MOVEMENTS OF MARKED SEA AND DIVING DUCKS IN EUROPE

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RINGING of dabbling ducks in Europe has helped considerably in discovering the patterns of their distribution and movement through the year. By comparison our knowledge of the behaviour of British species of the tribes Aythyini and Mergini is meagre, chiefly because they are harder to catch outside the breeding season. The numbers marked in Britain have been small, and seem unlikely to be rapidly increased, but ringers in some countries where these ducks breed more plentifully have marked considerably more. Captures of adults, mostly females taken on the nest, have been particularly informative. This paper reviews the results so far apparent. It is based on published and unpublished British records, and on the published material of foreign ringing schemes.

I am indebted to the British Trust for Ornithology for permission to use data relating to ducks not ringed at Wildfowl Trust stations. A card index of recoveries compiled by Dr. W. Rydzewski for the International Wildfowl Research Bureau provides a convenient summary of all but the most recent records published abroad, and I am grateful to Dr. Rydzewski and the officers of the Bureau for access to this index.

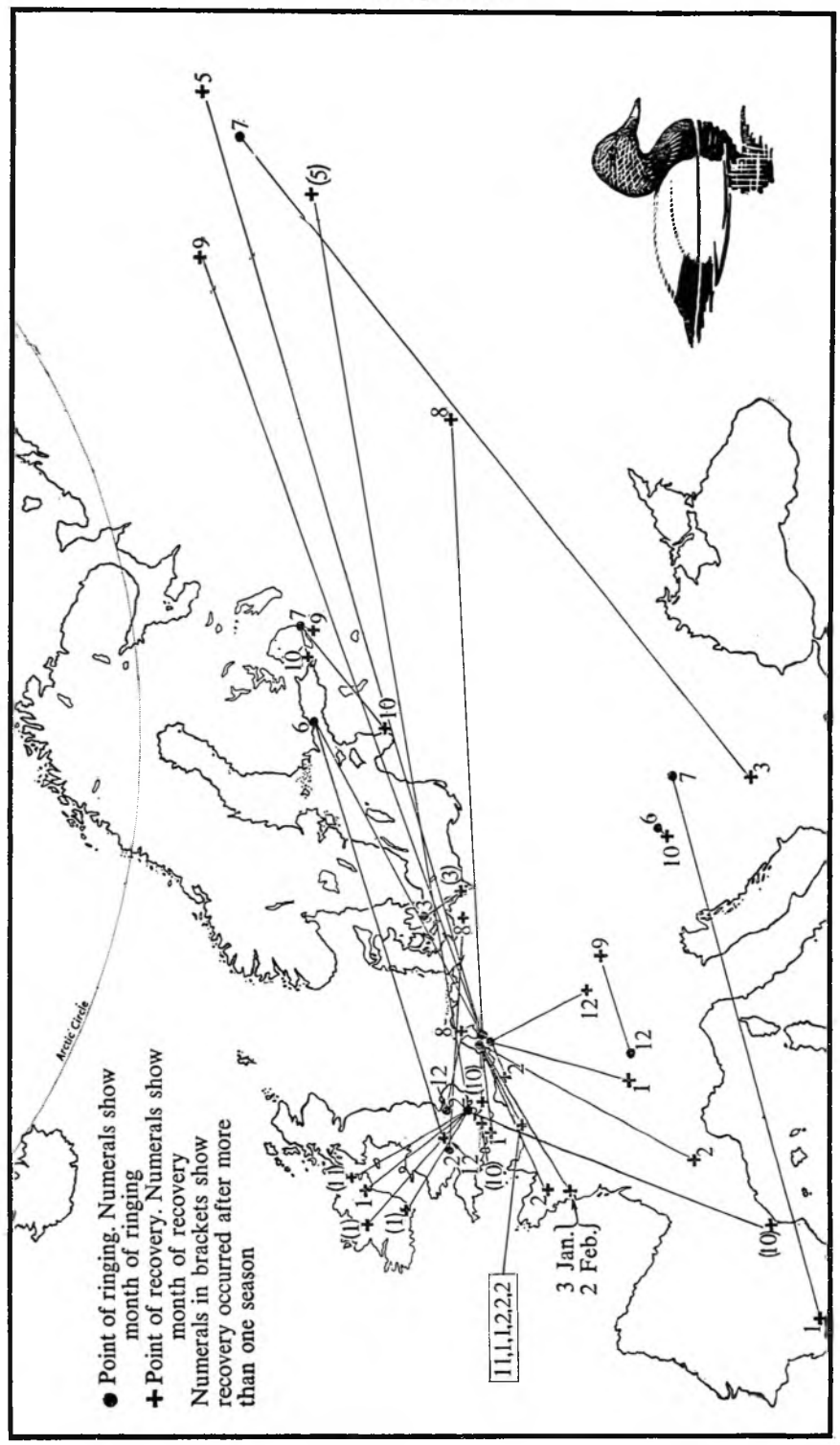
Table I summarises the amount of information obtainable from recoveries and reveals many of its inadequacies. Clearly samples as small as these cannot provide highly reliable and detailed guides to distribution, especially of species which are treated as sporting birds in some countries but not in others. However, by considering the recoveries against the background provided by published studies on the distribution of each species it is possible to form some ideas on the breeding distribution of the populations visiting Britain in winter. The differences between species which are revealed illustrate the extraordinary heterogeneity of the winter duck population of Britain.

