

Wetland bird migration in Central Norway

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New information on wetland bird migration through Central Norway is provided by data recently collected by several persons, during annual censuses on wetland birds and partly also during bird ringing. Several wetland birds move across Northern Fennoscandia to winter in other countries or along the Atlantic coast of Norway. The data reveal that there are large numbers of migrating and wintering Red-necked Grebes in this area and that Eider Ducks migrate across the north of Scandinavia. Several sea ducks winter along the coast of Central Norway. The most characteristic feature of the migrating waders is the predominance of juvenile birds. The co-operation of ornithologists in the adjacent parts of Europe is needed to complement this information on migration.

In the past bird migration studies in Fennoscandia have been mostly restricted to the eastern and southern areas, especially Finland, Southern Sweden, Denmark, and South-western Norway. Migration across the north of Fennoscandia has received far less attention. It has been generally accepted that birds from North-eastern Europe follow a west-southwest migration route over the Baltic and Southern Scandinavia, and it has also been supposed that birds from Northern Scandinavia migrate more or less due south. The available data do undeniably suggest as much, but this is merely due to the concentration of active ornithologists and ornithological observations to the southern parts of the region.

During the last few years, ornithology has greatly expanded, and field work has increased as well, in both Norway and Northern Scandinavia as a whole. Observations and censuses carried out during migration periods and in winter, together with mist-netting for ringing purposes, and the subsequent ringing re-

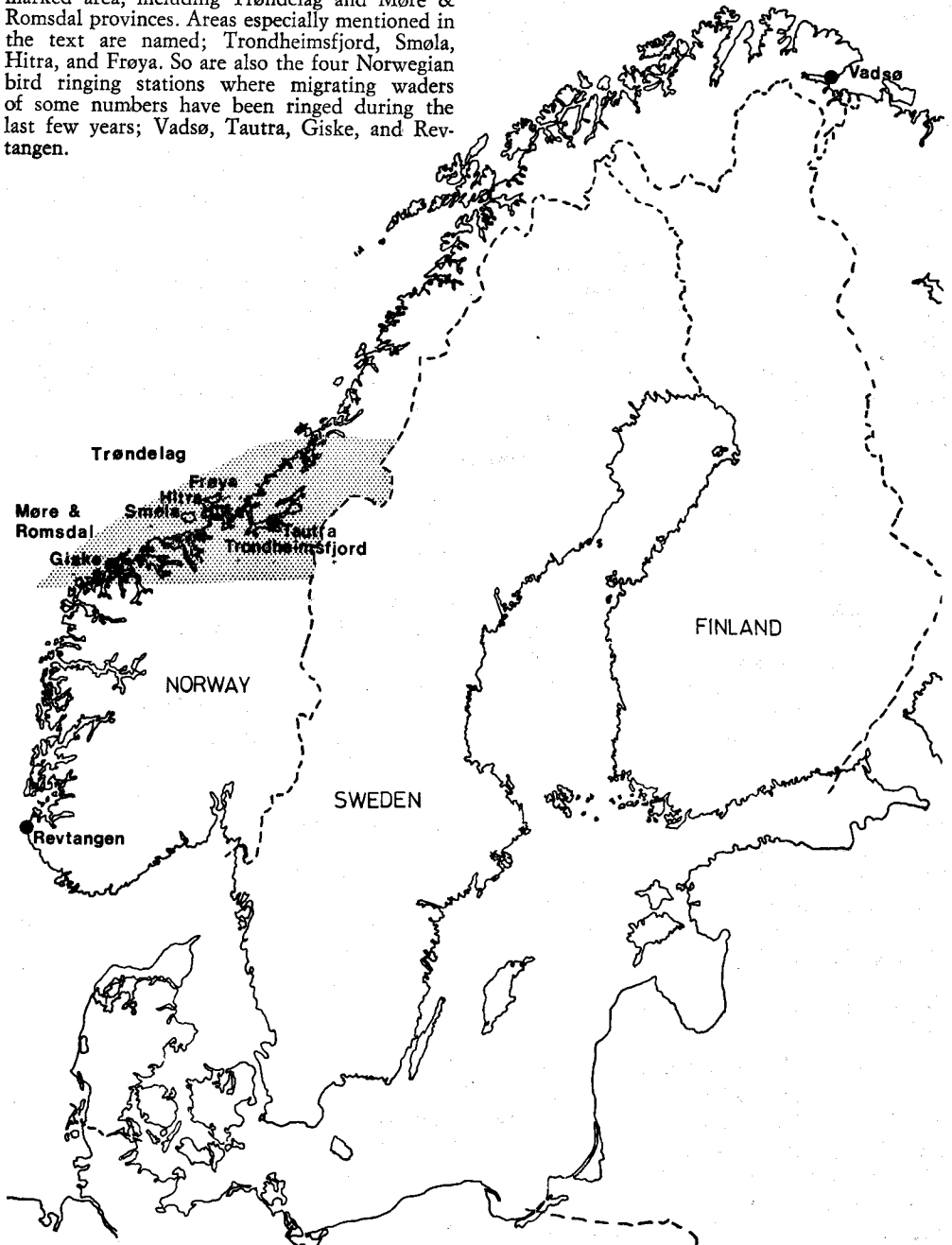
coveries, have indicated that a bird migration of considerable importance takes place annually across central and northern parts of Fennoscandia, e.g. of waterfowl and waders. Very interesting data have been obtained from the coastal regions of Trøndelag, and Møre & Romsdal provinces, Central Norway. The present paper is intended to provide a preliminary summary of these new data.

