

The international significance of wetland habitats in the lower Moroshechnaya river (West Kamchatka, Russia) for waders

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The West Kamchatka lowland, which stretches for hundreds of kilometres along the Sea of Okhotsk, is of great importance for waders using the East Asian Flyway. The lower Moroshechnaya River is numerically the most important migration stop-over area. During migration, 27 wader species were recorded there, including the rare Nordmann's Greenshank *Tringa guttifer* and Spoon-billed Sandpiper *Eurynorhynchus pygmeus*. In spring, the total number of waders in the estuary of the Moroshechnaya river is estimated at more than 400,000 birds. Ten species, including Dunlin *Calidris alpina kistchinski*, Oystercatcher *Haematopus ostralegus* and Eastern Curlew *Numenius madagascariensis* breed here. Thousands of Bar-tailed Godwit *Limosa lapponica* and Great Knot *Calidris tenuirostris*, hundreds of Eastern Curlew and tens of other waders appear in the estuary of the Moroshechnaya river in July. At least 100,000 Whimbrel *Numenius phaeopus* and Bar-tailed Godwit pass through this area during late summer-autumn. In total, at least one million waders and tens of thousands of wildfowl visit the Moroshechnaya river estuary on their autumn migration. These wetlands are undoubtedly of international importance and accordingly should receive protected status.

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Западно-Камчатская низменность, тянущаяся за сотни километров вдоль побережья Охотского моря, имеет большое значение для разных видов куликов, использующих Восточноазиатский миграционный путь. Количественно самым важным местом остановки мигрирующих куликов являются низовья р. Морошечная. В период пролета там обнаружены 27 видов куликов, в том числе и редкие виды, как охотский улит *Tringa guttifer* и кулик-лопатень *Eurynorhynchus pygmeus*. Общая численность куликов в устье р. Морошечная оценивается весной в более, чем 400 тыс. особей. Десять видов, в том числе чернозобик *Calidris alpina kistchinski*, кулик-сорока *Haematopus ostralegus* и дальневосточный кроншнеп *Numenius madagascariensis* гнездятся в этом районе. Тысячи особей малого веретенника *Limosa lapponica* и большого песочника *Calidris tenuirostris*, сотни особей восточного кроншнепа и десятки особей других видов куликов появляются в устье р. Морошечная в июле. Не менее 100 тыс. средних кроншнепов *Numenius phaeopus* и малых веретенников пролетают через этот регион поздним летом и осенью. В целом, по крайней мере 1 миллион куликов и десятки тысяч водоплавающих птиц останавливаются в устье р. Морошечная во время их осенней миграции. Эти водно-болотные угодия имеют, без сомнения, международное значение и поэтому необходимо включить их в список территорий с охраняемым статусом.

Introduction

The western Kamchatka lowland stretches for hundreds of kilometres along the coasts of the Sea of Okhotsk and for tens of kilometres inland from the Kamchatka Peninsula. This is an extremely marshy plain with a large number of lakes and many thousand kilometres of rivers. All the large

rivers of western Kamchatka have vast estuaries with diverse flora and fauna. The geographical position of the Kamchatka Peninsula and the availability of habitats which are suitable for waterside birds have determined the special importance of this region for waterfowl and shorebirds using the East-Asian Flyway.

The Moroshechnaya River is one of the largest on the western Kamchatka Peninsula: it is 270 km long and has a basin area of 5,450 km². The estuary of the Moroshechnaya river is more than 20 km long and more than two km wide near the river mouth (56°50' N, 156°10' E; Figure 1). During the high tides which, in this area, reach a height of seven metres, the river flows in the opposite direction for dozens of kilometres from the sea. At low tide, vast sandflats and mudflats of the estuary are exposed; these areas are important feeding sites for numerous waders, which stopover here during migration and summer movements.