TABLE I

Numbers of recoveries of diving- and sea-ducks ringed in Greenland, Iceland and Europe which provide evidence of movement

Where ringed	Poch-ard	Scaup	Common Scoter	Velvet Scoter	Long-tail	Golden eye	R B Merg.	Goos-ander	Total
Greenland ..	—	—	—	—	2	—	—	—	2
Iceland ..	—	80	11	—	9	—	10	—	110
U.S.S.R. ..	3	—	—	—	16	1	—	—	20
Finland ..	2	1	—	1	—	9	2	2	17
Sweden ..	—	6	—	3	—	26	6	10	51
Norway ..	—	1	—	1	—	—	1	—	3
Denmark ..	1	—	—	—	—	1	4	—	6
Germany ..	—	—	—	—	6	—	3	—	4
Holland ..	13	—	—	—	—	—	—	—	13
Switzerland	2	—	—	—	—	—	—	2	4
Hungary ..	2	—	—	—	—	—	—	—	2
Great Britain	12	—	—	—	—	—	1	5	18
Total ..	35	88	11	5	28	37	27	19	250

FIGURE 1: Recoveries of ringed Pochard showing movements of more than twenty miles.



AYTHYINI

Three species of this tribe occur regularly in the British Isles: the Pochard (*Aythya ferina*), the Tufted Duck (*A. fuligula*) and the Scaup (*A. marila marila*). An account of the summer distribution of British-ringed Tufted Ducks was published recently (Boyd, *Wildfowl Trust Eighth Annual Report,* pp. 47-51, 1957). As subsequent data have not substantially affected the picture and as the winter distribution of this species in Britain has been discussed at length by Atkinson-Willes (*Fourth Report on National Wildfowl Counts,* 20 pp., 1957) it will not be treated here.

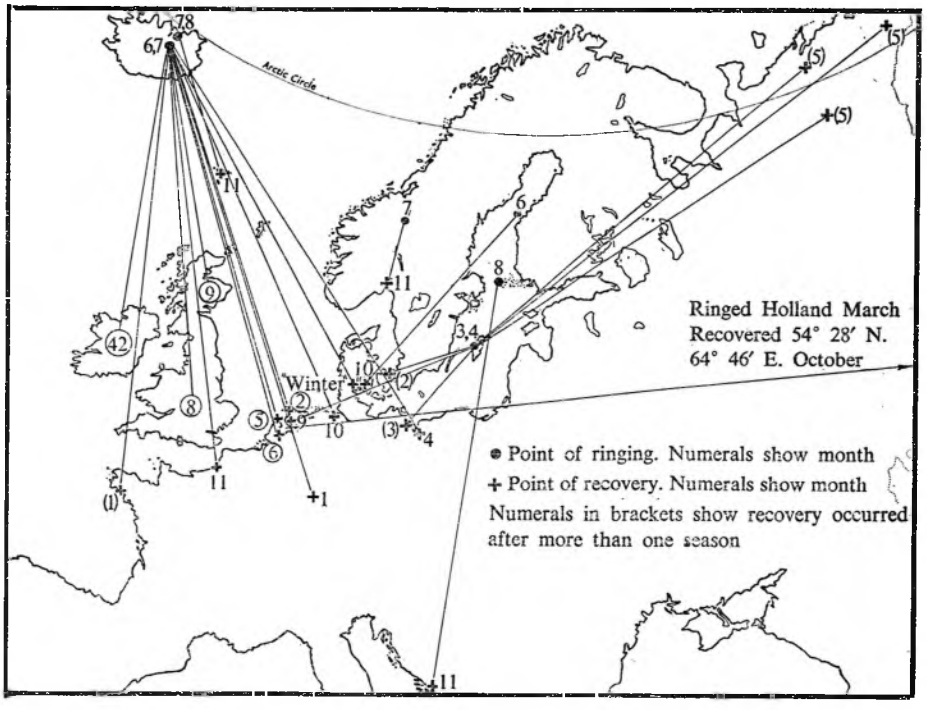
The POCHARD breeds in many parts of the British Isles, although rarely in abundance and often sporadically. Its numbers in mid-winter are very substantially greater than can be accounted for by home-breeding and home-bred individuals. The species is widespread as a breeding bird in the boreal zone of Europe and Asia, very largely within the latitudinal range 45° N. to 60° N. In recent years it has spread north and west in Scandinavia and has now even begun to colonise Iceland. This northwestern spread has been attributed both to the amelioration of the Baltic climate and to the deterioration of breeding habitat in the areas to the south and east formerly the particular stronghold of the species. This forest steppe zone has suffered from a diminution in rainfall, leading to drying up of many of the shallow reedy lakes favoured by the Pochard, a process accelerated too by agricultural drainage.