Gaviidae:

The two species which breed in Norway, the Red-throated Diver (*Gavia stellata*), and the Black-throated Diver (*G. arctica*), show quite different migration patterns, and have different wintering quarters as well. *G. stellata* is a fairly common species during the winter, being especially numerous in the inner and more sheltered coastal localities in Central Norway. In contrast, *G. arctica* is very rare during the winter and may occur only sporadically.

Both the Great Northern Diver (*G.*

FIG. 1. *Fennoscandia*. Central Norway is the marked area, including Trøndelag and Møre & Romsdal provinces. Areas especially mentioned in the text are named; Trondheimsfjord, Smøla, Hitra, and Frøya. So are also the four Norwegian bird ringing stations where migrating waders of some numbers have been ringed during the last few years; Vadsø, Tautra, Giske, and Revtangen.



immer), and the White-billed Diver (*G. adamsii*) are common and regular winter visitors, but they differ markedly in their geographical distribution in Central Norway. Whilst *G. immer* is wholly dominant in the outer and southern parts of the coastal waters, *G. adamsii* is to be found mainly in the inner and northern parts, e.g. in Trondheimsfjord. A complete census of these species is very difficult to carry out, since these coastal waters are almost impossible to survey. In several localities, however, 20—40 Great Northern and/or White-billed Divers (*G. immer/adamsii*) have been reported.

Podicipidae:

The Little Grebe (*Podiceps ruficollis*), and the Great Crested Grebe (*P. cristatus*) are extremely rare, both as migrants and winter visitors. On the other hand, the Slavonian Grebe (*P. auritus*), and the Red-necked Grebe (*P. griseigena*) are fairly common, the latter being very much the dominant one. Five to six years ago *P. griseigena* was regarded as a very rare bird in Norway throughout the year. Field work performed during the last few years has shown that the species is not only common, but even numerous, during the migration period and in winter along the coasts of Central Norway. During peak migration, in fact, this species quite dominates the bird fauna in the most typical localities. In several localities 50—100 individuals have been seen during migration and in the winter. The winter population in the Smøla area, Møre & Romsdal province, no doubt numbers several hundreds. It is noteworthy that during winter the species is only rarely recorded from the fjords, although during the spring and autumn migration periods it is commonly observed there, particularly in Trond-

heimsfjord. Most of the specimens in the zoological collections of the Museum of the Royal Norwegian Society of Science & Letters, in Trondheim, are birds which have been taken during the migration period, partly on lakes, partly on the fjords in the Trøndelag province. The collection includes both adults and juveniles, and is derived from the late 19th and early 20th century. The winter censuses made along the coasts of Central Norway indicate a winter population of at least two thousand individuals, perhaps more. The fact that the species regularly winters in Scotland and the Shetland Isles, and the increase in the number of grebes during the spring migration in localities along the Central Norwegian coast indicate that some of these birds winter farther south. During migration this species is very noisy and active, readily taking wing. Birds in flight north-eastwards may be observed in the daytime during the spring.

Anatidae:

Among migrant geese, the Greylag (*Anser anser*) is clearly the dominant species, but no goose species have been found in any number along the coasts of Central Norway during winter. The Pink-footed Goose (*A. brachyrhynchus*) regularly rests here during its autumn migration, but up to the present only small flocks (20—30 individuals), or single specimens, have been reported. In mid May considerable migration of geese takes place over both the Trøndelag provinces, in a fairly straight south-north direction. Some field identifications, together with the dates of observation and the number of birds involved, strongly indicate that at least the greater parts of these flocks are made up of *A. brachyrhynchus*. The Brent Goose (*Branta bernicla*), and the Bar-

nacle Goose (*B. leucopsis*) both occur regularly during migration, but mostly in small numbers. The flocks often fly parallel with the outermost islets and skerries. Larger flocks of *B. bernicla* have been reported from Trøndelag on occasions.

