THE NUMERICAL DISTRIBUTION AND THE CONSERVATION REQUIREMENTS OF SWANS IN NORTHWEST EUROPE

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The International Waterfowl Censuses

This paper provides an example of the ways in which the results of the International Waterfowl Censuses are being used to examine the conservation requirements of individual species.

The censuses began in 1967 and are conducted annually over a period of two weeks in the middle of January. The field work is undertaken almost entirely by volunteer observers. Fig 1 shows the location within northwest Europe of the 10 km grid squares in which counts were made in one or more of the seasons between 1967 and 1976. Counts were also made in many parts of northern and central Africa and southwest Asia. In Europe alone, more than 54 000 records were received from a total of 13 380 sites during the course of the ten-year period.

These data are currently being used to compile maps showing the numerical distribution of the species, to estimate the total numbers wintering in each region, to locate and identify the main centres of population, and to look for trends in the levels of population of selected species. These studies provide the information on which to base a sound international programme for the conservation of both wetlands and waterfowl and to demonstrate to governments the extent of their responsibilities.

Waterfowl conservation requirements

During the course of each year the migratory populations of waterfowl pass through many different countries, each of which must take appropriate measures to safeguard the stocks. In the countries bordering the Atlantic and the North Sea the main period of responsibility extends from October until March, when the migrants from the Soviet Union, Scandinavia and Iceland are present in strength. With a few notable exceptions, the breeding populations are small and unimportant. In some places there are large concentrations of moulting ducks, but these are special cases deserving individual attention.

During the autumn and winter months the populations of all waterfowl are confronted by a wide range of hazards; food is often in short supply and the impact of human activities is probably greater than at any other time of year. The greatest single threat is the loss or denial of the wetland habitats on which the birds depend, whether through drainage or development, or disturbance or pollution. In recent years the rate of these losses has increased alarmingly.

