

THE RUSSIAN HOME OF BRITISH-WINTERING DUCKS

By Hugh Boyd

THE account of some summer recoveries of British-ringed ducks appearing elsewhere in this report (pp. 47-51) helps to confirm what has long been suggested, that most of our commoner winter immigrants breed in the north-west of the U.S.S.R. Anyone wishing to assess the prospects of British wildfowl must concern himself with the situation on their breeding grounds. This essay reviews the effects of recent changes in human activity in north-west Russia and attempts to predict the consequences of developments in the next 20 years or so. Written by an ornithologist, and dealing with a region not accessible to detailed study by western geographers, it is rather unlikely to attain either goal. It seems inappropriate to burden such a crude sketch with 'full documentation,' or even a discussion of sources.

The map (Figure 1) illustrates the part of Russia within which a large number of our wintering ducks nest. A few recoveries (mainly Wigeon) have been

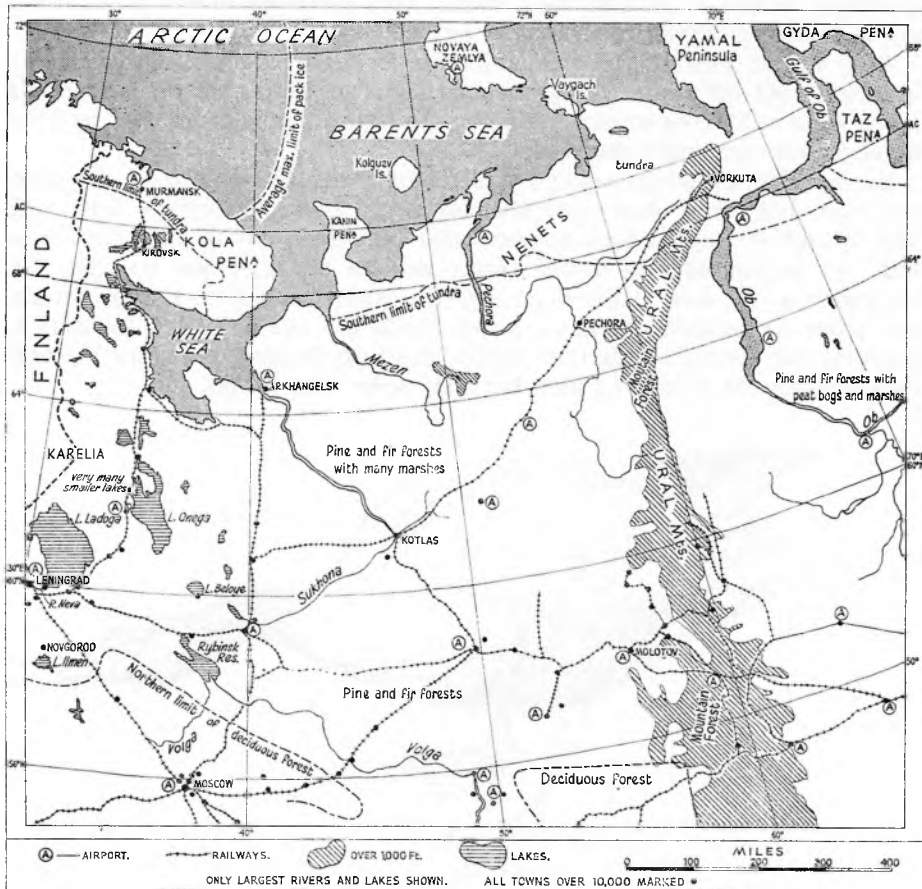


Fig. 1

obtained from farther east, and from the south, and the chosen limits are quite arbitrary. There is no sort of boundary abruptly dividing the area occupied by British-visiting ducks from areas frequented by ducks wintering in southern or south-eastern Europe, Asia Minor, or the Caspian. East of 70°E the country remains similar to the area under consideration, but gradually becomes less favourable for wildfowl, because of increasing aridity and lower summer temperatures. To the south the apparent reduction in the density of ducks suggested by the paucity of recoveries may result not only from a shortage of ducks in a more intensively cultivated region but also from changes in the relative abundance of different species and from the attachment of the ducks breeding south of about 50°N to southern rather than to western wintering places.

The three major characteristics of the region shown on the map are its vast extent, its topographical uniformity and the small human population in most parts of it. (The region lacks a label: for convenience we shall call it north-west Russia.) Its area is of the order of 1,500,000 square miles, or more than 12 times greater than that of Great Britain and Ireland. From Leningrad to Vorkuta at the north end of the Urals is 1200 miles in a direct line.¹ From Murmansk to Molotov is little less.

