

Aerial surveys were conducted with outstanding success in the coastal districts

of Denmark and France, and along the rivers of central Ireland. This is undoubtedly one of the quickest and most effective method of exploring for ducks, and is probably the only practicable means of counting the large gatherings of sea ducks which cannot normally be viewed from the shore. Aerial counts of the large concentrations of wildfowl in the Niriz basin in southern Iran, and at Azraq oasis in Jordan were equally successful. There are many advantages in using light aircraft to survey remote and extensive areas of marshland such as these, and the method has an obvious application in many parts of Asia and Africa. In particular, it enables a single trained observer to cover large areas of difficult terrain, and to achieve results

comparable to those obtained by the regiments of observers which in some countries are deployed on the ground.

The distribution maps (pp. 104-112)

Some examples of the distribution maps, based on the counts for 1967 and 1968, are contained in Figures 2-8. In this case all the data have been used, including those obtained outside the census period from mid-December until mid-February. Records for the same period in other winters since 1963 have also been incorporated in areas for which no recent data are available.

The method of presentation is similar to that adopted by the Committee for Mapping the Flora of Europe, to whom grateful acknowledgement is made for a supply of special outline maps. The mapping is based on a system of 50 km. grid squares, the records for each square being consolidated to provide a total for each species. The size of the total is indicated by a symbol placed in the centre of the square concerned. If counts were made in both 1967 and 1968, the higher of the two totals has been used. The location of the squares in which counts were made is shown in Figure 1. This should be read in conjunction with the species maps in order to avoid misleading impressions; in many areas, particularly in southern Europe, the paucity of symbols on the species maps is due to lack of records and not necessarily to an absence of birds.

The data from the U.S.S.R. were received in the form of regional summaries, and cannot be presented in quite the same detail. The regions concerned are shown on the maps by shading, with figures to indicate the numbers of birds recorded (Isakov 1968).

Despite the lack of data in some areas, the maps indicate quite clearly the distribution of the main wintering grounds, and the districts of high density, towards which the main effort of conservation ought to be directed. In some cases the population within these districts is evenly distributed over a large number of sites, which in itself provides some measure of protection; in others, the birds are concentrated into relatively small areas, many of which are highly vulnerable to drainage, disturbance or pollution. These focal points deserve special consideration as potential sites for reserves.

The weather during the first half of January, in both 1967 and 1968, was reported to be colder than usual in many parts of central and south-eastern Europe.

The maps may therefore be biased by these conditions. This is perhaps an advantage, because it is in cold winters that the birds stand most in need of care and protection. Sites which are capable of supporting large populations at such times are especially important, in that they provide a means of survival for migrants which might otherwise be faced with starvation.

Most of the largest concentrations were reported from the tropical and sub-tropical regions of Asia, Africa and southern Europe. The areas in which these gatherings occur are often isolated by broad stretches of inhospitable terrain, and thus provide the only habitats available. In addition to their use by wintering wildfowl, many of them afford temporary resting places for very large numbers of passage migrants. The loss of any one of them might therefore prove disastrous. In the more northerly regions there are numerous small areas of habitat and the population tends to disperse over a large number of relatively unimportant sites. Under these conditions the loss of an individual site may pass almost unnoticed, but in the aggregate the annual wastage of habitat is no less serious.

From the conservation viewpoint, any site or complex of sites which is capable of supporting 25,000 ducks, even for a short period, ought to be regarded as a wetland area of outstanding importance. In the European context this figure should certainly be reduced, perhaps to 10,000 or even lower.

The numbers and distribution of the individual species

Table III shows the total numbers of each species recorded in the 1967 and 1968 censuses. Because of the substantial differences in the number of places counted, the figures for the two years cannot at present be compared, nor can they be used to assess the relative abundance of the various species. Nevertheless the totals are of considerable interest: in particular they indicate the size of the samples which are available for future analyses.

The species best portrayed, in both the Table and the maps, are those which winter predominantly in the northern parts of Europe (where counters are plentiful), and which concentrate on to localized types of habitat, such as estuaries or flood meadows (which are readily accessible to observers on the ground). Very few species are in fact confined solely to northern Europe, but in several

cases the northern population appears to be discrete, and can thus be considered as a separate entity. The best examples are Common Shelduck, Bewick's Swan and Whooper Swan (Figures 7 and 8), followed by Goldeneye (Figure 7), Mute Swan and Scaup.

On the basis of the 1967 count the north European population of the Common Shelduck is estimated at about 100,000, a figure which agrees well with the summer numbers recorded on the moulting grounds around the Heligoland Bight. By mid-winter at least 40% of this population is concentrated in the British Isles.

The maps for Whooper Swan and Bewick's Swan provide an interesting example of two closely related species with quite distinct patterns of distribution.

The maps for several of the dabbling and diving ducks give a reasonable indication of the general distribution, but the detail is still far from complete. The species concerned are often widely dispersed over many different types of coastal and inland habitat, and comprehensive cover is consequently more dif-

ficult to attain. In some cases the northern populations are rather less important than those further south, and there is usually no clear dividing line between the two. In the absence of records from many southern districts, the maps may sometimes fail to present a properly balanced picture. This applies particularly to the species which are seen to occur in large numbers around the Mediterranean. The most reliable of the maps in this category are those for Wigeon, Tufted Duck (Figure 6) and Mallard (Figure 3). Those for Teal (Figure 4) and Pochard (Figure 5) are less representative because of the more southerly distribution.