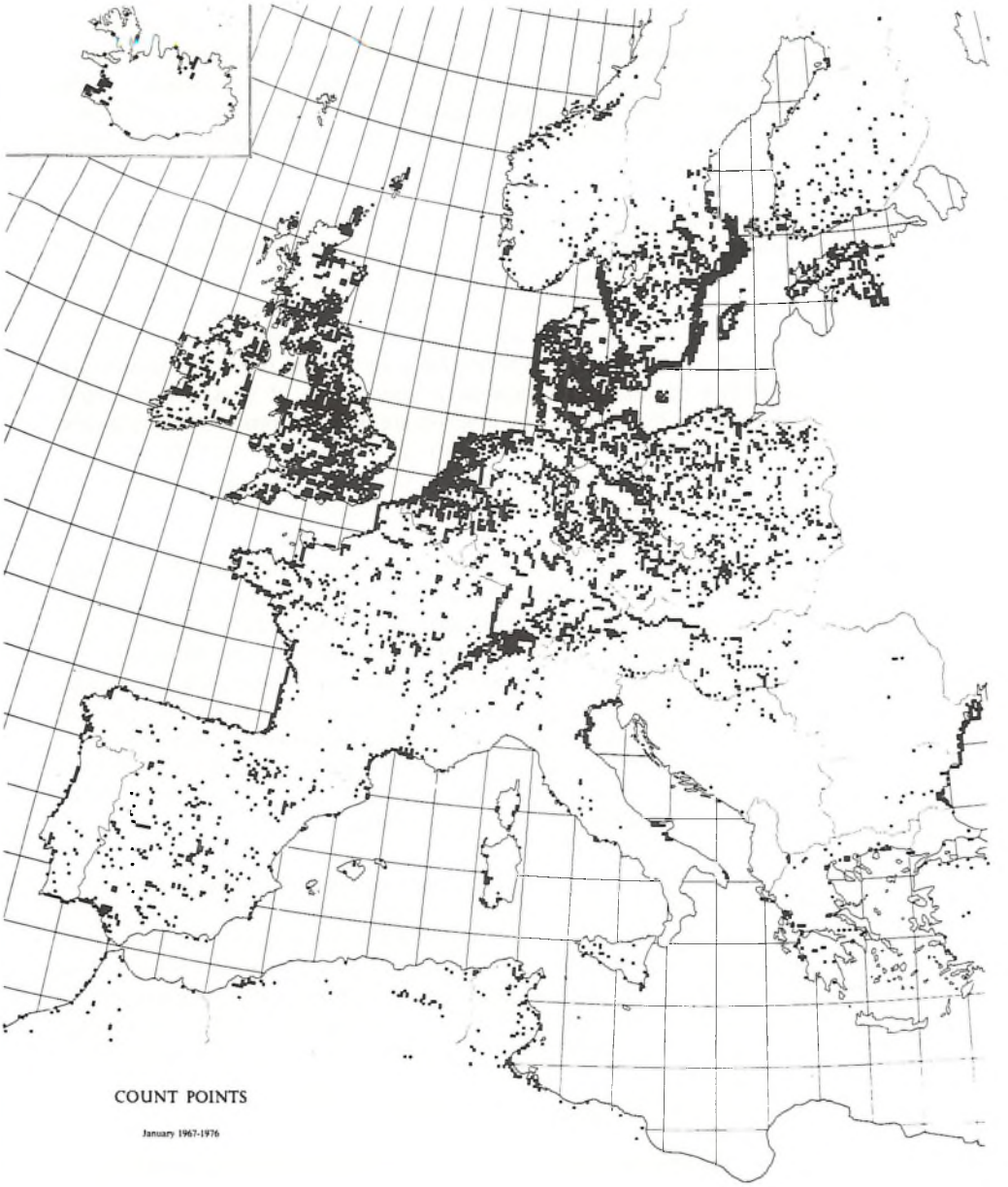


Fig 1. 10-km grid squares in which International Waterfowl Censuses were carried out in January in one or more years between 1967 and 1976.

The primary task of the conservation bodies must be to ensure that the remaining major wetlands are safeguarded from destruction. This can be achieved by advertising their value to wildlife, by insisting that this be taken into account in the planning of new developments and, more especially, by establishing a comprehensive network of reserves. The latter is undoubtedly the most flexible and the most immediately effective form of action.

The censuses show that some waterfowl are much more threatened by loss of habitat than others. The ones most affected are those whose specialized requirements force them to concentrate onto a few traditional resorts. Such species need to be given especial consideration in the planning of reserves, because their requirements can be met at so few places. In some cases the loss of even one major centre might prove disastrous. Some other species have very large populations and are sufficiently adaptable to take advantage of a wide range of