Until some Pochard have been marked in British breeding places it will not be possible to confirm, or refute, the suggestion to be found in several general works that, though they move about within the country, British birds do not emigrate. (It would be mildly surprising if this hypothesis were correct).

Recoveries of British-winter-ringed Pochard overseas and recoveries in Britain of foreign rings (Figure 1) indicate that some of our winter immigrants breed in the northern parts of the species range, at least as far as 61° E. (and probably substantially further east, since a Dutch-ringed bird has been found at 71° 30′ E.). Such birds probably arrive in Britain late (in January and February), after staying in north Germany, Holland and presumably Denmark. But the map shows that birds caught in Essex in autumn have passed through to Ireland by January. These earlier immigrants and passage migrants may subsequently be shown to breed around the Baltic, rather than further east. There is as yet no evidence that Pochard pass through England to France and the Iberian peninsula, although Dutch-ringed birds have moved into France as well as England. The only British-ringed Pochard reported from Spain was ringed in March 1956 and recovered in October 1957, dates suggesting that Iberian-wintering Pochard might return north through England in spring rather than visit it in autumn.

Two Pochard ringed in India in winter have been recovered in Siberia in summer, at 54° 42′ N, 76° 04′ E and 53° 23′ N, 83° 40′ E, indicating that the breeding population of the Siberian plain east of Omsk perform a north-south migration. In Europe, however, the migratory movements are more nearly east-west than north-south, thanks to the comparatively southern breeding-range, and to the mildness of winter weather near the Atlantic, in contrast to the severe winters of eastern Europe.

FIGURE 2: Recoveries of Scaup away from ringing place.



The breeding distribution of the SCAUP (figure 2), a subarctic species, overlaps with that of the Pochard only in the central Baltic so that the populations of the two species wintering in Britain could scarcely be expected to come from the same breeding areas. The recoveries suggest strongly, at first sight, that Iceland alone provides our winter birds. Closer scrutiny shows that the evidence may be misleading, because the only other place where any quantity of Scaup has been ringed is the Swedish island of Gotland, where the birds have been caught on passage in March and April. Some of these Swedish-visiting Scaup, breeding in Russia in the tundra of the Nenets National Okrug and the Komi A.S.S.R., evidently enter the winter-range of Iceland-breeding birds, in Denmark, Germany and Holland. This winter mingling of birds breeding in longitudes 17° W and 64° E makes it very likely that those breeding in intervening areas, from which no ringed sample is yet available, also winter in north-west Europe, including the British Isles.

Figure 3 shows in greater detail the distribution in the British Isles of Scaup ringed in Iceland. 40 of the 56 recoveries shown were in Ireland, and 41 in coastal localities, compared with 15 inland, proportions consistent with what is known or guessed about the distribution and abundance of the species in the two countries. The monthly distribution of the recoveries (Table II) shows them to be very largely concentrated in the months October to February. Few Scaup are seen in the British Isles before the end of

FIGURE 3: Recoveries in the British Isles of Scaup ringed in Iceland.