The estuary is separated from the sea by a 1.5-2 km wide spit. The latter is mostly occupied by dry tundra with dense vegetation of *Rubus chamaemorus*, *Rubus arcticus*, *Vaccinium uliginosum*, *Lonicera kamtschatica*, *Empetrum sibiricum*, *Vaccinium vitis-idaea*, *Oxycoccus palustris* and *Chamaepericlymenum*

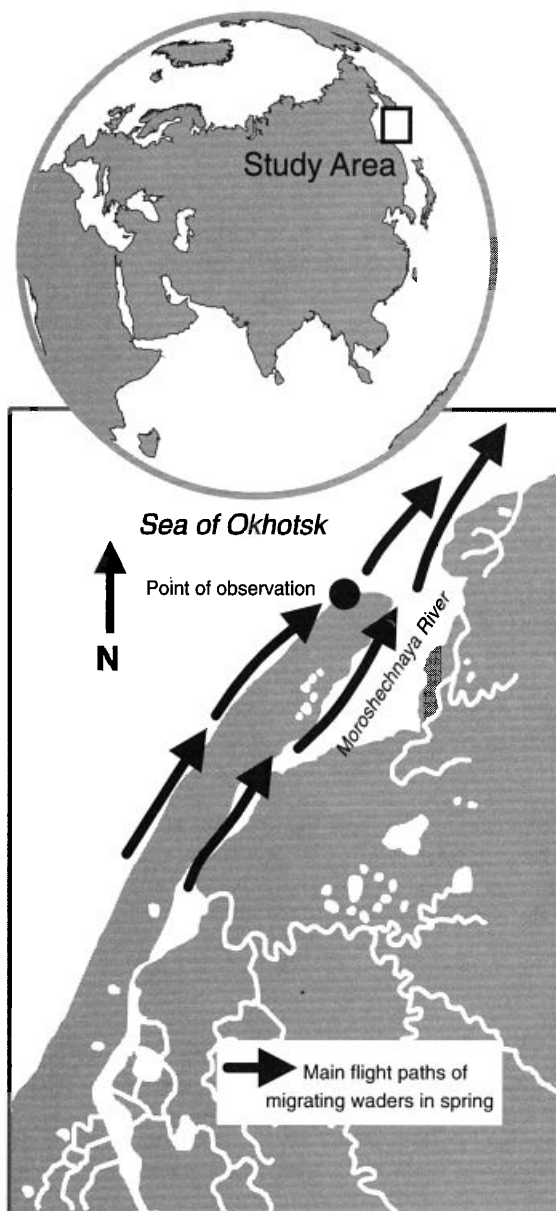


Figure 1. Study area and main flight-paths of migrating waders.

suecicum. During autumn migration this spit is also an important feeding site for various wader species. The tundra which borders the east side of the estuary abounds in numerous lakes surrounded by almost impassable mires and boggy areas.

Methods

For this paper we have used data collected in the Moroshechnaya river mouth from 1970 to 1990, during various field studies which were conducted there and lasted for more than 12 months. Incidental data on waders were collected during other bird studies, and thus no standard census methods for waders were used. Birds were counted mostly on the mudflats of the estuary during low tide, either by foot from the shore or from a motorboat. In 1990, special counts of birds migrating during the daylight (for 17-18 hours a day) over the sea and the coastline were carried out: birds were counted using binoculars or telescope within c. 3km of a constant observation point. Most migrants flew along the coastline or nearby, over the sea, and only the birds which flew over the tundra and inner parts of the estuary were not censused. On days with the most intense migration of Dunlin *Calidris alpina* and Red-necked Stint *Calidris ruficollis*, when these birds were passing through mainly at high altitudes, they were censused "overhead", looking upwards at visible migration.

Results

northwards migration

The species which migrates earliest across the Moroshechnaya river mouth is Oystercatcher *Haematopus ostralegus*, one of the rarest and most poorly studied waders on the Kamchatka Peninsula. First birds were recorded there between 3 May (1977, 1990) and 9 May (1980). During the total daylight counts in spring 1990, only 391 Oystercatchers were recorded in May. Taking into account the fact that this is an under-estimation due to the partial nocturnal migration of these birds, we believe that no more than 250 pairs of this species breed within the 500 km area of western Kamchatka north of the study area. Most Oystercatchers pass through in the first 10 - day period of May. In 1990, the highest number (195 birds) was recorded on northward migration on 8 May. Sometimes, rather late flocks of Oystercatchers were observed, for example a flock of 17 birds recorded on 1 June 1976. Other waders mostly migrate across the Moroshechnaya river estuary in the second and third ten-day periods of May. Of these, Dunlin is the most numerous. The earliest single Dunlin were recorded on 14 May in 1976, 1977 and 1980. In three to four days, separate flocks of this species could each exceed 1,000 birds. In 1975, two peaks of migration were observed: on 22 - 24 May Dunlin flew northwards in flocks of several tens and sometimes two to three hundred birds. Migration intensity then declined for four days before becoming active again from 29 May onward, when some flocks consisted of at least 1,000 Dunlin. In