coastal and inland habitats. In their case the numbers at any one site are likely to represent only a very small proportion of the population and the provision of specific reserves is seldom warranted. If further protection were needed, the most effective and certainly the most economical action would be to modify the shooting season.

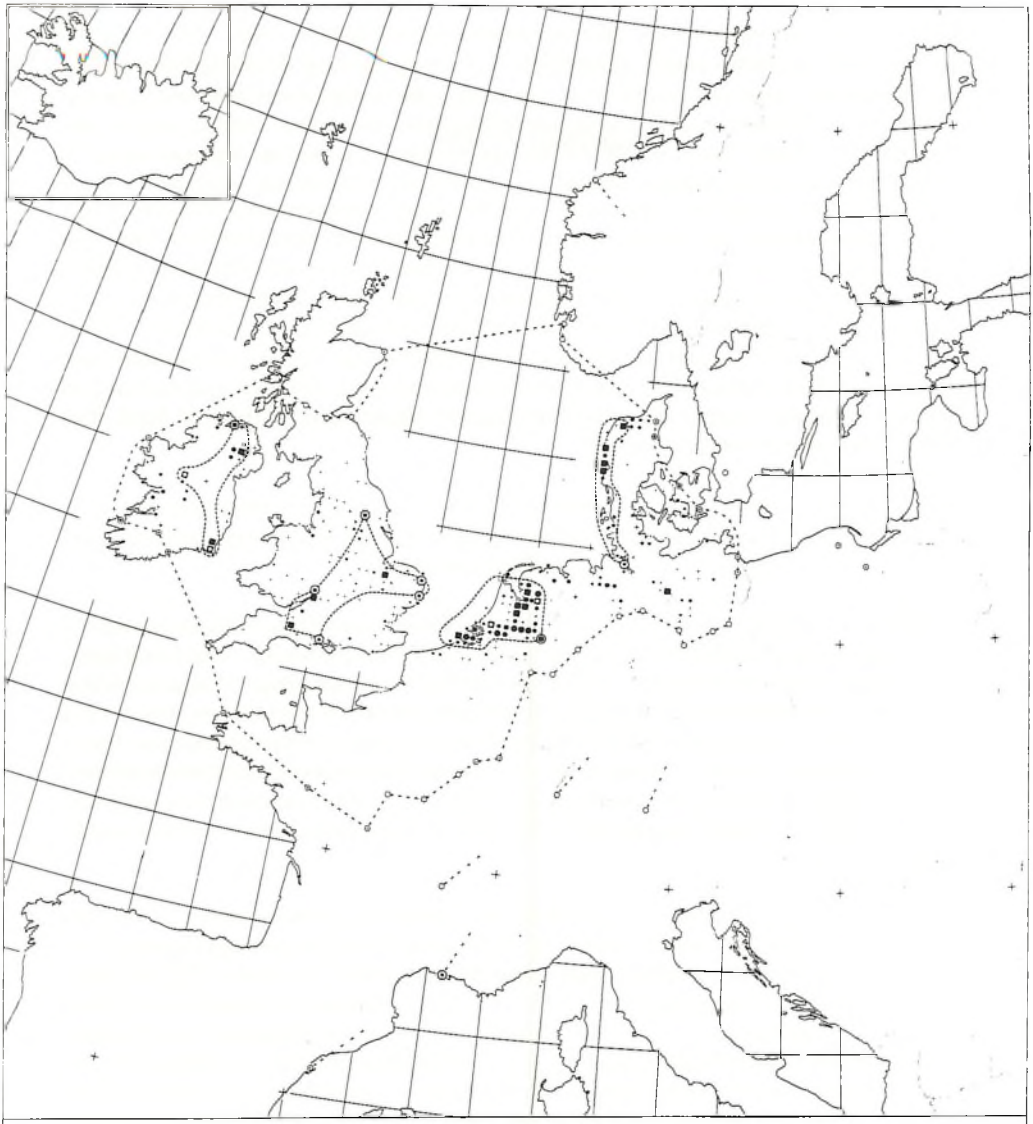
The maps in Figs 2, 3 and 4 are designed to show the numerical distribution of the species, to identify the areas of especial value and to demonstrate the need for conservation. It is now widely accepted that any site which regularly supports more than 1% of a population of a species should be regarded as internationally important. The sites concerned are marked on the maps by squares, the less important areas by dots of varying sizes to indicate the scatter of the population. In the aggregate, the numbers on these smaller centres often represent a sizeable proportion of the total population and many of the sites are likely to be of substantial interest in the national or local context. At least some of them should be safeguarded on this account in addition to the main centres.