The ability of the Mallard to adapt to a wider range of conditions is well illustrated by the quite large populations which remain to winter in north-east Europe, despite the prolonged periods of low temperature. The large native populations which occur in many other parts of Europe also appear to be mainly sedentary. Thus to some extent their conservation is a national, as much as an international, responsibility.

Table III. The total numbers of wildfowl (in thousands) recorded during the census periods 7th-22nd January 1967 and 6th-21st January 1968.

+ = less than 100.

Species	1967	1968	Species	1967	1968
Mute Swan			Steller's Eider		
<i>Cygnus olor</i>	50.4	73.3	<i>Polysticta stelleri</i>	+	+
Bewick's Swan			Red-crested Pochard		
<i>Cygnus columbianus bewickii</i>	5.8	4.9	<i>Netta rufina</i>	347.9	400.2
Whooper Swan			Pochard		
<i>Cygnus cygnus</i>	36.9	36.2	<i>Aythya ferina</i>	507.3	568.8
Ruddy Shelduck			Ferruginous Duck		
<i>Tadorna ferruginea</i>	9.7	14.4	<i>Aythya nyroca</i>	43.5	29.3
Common Shelduck			Tufted Duck		
<i>Tadorna tadorna</i>	113.5	92.9	<i>Aythya fuligula</i>	492.0	969.1
Marbled Teal			Scaup		
<i>Marmaronetta angustirostris</i>	+	2.4	<i>Aythya marila</i>	123.7	136.2
Pintail			Common Scoter		
<i>Anas acuta</i>	316.5	308.3	<i>Melanitta nigra</i>	30.4	53.7
Teal			Velvet Scoter		
<i>Anas crecca</i>	682.6	933.8	<i>Melanitta fusca</i>	1.1	26.5
Mallard			Long-tailed Duck		
<i>Anas platyrhynchos</i>	2111.9	1763.0	<i>Clangula hyemalis</i>	20.4	22.7
Gadwall			Goldeneye		
<i>Anas strepera</i>	123.1	84.9	<i>Bucephala clangula</i>	98.0	148.3
Wigeon			Smew		
<i>Anas penelope</i>	774.9	825.2	<i>Mergus albellus</i>	37.8	57.6
Garganey			Red-breasted Merganser		
<i>Anas querquedula</i>	127.5	6.4	<i>Mergus serrator</i>	49.6	15.4
Shoveler			Goosander		
<i>Anas clypeata</i>	130.9	335.8	<i>Mergus merganser</i>	38.0	55.0
Eider			White-headed Duck		
<i>Somateria mollissima</i>	74.4	300.6	<i>Oxyura leucocephala</i>	2.3	2.2
King Eider			Unidentified ducks	218.7	2249.4
<i>Somateria spectabilis</i>	*105.1	*64.5	Unidentified swans	5.7	—

* These counts from the White Sea and Barents Sea were made from the air and include substantial numbers of *S. mollissima*.

The numbers of Teal recorded in northern Europe (72,600) are surprisingly small compared with those of Mallard (891,000) and Wigeon (300,000). By mid-winter a sizeable proportion of the birds in this region appear to be concentrated in the British Isles where a recent decrease has been noticed, following a period of great abundance during the early 1960s. This is attributed partly to the cold winter of 1963, and partly to a redistribution of the European population, resulting from drainage operations in the Netherlands. In southern France a recent increase is reported from the Rhône delta. Clearly, this is a species which needs thorough investigation.

The least reliable results are those for the southern species, which winter mainly around the Mediterranean, and in tropical Africa and south-west Asia. The species concerned are Garganey, Gadwall, Pintail, Shoveler, Red-crested Pochard, Ferruginous Duck, Smew and Ruddy Shelduck.

The sea ducks present special problems, and the counts for some species appear to be quite unrepresentative—

except in Denmark, the Netherlands and France, where special surveys were undertaken from the air or by boat. One obvious omission was the failure to locate the main wintering flocks of the Long-tailed Duck, which during autumn passage is recorded in very large numbers from various points along the Baltic coast. The Velvet Scoter is also presumed to occur in much larger numbers than those recorded. The counts of Common Scoter and Eider seem more complete, but here again there must be many omissions, especially along the western seaboard of Scotland and Norway.

Despite these obvious short-comings, the results of the first and second censuses represent a remarkable achievement. Several thousand people have helped to provide the information on which this report is based, and to them I extend my very warmest thanks. The success of the project is due to their efforts alone. I hope that these preliminary findings will show that their work is being put to good use, and will encourage others to join us in future years. There is still much to be learnt.

Summary

International censuses of western Palaearctic wildfowl were held in mid-January 1967 and 1968. In 1967 over 6,600,000 birds were counted on 4,500 sites in 31 countries. In 1968 the total was over 9,500,000. In addition nearly four million coots were counted. Distribution maps are given for *Anas platyrhynchos*, *A. crecca*, *Aythya ferina*, *A. fuligula*, *Tadorna tadorna*, *Bucephala clangula*, *Cygnus bewickii* and *C. cygnus*.

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