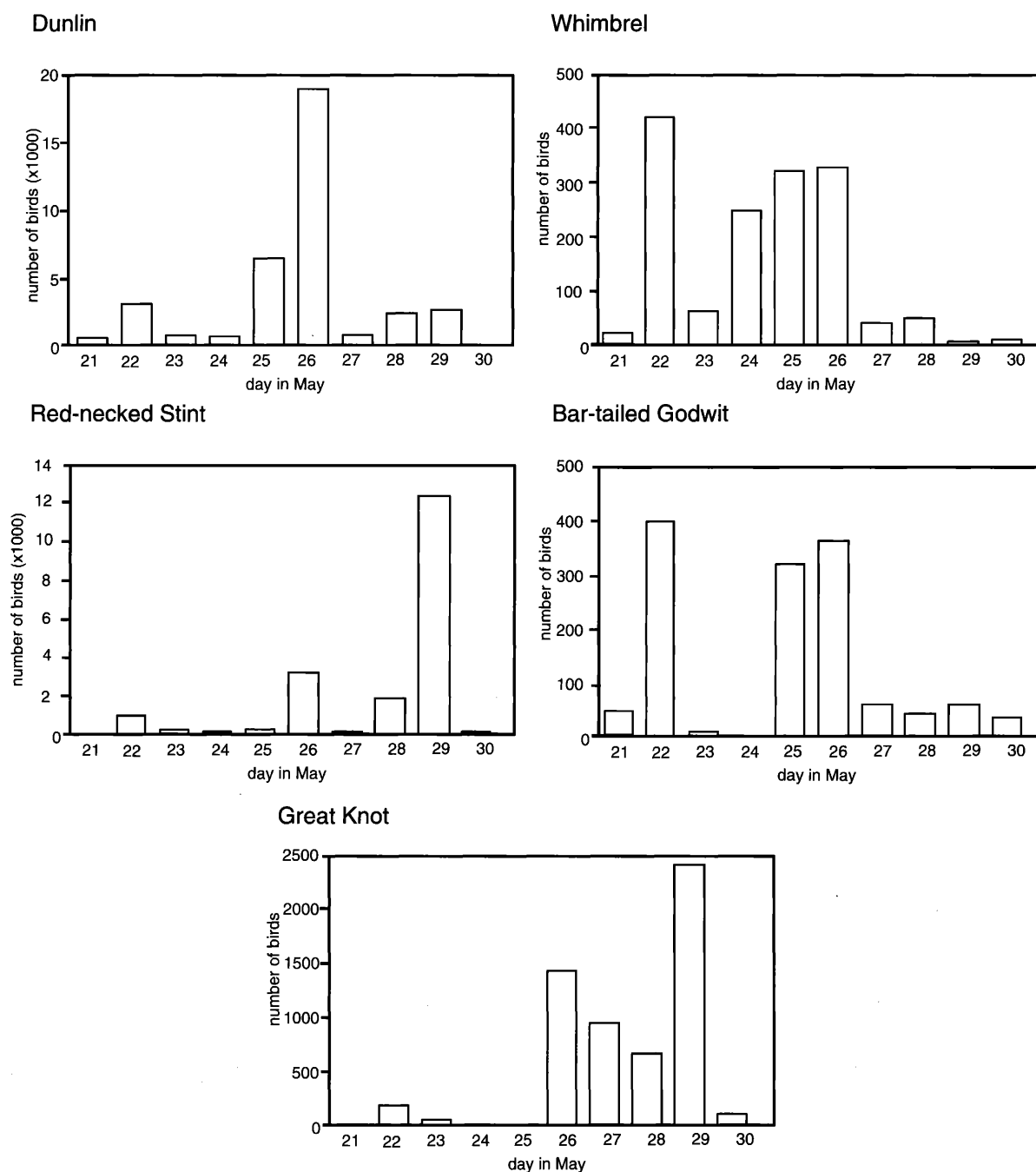


Figure 2. The numbers of five wader species observed from the stationary point near the Moroshechnaya river mouth between 20 - 31 May 1990.