North-west Russia is a flat, low-lying country. Much of the Kola peninsula, in the north-west, is over 700 feet above sea level, with hills around Kirovsk rising to 4000 feet, and in the east are the Ural Mountains, but nowhere else in the intervening area is there a hill of more than 1500 feet, and about four-fifths of the whole is below 500 feet. The Urals themselves have acquired their mountainous reputation largely from the fact that their north-south set made them a convenient boundary between 'Russia' (to the west) and 'Siberia' (to the east). But the Russians have abandoned this distinction, and it is doubtful if it ever existed for ducks, since the highest peak in the range is only 6200 feet, and in the north the hills are extremely narrow and pierced by many valleys.

There is very much surface water, with many lakes, especially in the west, and numerous rivers. The largest lakes are Ladoga (7000 square miles, larger than Yorkshire, 850 feet deep) and Onega (3860 square miles, 740 feet deep). These enormous areas are much less important to ducks than the smaller and shallower Ilmen (less than 400 square miles, 33 feet deep), Chudskoye (not shown on the map but south-west of Leningrad, 1400 square miles, 56 feet deep) and Beloye (420 square miles), or the host of smaller waters. The artificial Rybinsk Reservoir, of about the same size as Chudskoye, is of unknown value. No recoveries have been obtained from it. Some of the rivers drain immense basins. The Neva, only 47 miles long, but the outlet for Lake Ladoga, drains over 100,000 square miles, including much of south-east Finland. The basin of the Dvina is about 140,000 square miles, that of the Pechora 124,000 (each larger than the total area of the British Isles), while the Ob drains over 800,000 square miles, much of it outside the region used by British ducks. The Ob is 3114 miles long and its gradient is very slight, so that it is only 300 feet above sea level 1200 miles from the Arctic Ocean. The other rivers, though shorter, are all slow-flowing. They are all frozen for at least 160 days in the year and produce heavy flooding when the ice breaks up in the spring.

Despite the abundance of surface water the rainfall in the region is quite small. The summer rainfall, which alone affects the ducks, is higher than that in winter but averages in the north and east only between five and ten inches

¹From Leningrad to London is 1300 miles, or 1430 miles by sea.

(as in the driest parts of eastern England). In the western Great Lakes region (around Leningrad) and the south the summer rainfall averages 10–20 inches. Mean summer temperatures lie in the range 48° to 64° Fahrenheit, except in the Kanin peninsula, and the islands where the White-fronted Geese breed where it is below 48°F. This temperature range is comparable with, though slightly lower than, that of north-west Scotland.

The region may be divided into two main vegetational zones. The coastal zone is tundra. To the south this changes more or less abruptly to areas of coniferous forest interspersed with tundra. Farther south again the tundra disappears and nearer the southern limit of the region some deciduous woodland is mixed with the predominant conifers.

The conventional boundary between the tundra and forest zones, as drawn on maps, corresponds fairly closely with the 50° F. isotherm for mean summer temperature and the climate is of first importance in affecting the transition, but other physiographic features are involved. Over most of north-west Russia much of the soil is permanently frozen beneath the surface. In the forest belt the thawing effect of high summer temperatures extends some 6 feet down, but in the northern coastal area only the top 1½ to 2 feet thaw. Soils that are nearly always frozen can support only very limited vegetation, and cannot benefit from mixing of decaying organic matter with the minerals of the subsoil in consequence of the burrowing of worms and other animals, since these are absent. Such organic matter as there is rots and remains on the surface of the ground, forming acid half-humus of little value. The permafrost also prevents the percolation of water, leading to the formation of shallow marshes, although most of the tundra is dry.

The soils of the coniferous forest belt are not much more fruitful than that in the extreme north, because although the greater extent of the thaw permits better mould formation (the soil fauna being much richer) the organic surface layer is poorly aerated, and the underlying soil has been deprived of most of its useful mineral content by leaching. The richer 'black earth' which alone provides good conditions for cultivation in Russia lies very largely beyond the southern limit of our area.

The distribution of breeding ducks is closely related to the vegetation zones. Of the dabbling ducks only the Pintail and Wigeon occur at all frequently in the tundra and both are relatively more plentiful in the *taiga* (damp coniferous forest interspersed with peat bogs and marshes). British-wintering Mallard seem to come very largely from the Great Lakes area. Our Shoveler may prove to do the same. The Teal spread farther east, but do not reach the tundra and are most numerous in the forest. Russian-breeding Gadwall and Garganey are not known to visit Britain: their summer distribution in north-west Russia is in any case meagre. The Russian literature indicates that Tufted Ducks are much more numerous in the Great Lakes region than in the tundra, but the recoveries of British-ringed Tufted so far do not conform with that finding. Too few Pochard have been ringed to establish whether our immigrants include a substantial proportion of Russian breeding birds, although there has been a recovery from the South Urals (1 May 1952).