The frequency with which a species occurs in a given area is a further aid to the correct siting of reserves. Except in special circumstances, a place which holds substantial numbers every year is a better choice than one which holds very large concentrations in two years out of ten but next to none in the other eight. The maps attempt, therefore, to define the areas within which the species were recorded regularly on most of their main resorts. To qualify as 'regular' a species must have been present at a site on at least 75% of the occasions on which counts were made.

Numerical distribution of swans in northwest Europe

The three species of palearctic swans each present quite different problems in conservation.

Fig 2. January distribution of *Cygnus columbianus bewickii* (right).



Assembled by:
Population and Distribution Division,
International Waterfowl Research Bureau

1978

JANUARY RANGE

- Boundary of the areas within which the population wintered regularly
- Outlying resorts at which the species was recorded regularly
- Probable extent of the normal winter range in western Europe (as shown by the January counts)
- Casual outlying records

ABUNDANCE

Average counts per 20 km grid square
January 1967-1976

1-4	5-9
10-19	20-39
40-59	60-79
80-99	
100+	- dispersed
	- at one site

Concentrations of international importance

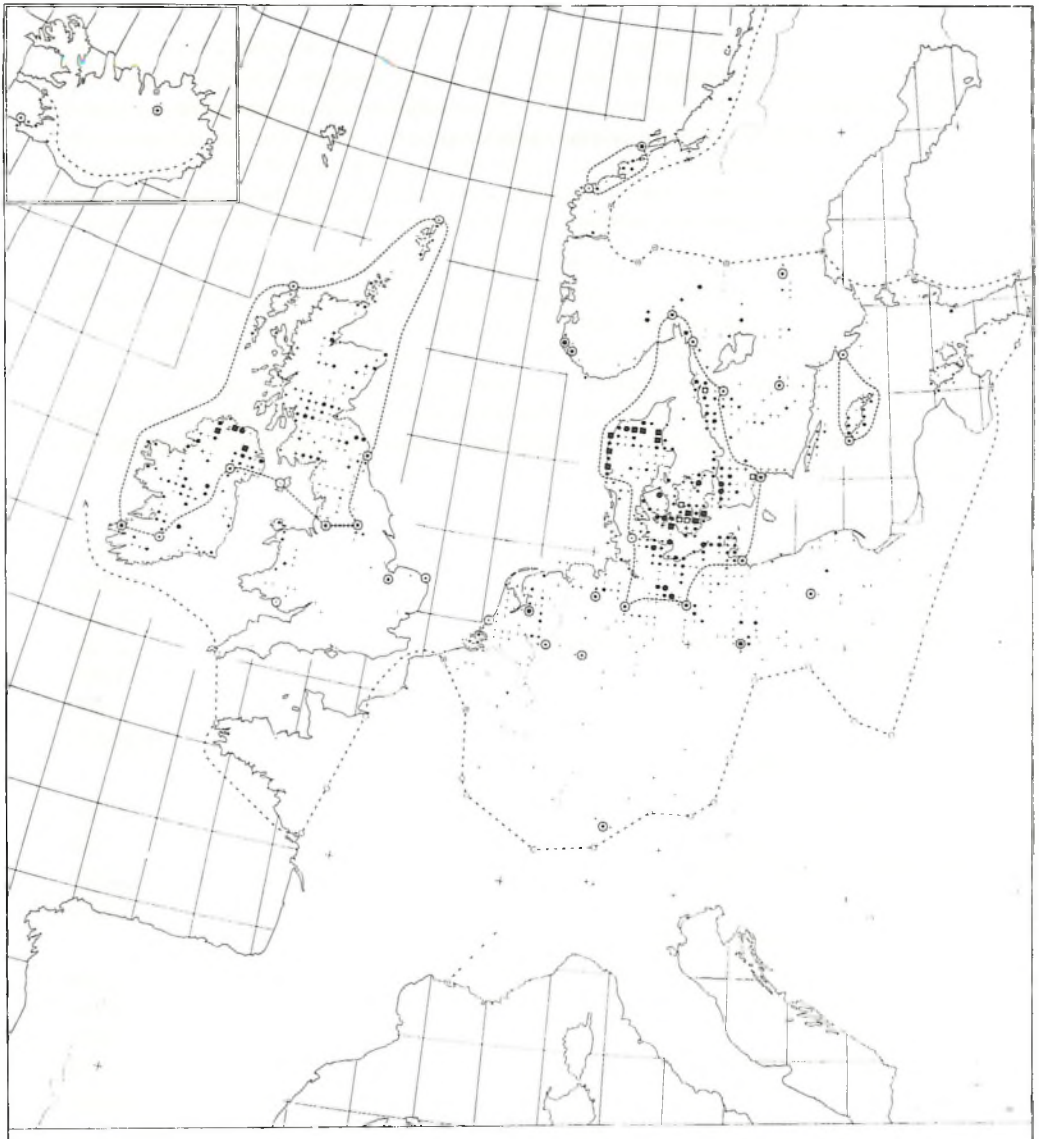
Cygnus columbianus bewickii, with a European population of about 10 000, has by far the most restricted winter range (Fig 2). During January of the ten years 1967 to 1976 it was recorded regularly in five small areas only: along the west coast of Jutland, in the Netherlands, in southern England, in eastern Ireland and in the Camargue. It feeds traditionally on wet pastureland, a type of habitat which is becoming increasingly scarce. Several major changes in the winter distribution have occurred over the past 20 years, only some of which are directly attributable to the loss or deterioration of former resorts. The most striking examples have been the advent of large numbers in several areas of England during the 1950s and 1960s, the virtual abandonment of the meadows along the lower Rhine and Waal in the 1970s and a corresponding increase around the IJsselmeer and in southern Ireland. This adaptability to changing conditions has enabled the species to maintain and even increase its population. There must, however, be a limit to the number of places, at present unused, to which the species could turn in time of need. The present resorts may well be the last.

Cygnus cygnus cygnus has an estimated northwest European population of about 20 000 (Fig 3). Another group of at least 25 000 winters around the Black Sea and eastwards into Turkestan, but these are quite separate.

In northwest Europe more than half the population winters in Denmark and the adjoining areas of Sweden, Schleswig-Holstein and Mecklenburg. The birds here, and elsewhere on the mainland of Europe, belong to a population of about 14 000 individuals, which breeds in Scandinavia and the western Soviet Union. Their main resorts are on the coastal bays and shallows of the western Baltic and on the fjords of north Jutland. Many of these areas are also used extensively by other waterfowl and are obvious targets for conservation. The rest of the population is scattered over a variety of inland habitats, the distribution depending largely on the severity of the winter.

