

Variation in numbers of migrating waders on Bol'shoi Ainov Island, Western Murman during 1963-1991

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For the past three decades, sixteen wader species which occur regularly on the Ainovy Islands during migration have been monitored. This paper presents the quantitative characteristics of migration for the five most numerous species. Every three to five days during spring and autumn migration, feeding and resting birds were counted along the shore of Bol'shoi Ainov Island on a route approximately 7 km long. The average number of birds recorded for one count was taken as an index of the abundance of birds. The mean numbers of each species in each year are tabulated. There has been no marked change in the number of Red-necked Phalaropes *Phalaropus lobatus*, although this species shows the greatest year-to-year variability in migration intensity. Numbers of Little Stint *Calidris minuta* and Dunlin *Calidris alpina* have increased. The largest numbers of Ruff *Philomachus pugnax* and Purple Sandpiper *Calidris maritima* occurred between 1963-1970, but in the last two decades their numbers have decreased.

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Татаринкова, И. П. 1998. Изменения численности пролетающих куликов на острове Большой Аинов (Западный Мурман) в 1963 - 1991 годах. *International Wader Studies* 10: 176-179.

В течение последних трех десятилетий проводились учеты численности 16 видов куликов, регулярно встречающихся на Аиновых островах во время сезонных миграций. В настоящей статье представлена количественная оценка миграции пяти самых многочисленных видов. Во время весенних и осенних миграций каждые три-пять дней были проведены учеты кормящихся и отдыхающих куликов вдоль побережья о-ва Большой Аинов на маршруте протяженностью около семи километров. Среднее число особей, зарегистрированных в каждом учете служило показателем обилия птиц. В таблице приведены средние значения численности каждого вида каждый год. Существенных изменений в численности круглоногого плавунчика *Phalaropus lobatus* отмечено не было, несмотря на то, что этот вид показывает наибольшую годовую изменчивость в интенсивности миграции. Численности кулика-воробья *Calidris minuta* и чернозобика *Calidris alpina* возросли. Максимальные численности турухтана *Philomachus pugnax* и морского песочника *Calidris maritima* были отмечены в период с 1963 по 1970 гг., за последние же два десятилетия наблюдался спад численности этих двух видов.

Introduction

Studies of the nature and scale of annual population fluctuations are essential in environmental monitoring. Long-term standardised observations are therefore extremely valuable. As part of such a monitoring programme, regular counts of migrating waders were conducted during three decades on the Ainovy Islands of Kandalaksha State Nature Reserve, near the Kola peninsula.

The Ainovy Islands are situated in the south-western part of the Barents Sea in Varanger-Fiord Bay, 10 km from the mainland. Migrating birds reach these islands either by crossing the bay or by following the coast.

The quantitative characteristics and migration phenology for all the wader species in Varanger-Fiord Bay have been discussed before (Tatarinkova 1982). Patterns of migration vary annually. Many species pass through in small numbers at irregular intervals and there are no regular patterns in the annual variation of their numbers. Several species, however, migrate across the islands every year in large enough numbers to monitor their populations. Of a total of 27 wader species recorded on the Ainovy Islands there are five such species: Red-necked Phalarope *Phalaropus lobatus*, Ruff *Philomachus pugnax*, Little Stint *Calidris minuta*, Dunlin *C. alpina* and Purple Sandpiper *C. maritima*.