We are very far from being able to assess the present duck-producing capacity of north-west Russia, but it is clear that, although large parts of this relatively uniform region are suitable for nesting ducks, and though it is of enormous extent, the stock it can produce must not be thought of as unlimited. For example, some preliminary calculations from summer recovery rates of Teal

indicate that the breeding density of this species in north-west Russia may be no higher than it is in Britain and is certainly substantially less than in Scandinavia.

A proclaimed purpose of this essay is to assess the possible effects on the breeding ducks of changes in the numbers and activities of the human inhabitants of north-west Russia. It has already been remarked that the human population is small. The impression of cheerlessness which may have emerged from the preceding pages should in part explain this. Much of the region is unsuitable for occupation throughout the year. The inhabitants of the northern towns have to endure prolonged and severe winters. Travel in winter is apparently impossible in the tundra areas and difficult farther south. Railways and roads are few (as can be seen from the map, on which *all* the railways north of 58°N are marked), hard to construct and to maintain. During the short summer the rivers provide the easiest form of communication. The Murman coast is ice-free even in winter, so that coastwise shipping is important in the north-west, but farther east the Barents Sea suffers from the hazards of ice, fog and shallow water and a lack of good harbours.

These harsh conditions have not prevented considerable increase in the human population of the north during this century, particularly in the Kola peninsula, where the population has increased ten-fold in the last 30 years. The high rate of settlement in this peninsula is due partly to its advantages in communications, but more to the discovery and exploitation of mineral deposits. These have led to the growth of mining and industrial towns, producing artificial fertilisers and aluminium. The main centres of production are in the Khibiny Hills, but the ports have also expanded. Murmansk had 4500 inhabitants in 1924, 117,000 in 1939, and 160,000 in 1954, and is now the largest town anywhere north of the Arctic Circle. Since almost all the new population has been absorbed in towns and there have been few changes in land use, this surge of activity has had, and will have, comparatively little effect on the ducks of the Kola area, which are in any case rather sparsely distributed. (The effects of settlement on the Bean and Lesser White-fronted Geese may be more severe.)

The rest of the tundra zone has been less affected by human activities. Attempts to increase the volume of shipping using the 'Northern Route' in summer have led to the establishment of settlements at various anchorages in the Nenets region, and the building of airfields has produced others. Against this increasing activity may be set a decline in the importance of the indigenous hunting tribes of Samoyeds, who, like the Eskimos and other highly specialised northern people, have been reduced in numbers. Although, from the behaviour of the Russian mining colonies in Spitsbergen, it must be supposed that wildfowl in the vicinity of settlements will suffer, probably severely, it may well be that over much of the tundra zone there will now be less rather than more human predation. The large-scale drives of moulting geese are reported to have been abandoned. It is doubtful whether losses from shooting in May or June will offset this reduction in exploitation.

Some Soviet geographers believe that extensive settlement of the Nenets area may be possible, and a very considerable concentration of population has in fact been achieved at and around Vorkuta, in the northern Urals. During the war the loss of the west Ukrainian and Don basin coalfields forced the Russians to turn to deposits farther east. The Pechora-Vorkuta coalfield is now an important one, connected with the industrial areas farther south by the Vorkuta-Kotlas railway (completed in 1942) and by water transport on the Ob. The total population of the Vorkuta area is sometimes put as high as 450,000.

The great majority are either prisoners or forced residents, including some foreigners. This concentration may well have important effects on the ecology of the north Urals and the Pechora basin, especially if the oil found in the latter begins to be exploited more extensively. The decrees of April 1954, which converted forced-labour camps into forced settlements, may also worsen the position for ducks, since the mobility and freedom of the human inhabitants has thereby been somewhat increased, without any obvious amelioration of their low standard of living. In an area where food is desperately short wildfowling is not a sport but a means of subsistence.