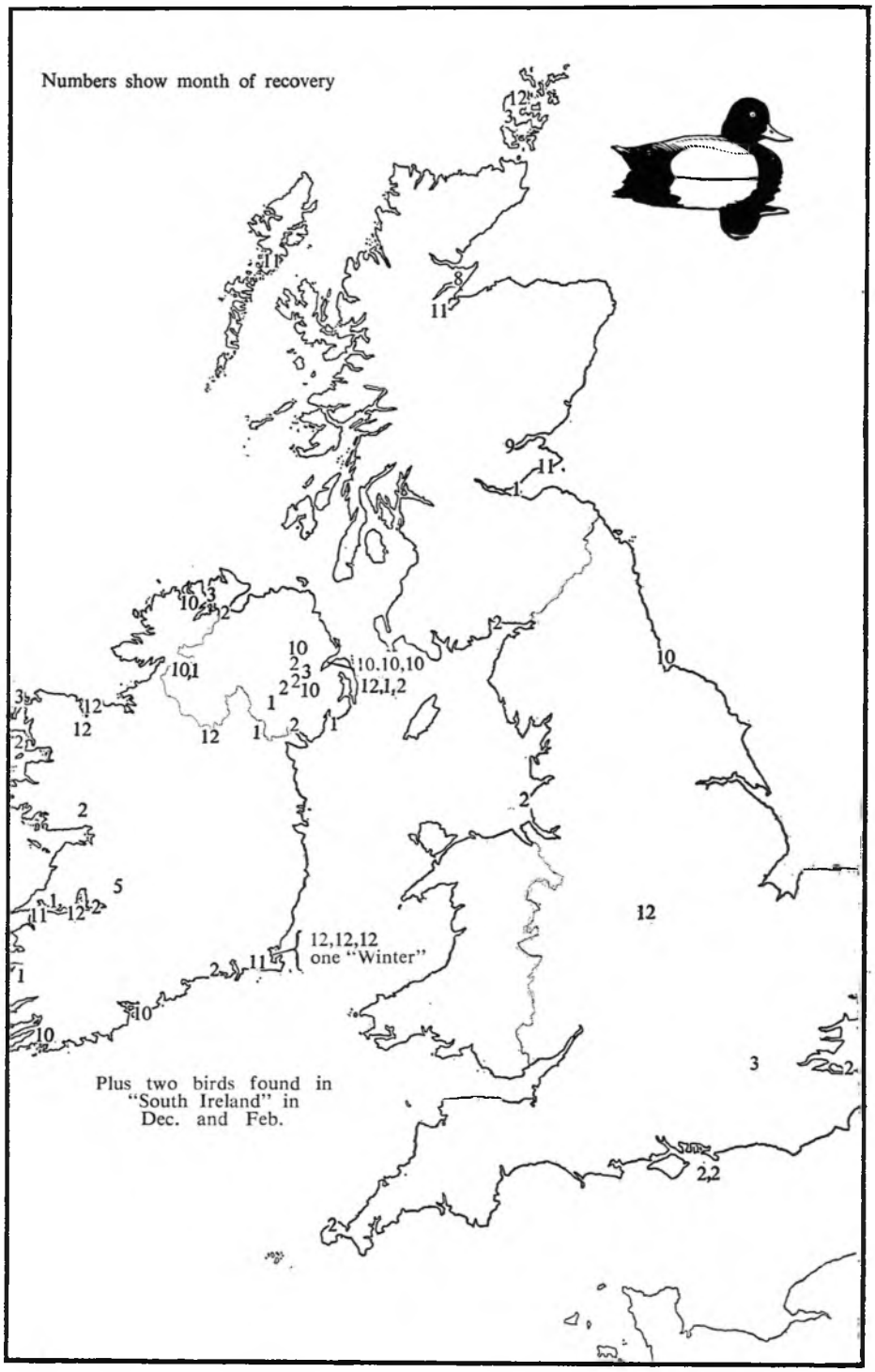


TABLE II

Monthly distribution of recoveries of Icelandic-ringed Scaup in the British Isles and North-West Europe

Recovered in	Aug.–Oct.	November	December	January	February	Mar.–Apr.	Total
British Isles ..	13	5	10	9	16	5	58
N.W. Europe ..	2	7	—	3	2	2	16
Total ..	15	12	10	12	18	7	74

September, and they are known to return to Iceland, where they do not winter, in March. When the monthly distribution of Iceland-ringed Scaup in the British Isles is compared with their distribution elsewhere in Europe an interesting discrepancy is found, recoveries in the Netherlands and France being unexpectedly numerous in November and non-existent in December. The numbers of Scaup in the Netherlands do seem to be highest in November, so that even this small sample of recoveries may reflect a real shift of the " centre of gravity " of the Iceland population from Holland in November to Ireland in December. But, as the recoveries have been accumulated over nearly thirty years and as there are known to be very marked fluctuations from year to year in the numbers of Scaup frequenting favoured localities both in Britain and in the Netherlands, no great weight can be given to this finding.

MERGINI

Seven species of the tribe occur regularly in Britain: Common Scoter (*Melanitta n. nigra*), Velvet Scoter (*Melanitta f. fusca*), Long-tailed Duck (*Clangula hyemalis*), Goldeneye (*Bucephala c. clangula*), Smew (*Mergus albellus*), Goosander (*Mergus m. merganser*) and Red-breasted Merganser (*Mergus s. serrator*).

The breeding distribution of the COMMON SCOTER is similar to that of the Scaup. No ringing data relating to birds breeding in Sandinavia or further east are available, so that their contribution, if any, to the British-visiting population is unknown. A female ringed on her nest at Myvatn, Iceland, in June 1946 and found dead near Liverpool in September 1949 provides the only record of immigration. The only recovery so far of a British-ringed Scoter shows no movement. There have been seven published recoveries of Iceland Scoters in the Bay of Biscay, six on the islands and coast of the Vendée and Charente Maritime, the seventh on the north coast of Spain near Santander. One was in September, two in November, three in December and one in February.

Further east, ringing on the Swedish islands of Gotland and Öland in June and July has yielded recoveries in Denmark in September and October, but none further west, while summer ringing in northern Sweden, Finland and the Estonian S.S.R. has produced only evidence of return in later summers.