1989 and 1990 the pattern of migration was different and the numbers of Dunlin foraging at the lower end of the estuary were smaller. Nevertheless, more than 36,000 Dunlin were recorded from the constant observation point on the seashore between 21 - 29 May 1990 (Figure 2; Gerasimov 1991). It is likely that the total number of Dunlin migrating in spring across the Moroshechnaya river mouth exceeds 100,000 birds.

Red-necked Stint *Calidris ruficollis* is the second most numerous migrating wader. It appears on the estuary between 18 May (1976) and 22 May (1977). The most active migration usually takes place during two or three days each spring; large numbers of Red-necked Stint pass through within a two to

three hour period each day, usually during high tide. Thus, on 29 May 1990, more than 12,000 migrating birds were counted during three morning hours at a point on the seashore one km from the river mouth. Intense migration of Red-necked Stint finishes in late May. Although in early June the numbers on the mudflats of that estuary are still large, no more than 200 to 300 birds a day were counted arriving each day. We estimate that the total number of Red-necked Stint passing over the Moroshechnaya river estuary is close to 100,000 birds according to our rough estimates.

Great Knot *Calidris tenuirostris* is the third most numerous migrating wader. In the southern part of the Western Kamchatka coast, the areas of spring

concentrations and migration routes of birds which appear on the Kamchatka Peninsula are not yet known for this species. The earliest Great Knot arrive on the estuary between 15 May (1977, 1980) and 18 May (1983). In 1980, when there was a late spring, they arrived at a time when most of the estuary and all the tundra was still covered with ice and snow. In 1975 - 1976, we estimated that at least 20,000 Great Knot cross the Moroshechnaya river estuary in spring (Gerasimov 1980). Further studies in 1977, 1980 and 1990 revealed that even larger numbers (35,000 - 40,000) pass through. One flock, which was observed on 26 May 1980 at 5.30 a.m. on the small cape in the lower part of the estuary, consisted of 12,000 to 15,000 birds. This cape was used every year by Great Knot as a roost site during high tide. At low tide they moved to the intertidal areas where they concentrated into dense flocks of several hundreds to 1,500 - 2,000 birds. Thus, the Moroshechnaya river estuary is the only known area in Russia where Great Knot concentrations as large as this are known to occur during the migration period.

The next group of rather numerous waders migrating across the Moroshechnaya river estuary includes Bar-tailed Godwit *Limosa lapponica*, Whimbrel *Numenius phaeopus* and Knot *Calidris canutus*. Their numbers are approximately ten times lower than in the three former species.

Bar-tailed Godwit appears at the Moroshechnaya river mouth between 10 May (1977) and 16 May (1976). Peak migration is observed from the end of 8-15 May and the latest bird was recorded on 2 June 1976. We believe that the total number of Bar-tailed Godwit crossing the Moroshechnaya river estuary in spring is at least 4,000-5,000 birds.

Spring arrival dates of Whimbrel at the Moroshechnaya river mouth range from 17 to 25 May. Migration occurs over a large coastal area of the western Kamchatka Peninsula, and only a small proportion of all migrating birds occur at the Moroshechnaya estuary. During intense migration at the Moroshechnaya river mouth, it was possible to record up to 20-30 passage flocks of Whimbrel, each flock consisting of five to 150 birds. The total number of Whimbrel, recorded there by a single observer during a spring reached several thousand birds (Figure 2).

Knot migrates at the same time as, and often in mixed flocks with, Great Knot (Gerasimov 1980). The maximum estimate of the total number of Knot recorded during a spring at the Moroshechnaya river estuary was 2,500 - 3,000 birds.

Waders whose total number on spring migration at the Moroshechnaya river mouth range from several hundreds to 1,000 birds form a rather large group of species, including Pacific Golden Plover *Pluvialis fulva*, Grey Plover *Pluvialis squatarola*, Turnstone *Arenaria interpres*, Mongolian Plover *Charadrius*

mongolus, Black-tailed Godwit *Limosa limosa* and some other species of shanks etc.