In the west, between the Kola peninsula and the Leningrad area, lies the Karelo-Finnish Republic, heavily wooded, with many lakes. This is an important duck breeding ground. The land is unsuitable for cultivation and the sparse population lived formerly by hunting and fishing and lumbering. Recently, industrial development has begun, along the Baltic-White Sea Canal and the railway to Murmansk. East of Karelia the country remains forested even close to the coast. The port of Arkhangelsk (325,000 inhabitants in 1954) is an important centre for the timber trade. Lumbering in the hinterland, as well as in Karelia, seems to be carried on from large temporary settlements. It seems unlikely that the inhabitants of these labour camps can indulge in duck shooting, but they may well have added considerably to the casualties inflicted on the duck population by the fishing nets and musk-rat traps of the forest dwellers.

The Leningrad area has a very dense human population, predominantly industrial. Leningrad itself had a population of 3,191,000 in 1939. This was much reduced during the war but by 1954 had recovered to the level of 1939. The main threat to the duck population of the Great Lakes region, for which Leningrad is the trading centre, probably lies not in the growth of the industrial zone, which covers a comparatively small area, but in the destruction of forest and its replacement by cultivation, leading to a more general diffusion of the human population.

Most of the duck recoveries have come from farther south and east, from parts of Russia already fairly densely inhabited and developed industrially and agriculturally. The human population of this large area, stretching from Novgorod in the west to Molotov and beyond, south to Moscow and north to Kotlas is certainly increasing. From experience in Europe and America more people result in fewer ducks, unless special attempts are made to prevent their destruction. It is possible, though perhaps not very likely, that the Russians will be more successful than western countries in retaining their ducks. They could even do so unintentionally, since the depletion of duck populations by man in arable country is due to the detailed technique of cultivation as well as to shooting. Shooting certainly goes on, as recoveries of ringed ducks demonstrate, but it is likely to fall short of the intensity attained in, say, France or parts of the U.S.A. The hope for the ducks of 'middle Russia' lies perhaps in Russian ability to learn from the mistakes of the prairie farmers in the U.S.A. and Canada. If they avoid the folly of supposing that the best thing to do with all your marshes is to drain them the ducks may still survive. Intensive cultivation is not in itself against their welfare.

The great emphasis given in recent Soviet pronouncements to the agricultural development of hitherto virgin land to the east of our area suggests that the changes of the habitat in the south of north-west Russia may already be largely completed, without the destruction of the wildfowl population.

The Ural mountains are not a home for ducks, but the lower Ob basin to the east, which still remains to be considered, is perhaps the most important area of all. Unfortunately it is also the most difficult one about which to make predictions. The country is grim for human settlement, and western geographers have written little about its potentialities, but recent Russian maps indicate that settlements are increasing rapidly. The density of recoveries of British-ringed ducks, though still low absolutely, is relatively higher than for any other breeding area. Although the lower Ob is described by Russian ornithologists as an important gathering ground for moulting ducks, the recoveries have nearly all been made in May and early June. This suggests that the beginning of the summer, when the ducks are newly arrived and the human inhabitants are first able to move about after the break-up, is a hazardous time. Until more is known of the growth of the human population of the Ob basin it is difficult to guess whether conditions there will deteriorate in the next few years.

As has already been emphasised, this is no more than a sketch for a picture of north-west Russia as a home for ducks. Very much more work will have to be done in determining the needs of nesting ducks as well as in collecting information about human activities in Russia and Scandinavia before reliable estimates of the status and prospects of the populations of various species can be achieved. But in the author's opinion the human development of north-west Russia is not likely to produce catastrophic changes in the duck population in the foreseeable future. The ducks visiting Britain in winter seem to be in far greater danger from their reception in western Europe than from the hazards of living in Russia.



THE USE OF HAND-REARED DUCKS FOR SUPPLEMENTING WILD POPULATIONS

By Hugh Boyd

HAND-REARING of ducks for shooting has long been practised in Britain. Until recently such rearing was undertaken only by landowners, or their tenants, for their own immediate benefit. In the last two years the Wildfowler's Association of Great Britain and Ireland has been advocating the rearing of ducks for release in the wild by its members, individually or collectively, and some of its local organisations put such schemes into practise in 1955. The novelty and interest of these schemes lies in the fact that few of the members of W.A.G.B.I. are landowners, and the majority are probably only able to indulge in fowling on the foreshore. Two lines of inquiry suggest themselves. First, will duck-rearing schemes improve the sport of members of W.A.G.B.I.? Second, will such schemes 'in due course do much to increase our wildfowl populations' as the Annual Report of their Association for 1953-54 suggests? The two questions are related, though by no means identical. This discussion of them is based on a number of papers published in America in the last 20 years dealing with similar problems, analyses by the writer of the results of British Mallard ringing (see Boyd 1954, but largely unpublished), and various observations on the behaviour of ducks and wildfowlers.