Ringing evidence of the distribution of the VELVET SCOTER is even more meagre, perhaps chiefly because the species does not breed in Iceland, although in Scandinavia, Russia and Siberia its breeding range largely overlaps that of *M. nigra.* There is one recovery in Britain: a young bird ringed in Gudbrandsdalen in the mid-west of Norway, in July 1943, was found near Glencaple, Dumfries in October of the same year.

The only other recoveries showing movement are of birds ringed in S.W. Finland in June and on Oland and Gotland in July and found in Denmark in October and in September and October, respectively.

Since accumulated observations from many parts of the British Isles show that many puzzling changes in numbers and some quite spectacular passage movements of both species occur it would be of great interest to ring them on a large scale. Experience at Myvatn, where 540 (282 adults) Common Scoter ringed for the Reykjavik Museum to 1952 have yielded only seven overseas recoveries (though many more recaptures at the ringing place) makes plain that massive efforts would be needed to achieve much. Perhaps some inventive genius can devise a method of catching Scoters at sea in mid-winter.

No ringed LONG-TAILED DUCKS have been recovered in the British Isles, where only two had been marked to the end of 1956, so that no proof of the breeding origin of the considerable British visiting population is available. Bannerman (*Birds of the British Isles, vol. VII,* 1958) has treated the point at some length and inferred that " it is pretty certain that no members of the large Greenland population are among them " (the British population) and " if the Iceland population which leaves that island prefer to take a westerly rather than a southerly course, what more likely than that Russian tundra birds do likewise?—a migration which would eventually bring them to Scottish waters." Bannerman obtained his evidence chiefly from Salomonsen (*Birds of Greenland,* 1950), who discussed the results of ringing in Greenland and Iceland as well as observations in those countries and Scandinavia. Since Salomonsen wrote, further recoveries of Iceland- and Greenland-ringed Longtails have been obtained. Figure 4 records the movements of these marked birds, together with those of a series of birds marked in the Yamal Peninsula in northern Siberia (around 72° N, 72° E). The latter, published by Mikheev in 1947, seem to have been overlooked by Bannerman. They support his hypothesis of a westerly movement by Russian birds. As all published recoveries outside Iceland of birds ringed there are in Greenland there is still no support for the view that any of our winter visitors come from Iceland. But there is now one recovery of a Greenland bird (ringed July 1947) from Denmark in January 1951 to weaken the argument that Greenland birds which emigrate go only to America.

Two recoveries of Yamal-ringed Longtails: an adult male ringed in August 1933 found in northern Norway in July 1938, and one of unknown age marked in August 1934 and found in northern Sweden in June 1935, suggest that some redistribution of Longtails through the breeding range occurs, as would indeed be expected from the taxonomic homogeneity of the species despite its circumpolar distribution.

Presumably the main obstacle to the recovery of ringed Long-tailed Ducks in the British Isles is that few are shot or otherwise killed by man here, so that it would be helpful to catch and mark some in British waters in the expectation that they would be shot elsewhere.

FIGURE 4. Recoveries of ringed Long-tailed Ducks.