Among the swans, only the Whooper Swan (*Cygnus cygnus*) occurs in any number. Some birds obviously migrate farther south during the autumn, however. The wintering population along the coasts of Central Norway numbers between 500 and 1000 individuals (573 during the mid-winter census of 1974), this area apparently being the most important wintering area for this species in Norway.

The dabbling ducks (*Anas spp.*) are far less numerous than farther south, both during migration and on their wintering grounds. The Mallard (*Anas platyrhynchos*) is the most numerous, followed by the Widgeon (*A. penelope*), and the Teal (*A. crecca*); other species are very scarce. In some localities, *A. platyrhynchos* may number as many as 2000—3000 individuals. During migration the largest gatherings of *A. penelope* observed comprised about 1000 individuals. During the winter they are far smaller, 50—100 individuals in a few localities and almost without exception accompanying the flocks of *Cygnus cygnus*. The total winter population of *A. platyrhynchos* in our area probably exceeds 10 000 individuals. Obviously most of them belong to the local populations. Nevertheless, the results of ringing several hundreds of Mallards in Buvika, near Trondheim, indicate that a considerable proportion of these birds may come from Northern Sweden and Finland.

Ducks of the genus *Aythya* obviously do not migrate through these parts of Norway to any extent, the numbers recorded being fairly low and seldom

reaching as many as 50 individuals in a single locality.

In contrast, the sea duck species totally dominate the waterfowl migration. Since the first evidence obtained during the spring of 1969 by FOLKESTAD and MOKSNES, it has been confirmed that fairly large numbers of Eider Ducks (*Somateria mollissima*) migrate north-east, straight across the Scandinavian peninsula from the region of Trondheimsfjord. Dr. GÖRAN BERGMAN has reported (in litt.) radar observations of birds over Northern Finland during the past few years. The birds appear from the south-west, flying at a very great altitude, and disappear east-northeastwards without hesitating or changing their altitude or direction. All the evidence suggests that this is *S. mollissima*, and if the birds continue on the same course over Finland, they probably arrive at the north-east corner of the White Sea.

Further observations indicate a corresponding south-westwards migration along the valleys of Trøndelag province during the autumn. The coasts of Central Norway form important wintering grounds for *S. mollissima*. In Trondheimsfjord alone, the species may number 10 000—15 000 individuals during winter. Some of these are obviously local breeding birds. Nevertheless, migration movements, and changes in flocks and numbers of individuals, show a marked increase during autumn and a corresponding decline during spring, thus strongly supporting the observations of birds migrating north-eastwards. At the moment, it is very difficult to estimate the size of the migrating population, and that of the total winter population along the coasts of Central Norway, but no doubt several thousand birds follow this migration route. The King Eider (*S. spectabilis*) and Steller's Eider (*Polysticta stelleri*) have been ob-

served repeatedly, although sporadically, in the same area as *S. mollissima*. Only single individuals of *P. stelleri* have so far been reported. *S. spectabilis* may occur in flocks of up to 50 individuals, but single individuals or small flocks are mostly observed. Trondheimsfjord is the sole area in Southern Norway in which *S. spectabilis* regularly occurs, and on several occasions the species has been found breeding there. If one accepts that *S. mollissima* migrates from Northern Russia to Norway, it is reasonable to suppose that both *S. spectabilis* and *P. stelleri* may accompany the migrating flocks, more or less by chance, and are thus found more regularly along the coast of Central Norway than in adjacent districts.

The two Scoters behave quite differently. The common Scoter (*Melanitta nigra*), present in hundreds in Trondheimsfjord during the migration and moulting periods, occurs in only very limited numbers there during winter. No doubt the bulk of the population passes farther south during migration. On the other hand, the Velvet Scoter (*M. fusca*) is a dominant species during migration, and also during the moulting period and in wintertime. During the moulting period and migration, in particular, it is rather abundant in the inner parts of Trondheimsfjord, its numbers rising to several thousands. During winter it is dominant in several localities in the outer coastal areas. Estimation of the total population is difficult. In several localities the number of birds may exceed 1000, and so the total population must at least number a great many thousands. In addition, a marked increase in numbers occurs in the southernmost localities during the spring migration, evidently owing to an influx from the south and south-west (Great Britain).