The earliest Pacific Golden Plover were recorded on spring migration at the Moroshechnaya river mouth between 21 May (1990) and 25 May (1977). A little more than 150 Pacific Golden Plover were counted on the seashore between 20 - 31 May 1990 (Gerasimov 1991).

The first flock of Grey Plover was recorded on the peninsula on 17 May 1990 and about 100 birds in total were counted that year between 20 - 31 May. Thus, the total number of Grey Plovers migrating in spring across the Moroshechnaya river estuary probably does not exceed several hundred birds.

The earliest arrival of Mongolian Plover was recorded on 10 May 1976, although usually they appeared at the study area no earlier than 20 - 31 May. In total, about 400 Mongolian Plover were counted in 1990 on the seashore near the estuary (Gerasimov 1991).

Like the three latter species, Turnstone is not numerous on spring migration. The earliest birds were recorded between 14 May (1976) and 22 May (1977). We believe that at least several hundred Turnstone cross this area in spring.

Black-tailed Godwit arrives at the Moroshechnaya river between 13 May (1980) and 18 May (1977). From their arrival until the end of May we usually counted several tens of these birds every day; numbers of more than 100 Black-tailed Godwit a day were observed very rarely.

The earliest Far Eastern Curlew *Numenius madagascariensis* were found on the Moroshechnaya estuary from 10 May (1977, 1989) to 13 May (1974). Most Eastern Curlew, several hundred birds in total, migrated northwards across this area from 15 May until 25 May.

Among Tringinae sandpipers migrating across the Moroshechnaya estuary, Wood Sandpiper *Tringa glareola* is the most common. It appears at the study area between 10 May (1976) and 18 May (1977). As all the Wood Sandpiper were passing this area at rather high altitudes and were sometimes recorded only by voice, we believe that the Moroshechnaya river estuary is not attractive for this inland species. The largest flock of Wood Sandpipers, 44 birds, was observed on 28 May 1976. The latest birds migrating northwards were recorded on 2 June 1976. In 1980 migration took place from 13 - 29 May, although even in the days of intense migration on 23 - 24 May, only 10 - 15 birds were counted.

Terek Sandpiper *Xenus cinereus* is a late migrant, passing through in small numbers. Often it is recorded in flocks, consisting of a few to 30-40 birds. Between 20 - 31 May 1990, about 200 Terek Sandpiper were counted at the Moroshechnaya river

mouth, most passing through between 27 - 29 May (Gerasimov 1991).

Greenshank *Tringa nebularia* migrate across the lower Moroshechnaya river from 13 May (1980) to 18 May (1975, 1976). Like Wood Sandpiper, they fly at high altitudes. The largest numbers per day (120 birds) were counted over the river mouth on 25 May 1980.

Spoon-billed Sandpiper *Eurynorhynchus pygmeus*, one of the rarest waders of North-Eastern Asia, is fairly common at the Moroshechnaya river mouth. Large numbers of this species were recorded for the first time on 7 June 1983, when half of a mixed flock of 200 waders were Spoon-billed Sandpipers. In 1990, the earliest Spoon-billed Sandpipers were observed on 29 May during the intense migration of Red-necked Stint. Three groups of Spoon-billed Sandpiper, consisting of 6, 18 and 40 birds, were observed that evening foraging near the river mouth. These and additional data indicate that the Moroshechnaya river estuary is crossed in spring by hundreds of Spoon-billed Sandpiper.

The earliest spring record of Red-necked Phalarope *Phalaropus lobatus* was on 14 May 1975, although this species usually migrated in the third 10-day period of this month. No more than several tens of these birds were ever observed during a whole spring.

The earliest arrival of Common Snipe *Gallinago gallinago* was recorded on 13 May 1990. This species was not observed migrating through the study area but displaying males were rather common there around 25 May.

Only a few Common Sandpiper *Actitis hypoleucos*, Spotted Redshank *Tringa erythropus*, Grey-tailed Tattler *Heteroscelos brevipes* and Long-toed Stints *Calidris subminuta* were recorded during a spring. Curlew Sandpiper *Calidris ferruginea* was observed in the study area only once on 24 May 1975: two birds were recorded in a flock of Dunlins. A single Sanderling *Calidris alba* was shot there on 1 June 1990. A single Nordmann's Greenshank *Tringa guttifer* was recorded on 22 May 1976, the first record for this area. In 1980, displaying males of this species were recorded there from 24 - 29 May (Gerasimov 1985).