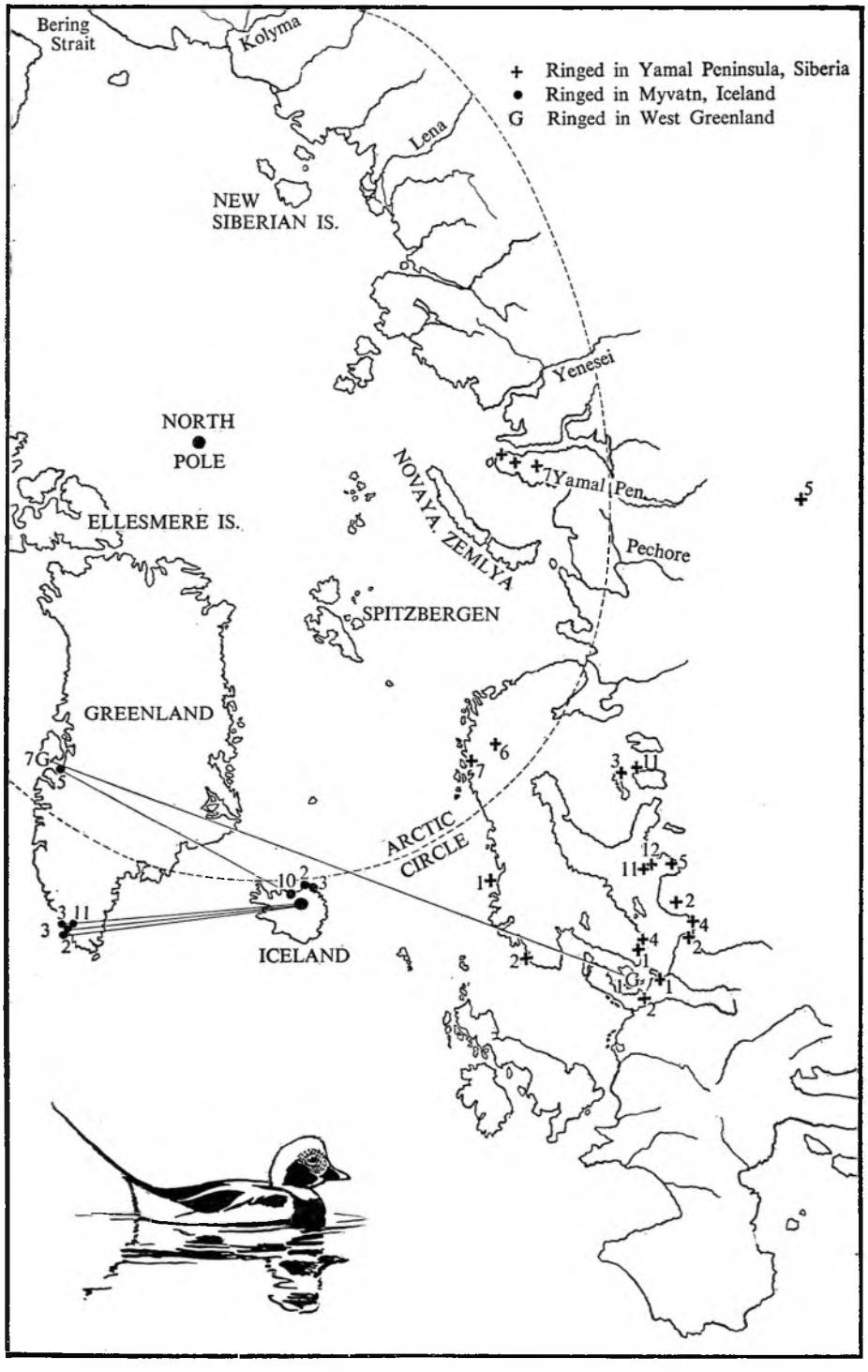
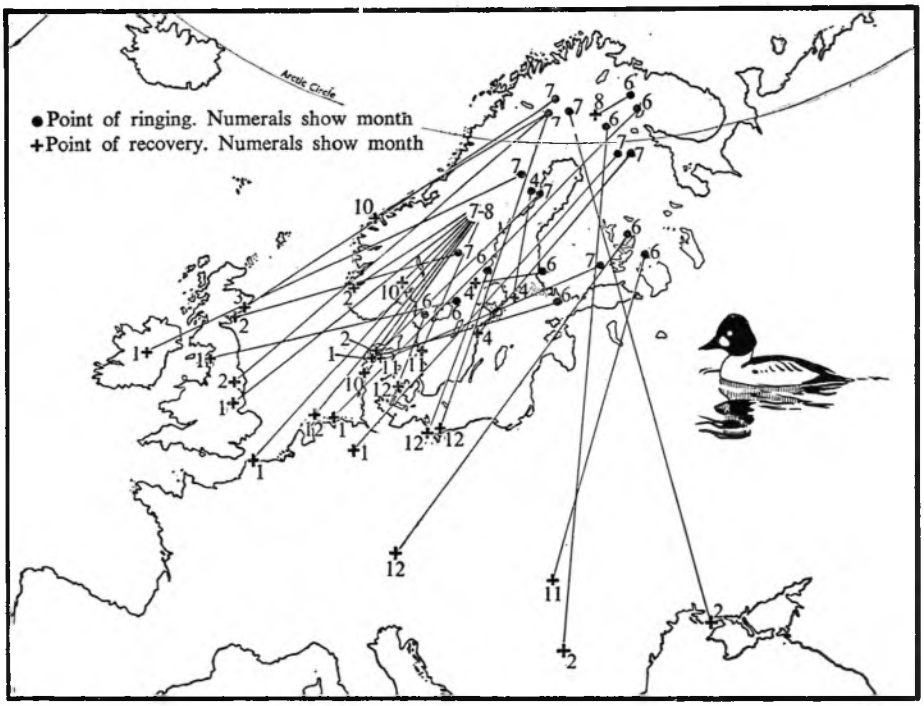


FIGURE 5: Recoveries of Goldeneye, away from ringing places.



The map of recoveries of ringed GOLDENEYE (Figure 5) provides a comparatively rich picture of the movements of the Scandinavian-breeding population. This is because the marked sample has been caught in many different localities, mostly in Sweden and during the summer. It appears that the Swedish population moves slowly south-west (see also Table 4), staying around the Baltic until December and then shifting to the countries surrounding the North Sea for January and February. The only March recovery is from Scotland. The two April ones are from Sweden.