Cygnus c. cygnus wintering in Scotland and Ireland is predominantly, if not exclusively, of Icelandic origin, and is quite distinct from the previous group. The population to which it belongs totals some 5000 to 6000, of which 1000 to 1500 remain in Iceland throughout the winter. The major centres in Ireland are of prime importance and there are a number of other resorts in both Scotland and Ireland, whose value is substantially greater than the map suggests. This is because, in the present study, the northwest European population is considered as a whole: if the Icelandic element were treated separately, several more of the Scottish and Irish sites would qualify as internationally important. The same problem arises with several other species of waterfowl; on balance it seems better to start by looking at the general distribution of the wintering flocks, regardless of their origin, and to discuss the special cases individually in the light of additional information.

Fig 3. January distribution of *Cygnus cygnus cygnus* (right).



Assembled by:
Population and Distribution Division,
International Waterfowl Research Bureau

1978

JANUARY RANGE

- Boundary of the areas within which the populations wintered regularly
- Outlying resorts at which the species was recorded regularly
- Probable extent of the normal winter range in western Europe (as shown by the January counts)
- Casual outlying records

ABUNDANCE

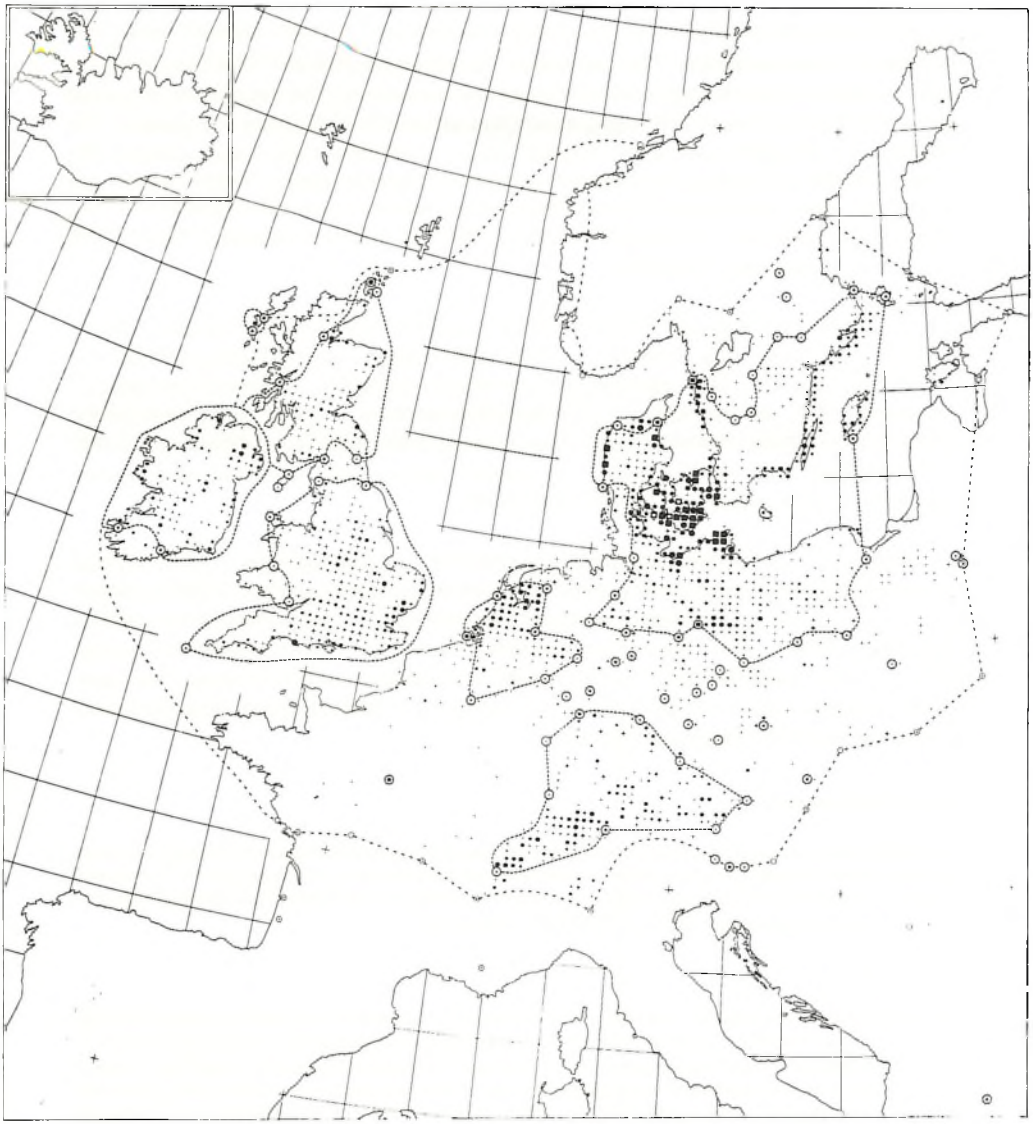
Average counts per 20 km grid square
January 1967 - 1976