After *S. mollissima*, the Long-tailed Duck (*Clangula hyemalis*) is the most

numerous of the duck species found wintering along the coasts of Central Norway. It apparently follows the same migration route across the Scandinavian peninsula as the other sea ducks. The species is present almost everywhere along the outer coastal waters and skerries, especially on seaweed grown shoals. It is quite impossible to estimate the size of the population, partly because of the very vigorous feeding habits of this species, with only about one third of all the birds appearing at the surface at the same time during intense feeding periods, partly because it keeps to such exposed localities and so far away from the coast that it is almost impossible to carry out reliable censuses. No doubt the population numbers several tens of thousands.

The Goldeneye (*Bucephala clangula*) also belongs to the migrant and wintering duck species, but nowhere occurs in any great numbers. Usually solitary individuals or small flocks are seen, those in the Trondheim area being the largest, sometimes with as many as 200—300 birds. It therefore seems clear that the main migration of this species does not touch Central Norway. The occurrence of the mergansers varies from species to species; the Smew (*Mergus albellus*) is extremely rare, but the Goosander (*M. merganser*) occurs regularly in small numbers, on some of the largest rivers or estuaries during the migration period and in winter. In contrast, the Red-breasted Merganser (*M. serrator*) is one of the most numerous duck species present during migration, and in the moulting period and winter as well. We now know for certain that this species has some very important moulting areas among the outer skerries along the coasts of Møre & Romsdal and Trøndelag provinces, viz. around the islands of Smøla, Hitra and Frøya. However, in this district, with its thousands of skerries

and sounds, it will be extremely difficult to obtain any reliable estimate of the total population. Obviously their numbers must amount to tens of thousands. During winter censuses, the species plays a dominant role, even if the censuses do not cover many of the potentially most important areas. During the mid-winter census of 1974 more than 2000 individuals were counted along the innermost sounds around the island of Smøla.

Charadrii:

Between the middle of August and the end of September, waders are dominant in the bird migration along the coastal areas of Central Norway. On some days up to several thousand Oyster-catchers (*Haematopus ostralegus*) may pass through the area (during a single day more than 5000 individuals were observed passing Giske, near Ålesund), but besides this species and the Curlew (*Numenius arquata*), north-eastern species predominate in the wader migration.

During the latter half of the autumn migration period of the Ringed Plover (*Charadrius hiaticula*), the northern subspecies (*Ch. h. tundrae*) is generally dominant. The Golden Plover (*Pluvialis apricaria*) is another of the most numerous species, usually being present in flocks of several hundreds, especially on cultivated areas near the coast. At the peak of migration, the flocks may number 2000—3000 individuals in some localities.

Although the Turnstone (*Arenaria interpres*) is usually fairly few in number during the autumn migration, it is the most numerous wintering wader species, after the Purple Sandpiper, occurring in flocks that generally number 10—200 individuals.

Among the migrating *Calidris* species,

the Dunlin (*C. alpina*) is dominant, and may occur in flocks consisting of 5000—6000 individuals in some localities. Even more interesting are the Little Stint (*C. minuta*) and the Curlew Sandpiper (*C. ferruginea*). The former usually occurs in flocks of up to 100—200 individuals, or even more; the latter is usually less frequent (50—100 individuals). However, *C. ferruginea* flocks may number 150—200 individuals in some years yet be almost absent in others. During winter, the Purple Sandpiper (*C. maritima*) is the most numerous wader species found on the coast of Central Norway, sometimes occurring in concentrations of up to 1000 individuals. It is present everywhere along the outer coastal waters, on sandy beaches, and on skerries far from the coast, during the period from early July until March/April. The remaining *Calidris* species occur more sparsely, very much depending upon the prevailing weather conditions. With westerly or south-westerly winds, in particular, the Knot (*C. canutus*) and the Sanderling (*C. alba*) may occur in some numbers.

Next to the Dunlin (*C. alpina*), the Ruff (*Philomachus pugnax*) is the most numerous wader species throughout the coastal district during the autumn. On several islands, especially those with extensive cultivated areas, 3000—4000 individuals, or more, have been present at the same time at the peak of migration.

It is noteworthy that the flocks of *Calidris* species and *Philomachus pugnax* during peak migration almost without exception consist of juveniles, and adult Ruffs are virtually absent after the beginning of August. This corresponds well with reports from Southern Sweden and Denmark, where the peak of the migration is said to fall between July and August and the flocks consist mainly of adult birds.