Recoveries of Goldeneye ringed in south-west Finland show movements like those of Swedish birds, but birds marked in the north and along the Russo-Finnish border seem as likely to travel south towards the Balkans and the Black Sea as to move south-west. This tendency appears to be more pronounced than in any other species of duck nesting in Scandinavia. (Southward movements of ducks nesting further east in Russia and Siberia are, of course, known in many species).

It would be instructive to mark Goldeneye in their western wintering places, to see whether any important part of the "North Sea population" breeds east of 30°E. The absence of recoveries from Russia cannot be taken to disprove this, since ringing at breeding localities cannot provide an unbiased picture of summer distribution, because of the tendency of ducks (and especially of adults) to return to their home areas.

Ringing of Barrow's Goldeneye (*Bucephala islandica*), which replaces *B. clangula* in Iceland, has produced several recoveries and recaptures, but none outside that country. The isolation of the Iceland population from the

Goldeneyes of Europe seems all the more remarkable when other closely related species of duck occurring in Iceland are found to share wintering places with Scandinavian breeders.

The movements of ringed RED-BREASTED MERGANSERS (Figure 6) from Sweden resemble those of the Goldeneye. Mergansers marked in Denmark have been nearly sedentary, but one marked on the north German island of Fohr in August 1933 was recovered in November of the same year in northern Italy. No Scandinavian-ringed examples have yet been found in Britain, though it seems likely that some birds from Sweden, Finland and perhaps Russia should occur here. Iceland birds have been found in Shetland and off the mainland of Scotland and one is known to have reached Holland. The most pressing need is for more ringing in Britain, in both summer and winter. The only British recovery of a British-ringed bird showed only a small movement, within Co. Fermanagh, of a bird marked in June 1909 and recovered in June 1912. (It is astonishing that no further data have been obtained in forty-six years).

The British contribution to our knowledge of GOOSANDER movements (Figure 7) is less blameworthy, though this is due almost entirely to the enterprise of Mr. P. A. D. Hollom who succeeded in trapping small numbers on a reservoir at Molesey, Surrey, in several winters during the 1930's. These yielded an unusually high proportion of recoveries overseas, three in east Sweden in April, one in Arkhangelsk (also in April) and one on the west coast of Finland in September. The sketch they provide has been amplified by other small scale ringing in Sweden, Finland and Denmark, showing the Scandinavian population to remain as long as possible in and around the Baltic, but moving west if necessary in mid-winter.

Though the Goosander breeds in Iceland, few have yet been ringed there and no evidence of emigration has been obtained. Marking of members of the isolated southern breeding population in the Alps has shown that some dispersal occurs but has given no hint of Swiss birds moving northwards at any season.

Nothing has been found out about the movements of SMEW by means of ringing.

Summary

Recoveries of sea and diving-ducks ringed in northern Europe provide a sketch of the movements of eight of the ten species of these tribes which occur regularly in the British Isles.

Pochard. Some of our winter immigrants breed in the north of the species range, east to 61°E (and probably to 70°E and beyond). Pochard breeding around the Baltic may arrive ahead of those breeding in Russia. Proof that British-breeding Pochards are resident has yet to be obtained.

Scaup. All foreign-ringed Scaup yet recovered in Britain have come from Iceland, but it is very likely that some from northern Scandinavia and Russia also visit this country. The majority of the Icelandic birds have been reported from Ireland. Ringed Scaup have occurred almost entirely in the months October to February, most often in February. Surprisingly few have been found in November, the peak month for occurrences in Holland and France.

FIGURE 6 : Recoveries of Red-breasted Mergansers, away from ringing place.