Breeding waders

In summer, ten wader species were recorded breeding in the area of Moroshechnaya river. Dunlin were the most numerous; by analysing specimens collected in this area, Tomkovich (1986) described a new subspecies *Calidris alpina kistchinski*. Red-necked Phalaropes, Common Snipe, Eastern Curlews, Black-tailed Godwits and Long-toed Stints breed there in small numbers (Gerasimov & Vyatkin 1973). Wood Sandpiper, Greenshank and Common Sandpiper are also found breeding on the river

banks. Two to three pairs of Oystercatcher breed annually on the shores of the estuary.

Southwards migration

In June and July, the Moroshechnaya river estuary also supports non-breeding waders and birds which have already started their post-breeding movements. Thus, thousands of Black-tailed Godwit, Great Knot, hundreds of Red-necked Stint, and dozens of other waders concentrate at the estuary in July. A flock of 170 Eastern Curlew was recorded there on 9 July 1984.

Rather intense southward movements of waders can be observed at the Moroshechnaya river mouth from July onwards. For example, the departure of Black-tailed Godwit started in 1984 from 9 July onwards at which time at least 7,000 birds were present. Autumn migration of this species finished in September when flocks of hundreds of birds were still observed on the estuary shores.

Large numbers of Bar-tailed Godwits are recorded at the Moroshechnaya river mouth at the end of August and in early September. Thousands of these birds are found in mixed flocks with Whimbrels in tundra habitats. Although the numbers of Black-tailed and Bar-tailed Godwit in autumn have not yet been estimated exactly on the lower part of the river, it is obvious that they are considerably more numerous than in spring.

The earliest migrating groups of Whimbrel appear at the Moroshechnaya river in mid-July. There, they forage and fatten up until the end of August on the spit separating the estuary from the sea. Flocks of up to 500 birds were recorded there on 1 August 1989 and in the following days the number of Whimbrel continued to increase, reaching a peak on 13 August, when one of the flocks which took flight included about 3,000 birds. Special counts carried out in that period revealed that Whimbrels were distributed evenly over the whole 20 km long spit: on average, 100-130 Whimbrels were recorded on every kilometre of the 300m wide transect. While some of these birds were departing southwards, others were arriving from the north. Thus, the Moroshechnaya estuary is visited in September by tens of thousands of Whimbrel. Migration of both Whimbrel and Bar-tailed Godwit, which often fly and feed in mixed flocks, finishes in general between 1 - 10 September.

Dunlin and Red-necked Stint are as numerous as they are on spring migration and were recorded until October. In the first half of August only small flocks are observed on the estuary but, in the second half of this month, mixed flocks of these two species can include several thousand birds. Flocks of Great Knot remained at the estuary during the whole summer in the 1970s and in August they were among the most abundant waders on the Moroshechnaya river estuary.

Oystercatchers begin to concentrate on this area in August, when flocks of several tens can be recorded. For example, five flocks of Oystercatchers, each of at least 40 to 50 birds, were counted on the six km coastline of the estuary on 28 August 1983; 60 birds were recorded foraging in two flocks on 12 September 1980; 15 - 16 Oystercatchers were recorded on 29 September 1986.

Tringinae species were rather rare on autumn migration. The most common was Greenshank, although we did not record flocks of more than 15 birds.

Conclusions

According to our data, the total number of waders migrating in spring across the Moroshechnaya river mouth is at least 400,000 birds and in autumn this area must be crossed by at least one million waders.

In 1974 the ornithological sanctuary "The Moroshechnaya River" was established in the river mouth and surrounding wetlands on a total area of 1,500 km². Primarily, it was planned as a reserve for the protection of the local breeding population of Bean Geese *Anser fabalis*. Only later did it turn out that this area is important for many other Anseriform and Charadriiform birds as well. Our data demonstrate that the lower reaches of the Moroshechnaya river should be considered as an area of great importance for the protection of migrating waders. It qualifies on all criteria as an internationally important wetland and as such, should be given official status.

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