As far as an eastern species, the Spotted Redshank (*Tringa erythropus*), is concerned, it is interesting to record a resting place on the coast of Møre & Romsdal province. Nearly 100 individuals were gathered together there during the peak of migration and the species was present in some numbers for more than two months, from the beginning of August until the beginning of October. More than 5—6 individuals are rarely recorded from any localities in Southern Norway during the autumn.

The Redshank (*T. totanus*), though very common, does not occur in any great concentrations, 100—150 individuals being the usual maximum number. Records from the last few years indicate that the birds normally seen wintering along the coast in this part of Norway belong to the Icelandic subspecies, *T. t. robusta*.

During the peak of the autumn migration the Common Snipe (*Gallinago gallinago*) may pass through the best wader localities in Møre & Romsdal in several hundreds, or even thousands, a day. Although the more interesting Jack Snipe (*Lymanocryptes minimus*) is not so numerous, more than 100 birds have been observed migrating during a single day in some of these localities. Nearly 50 individuals have been counted sitting around the same mud-hole. No heavy concentrations of this species have been reported from Southern Scandinavia.

Probable migration routes:

The coastal districts of Central Norway dealt with here obviously receive an influx of migrating birds from North-eastern Europe as well as from the Iceland/Greenland area, the former area being the more important. Previously, it was generally assumed that the birds migrated southward along the Norwe-

gian coast from Finmark. The data collected during the past few years, however, indicate that the main migration route must pass straight across the Scandinavian peninsula, from the Gulf of Bothnia to the coast of Trøndelag in Central Norway. This view receives support partly from ringing recoveries (*Anas platyrhynchos* from Trøndelag to Northern Sweden and Finland, *Bucephala clangula* from Northern Sweden to Trøndelag, and *Calidris minuta* from Finland to Trøndelag), and direct observations of some of the bird species concerned on lakes and other inland areas of Trøndelag (e.g. *Podiceps griseigena*, *Somateria mollissima*, and even *S. fisheri*, an extreme eastern species), and partly from sightings of migrating birds. Further confirmation is provided by the fact that during the migration period in Troms and the northern part of the Nordland provinces, the small wader species occur more sparsely, even in favourable localities in the tidal zone, than in similar localities farther south.

Migrating waders have been ringed during the past few autumns at several localities along the Norwegian coast, viz. at Vadsø in Finmark, Tautra on Trondheimsfjord and Giske near Ålesund, and also in the traditional ringing locality at Revtangen on Jaeren. Recoveries of birds ringed at Giske so far reveal a different migration pattern than those of birds ringed at Revtangen. During the first autumn *Calidris alpina* ringed at Revtangen has mostly been reported from Great Britain, whilst the birds from Giske have mainly been reported from the coastline of the European continent, from Denmark to Spain, with only a very few recoveries in the same autumn from Great Britain. Birds from Vadsø and Tautra have several times been recaptured at Giske, just as birds from Giske have been recaptured at Revtangen in the same year.

Summary

The numbers of waterfowl and waders passing through Central Norway are far fewer than those traversing Southern Scandinavia. However, for some species, at least, this northern migration route seems to be very important. This is certainly true of both the Great Northern Divers (*Gavia immer* and *G. adamsii*), the Red-necked Grebe (*Podiceps griseigena*), several of the sea ducks, and such waders as the Oyster-catcher (*Haematopus ostralegus*), the northern subspecies of the Ringed Plover (*Charadrius hiaticula tundrae*), and juvenile birds of the Little Stint (*Calidris minuta*), the Dunlin (*C. alpina*), the Ruff (*Philomachus pugnax*), the Common Snipe (*Gallinago gallinago*) and the Jack Snipe (*Lymnocryptes minimus*). In addition, the coast of Central Nor-

way is obviously an important wintering area for the Purple Sandpiper (*Calidris maritima*), and also apparently for the Icelandic Redshank (*Tringa totanus robusta*). The recent data from Central Norway yield some new information about the migration of waterfowl and waders in Northern Europe. For several species this is most important from the point of view of conservation. Great interest therefore attaches to obtaining still more detailed information. To achieve adequate results, a network of field study stations must be established in the northern parts of Fennoscandia, and farther south as well. This will demand co-operation among not only the ornithologists working in Fennoscandia, but also those along other parts of the migration routes. It is to be hoped that fruitful collaboration can in fact be established in all the European countries concerned.