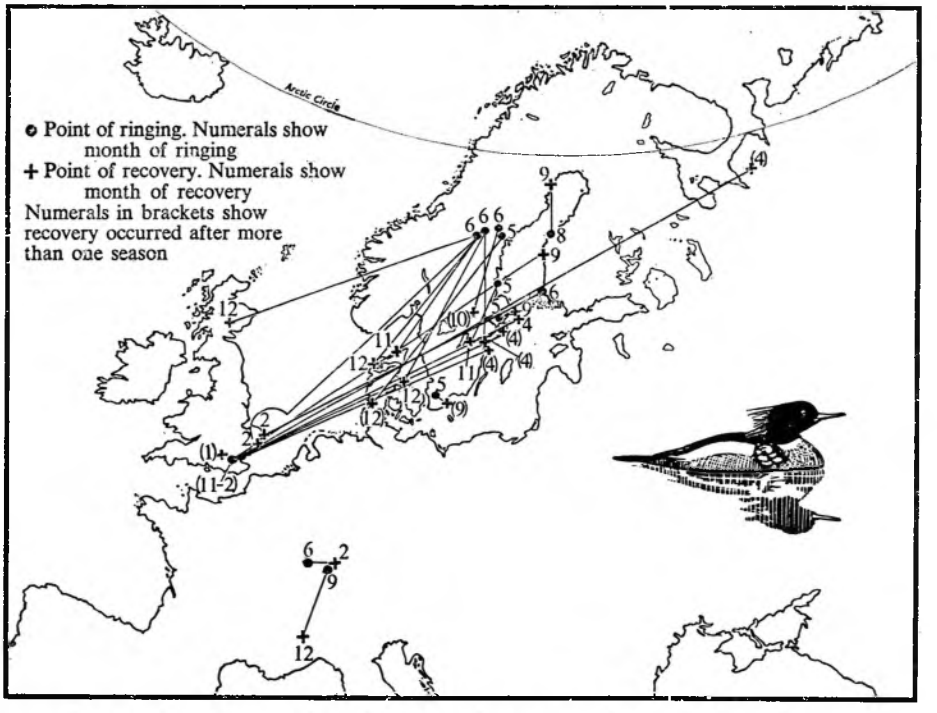
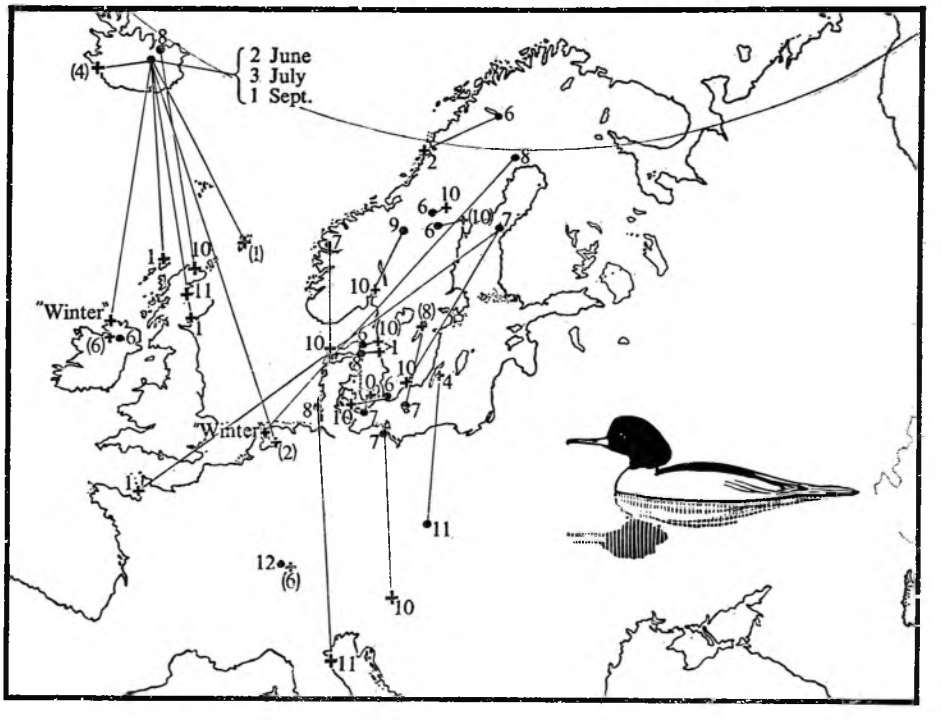


FIGURE 7: Recoveries of Goosanders, away from ringing place.



Common Scoter. Icelandic Scoters certainly visit Britain, but ringing in Scandinavia and Estonia has not yet produced recoveries in the British Isles.

Velvet Scoter. A young bird ringed in Norway in July 1943 and recovered on the Solway in October provides the only British recovery. Ringing in Finland has produced comparatively many recaptures but very few recoveries elsewhere.

Long-tailed Duck have been ringed in Iceland, West Greenland and the Yamal Peninsula in Siberia. The Icelandic birds have been found there and in Greenland. Birds from Greenland have travelled to Denmark but also to N.W. Canada. Birds from Siberia have been found around the Baltic and in west Norway. Winter visitors to Britain seem more likely to originate in the north-east than the north-west.

Goldeneye have been ringed more plentifully and yielded more recoveries at a distance than most diving ducks. Six ringed ducks found in Britain had all been marked in Sweden. Finnish and Russian Goldeneyes seem to move south as often as south-west.

Red-breasted Mergansers have been marked in Iceland, Scandinavia and Germany. Five recoveries in Scotland and one in Ireland have all been of Icelandic origin, but a few Scandinavian birds probably visit England, since they have been found in Holland and northern France.

Goosander. One ringed in Sweden has been found in Scotland. A Swedish and a Finnish Goosander have been recovered in Suffolk and Norfolk. Goosanders ringed near London in winter have been reported in spring from Sweden and north-west Russia and from Finland in September.

Very few Smew have been ringed and no evidence of movements has yet been obtained.

Movements of Tufted Ducks are not treated here.