1 - 4	·	+	5 - 9
10 - 20	•	•	20 - 50
50 - 100	•	•	100 - 150
150 - 200	●		
over 200	□		- dispersed
	■		- at one site
Concentrations of international importance	■		

Cygnus olor, unlike most other species of waterfowl, is either sedentary or moves only short distances between its summer and winter quarters (Fig 4). It is the only swan breeding in the area under review. In consequence its conservation is largely a matter of national rather than international concern. Being highly adaptable and tolerant of most human activities, it is able to take advantage of an unusually wide range of urban, rural and coastal wetlands and so is not much threatened by loss of habitat. In several areas the numbers have increased remarkably in recent decades.

The total number of *C. olor* in northern and central Europe is currently estimated at 140 000. From the ringing data and various national studies, it seems that the population can be divided into seven groups, each of which is more or less independent. This is reflected in the distribution map, which shows that the areas of high density are interspersed with zones in which the species is scarce and has relatively few regular resorts. The numbers in each group are made up as follows, the totals for the various countries being the estimated January populations under normal weather conditions:

(1) *Scandinavian-Baltic Group*	
Finland, Baltic republics, Poland	2 000
Sweden	10 000
GDR, West Berlin	15 000
FRG: Schleswig-Holstein, Niedersachsen	3 000
Denmark	70 000
Norway	300
	100 300
(2) *Netherlands Group*	
Netherlands	4 500
FRG: Nordrhein-Westfalen	800
Belgium, northwest France	600
	5 900
(3) *Central European Group*	
Czechoslovakia, Austria	1 250
FRG: central and south	4 000
Switzerland	4 200
Southeast France, north Italy	650
	10 100
(4) England and Wales	14 700
(5) Scotland: mainland and Orkney	2 600
(6) Scotland: Hebrides	900
(7) Ireland	5 000
GRAND TOTAL	139 500
Highest total actually counted in any one census	103 440



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JANUARY RANGE

- Boundary of the areas within which the population(s) wintered regularly
- Outlying resorts at which the species was recorded regularly
- Probable extent of the normal winter range in western Europe (as shown by the January counts)
- Casual outlying records

ABUNDANCE

Average counts per 20 km grid square
January 1967 - 1976

1 - 10	10 - 20
20 - 50	50 - 100
100 - 200	200 - 500
500 - 1000	
over 1000	- dispersed - at one site
Concentrations of international importance	

Fig 4. January distribution of *Cygnus olor* (right).

The Scandinavian-Baltic group has increased greatly in recent decades and now comprises three-quarters of the northwest European population. The birds here are more migratory than those in other groups and in summer the population is spread over a wide area around the Baltic, extending eastwards to Estonia. By January the majority of the birds are concentrated into a relatively small area around the Danish islands and along the Swedish and East German coast. These resorts are clearly of great importance to the group and ought to be safeguarded on that account. Oil pollution is a major hazard in this area and is probably a much more serious threat than loss of habitat.

The groups in the Netherlands and central Europe have both shown recent signs of increase. The safeguards afforded by the wide dispersal of the flocks, and by the reserves set up for other species, are probably sufficient. It should perhaps be mentioned that the numbers in the Netherlands have not yet been determined satisfactorily: several recent books have quoted and requoted a figure of 15 000 to 20 000 but there is no evidence to support this in any of the winter censuses, the highest count amounting to less than 5000.

The population in Britain and Ireland is divisible into four groups. The recoveries of several thousand ringed birds show that the population is almost entirely sedentary; very few of the movements recorded within the country have amounted to more than 50 km, and there is no migration to or from the mainland of Europe, except in very cold winters. As in the Netherlands and central Europe, the population is spread over a large number of resorts, very few of which hold sufficient numbers to warrant especial attention.

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Summary

The International Waterfowl Censuses held annually in January since 1967 produced 54 000 records from 13 380 sites in Europe in their first ten years and are used to compile maps showing the distribution of wintering waterfowl. The maps illustrate distribution of species, areas of especial value and the need for conservation, as well as the frequency of a species at a given site. Figures are given for the current size of the northwest European populations of *Cygnus columbianus bewickii, Cygnus c. cygnus* and *Cygnus olor.*

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