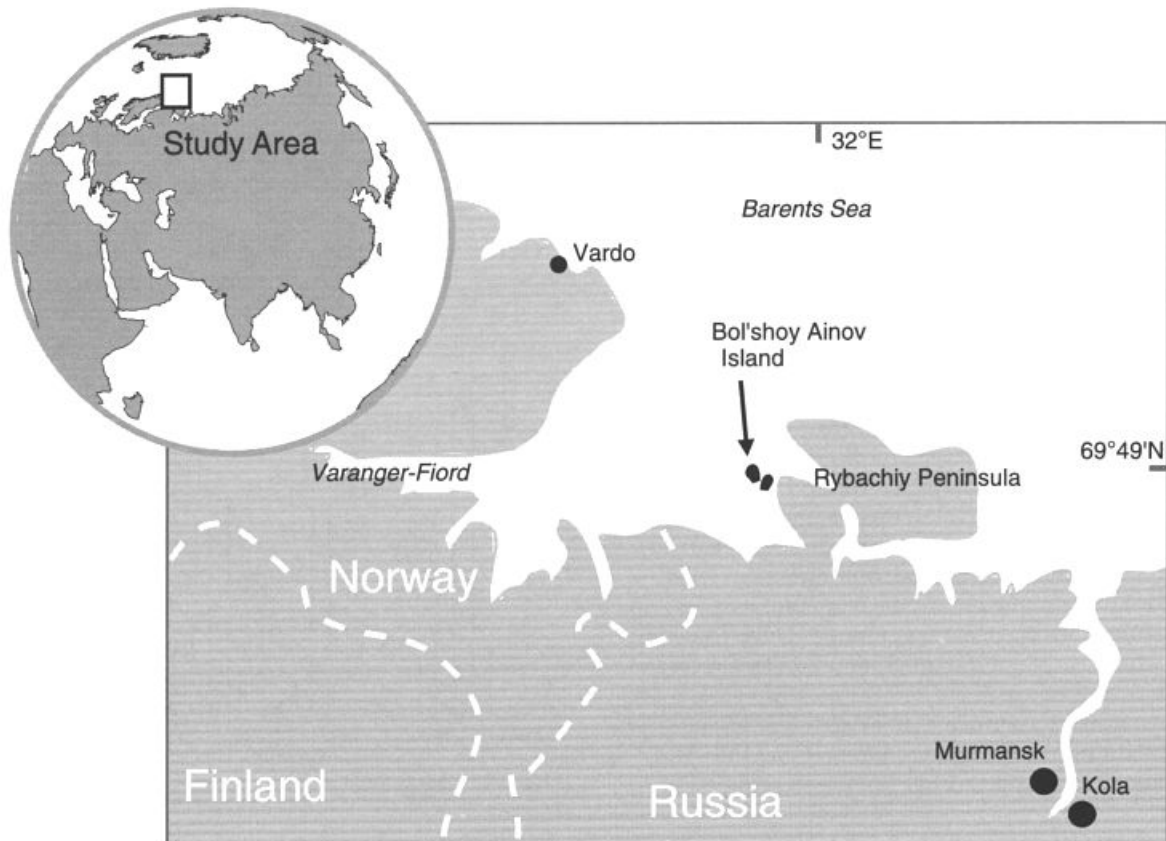


Figure 1. Location of the Ainovy Islands.

Long-term changes in their numbers are analysed in this paper.

Materials and Methods

Data were collected on Bol'shoy Ainov Island (the largest of the two islands) in spring, summer and autumn 1963-1991. Wader counts were carried out regularly at three to five day intervals on a 7 km stretch of coastline. In several bays, seaweed washed ashore by storms attracts waders by supplying them with food such as nematode worms and the larvae of littoral flies which inhabit it. Recoveries of ringed and marked individuals showed that migrating waders stopover to roost and

feed for 1-15 days, with an average of 10 days (own unpublished data). Thus, average numbers for ten-day periods were used to describe seasonal population changes: the total number of birds recorded in every ten-day period was divided by the number of censuses (Figures 2 and 7). The total annual number of migrating birds was estimated as the sum of the 10-day period estimates for the whole migration period. The average number of birds per census (total number/number of censuses in a season) was used in analysis of long-term population changes (Figures 3 - 6, 8).

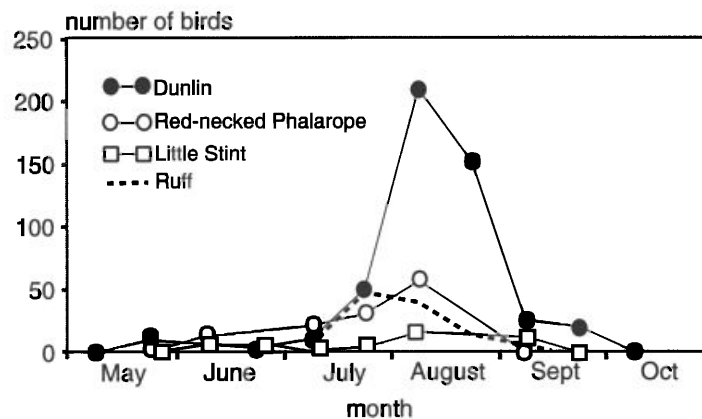


Figure 2. Seasonal occurrence of Red-necked Phalarope, Ruff, Little Stint and Dunlin on Bol'shoy Ainov Island.

Table 1. Average number of migrating waders per census, its variation and changes for subsequent decades at the Bol'shoy Ainov Island.

Species	1963-1991	1963-1991	1963-1970	1971-1980	1981-1991
	mean±SE	CV±SE	mean±SE	mean±SE	mean±SE
Red necked Phalarope <i>Phalaropus lobatus</i>	22±4	103±14	23±10	23±7	20±7
Ruff <i>Philomachus pugnax</i>	32±5	79±10	44±11	29±9	27±4
Little Stint <i>Calidris minuta</i>	15±2	63±10	10±1	14±4	18±2
Dunlin <i>Calidris alpina</i>	56±8	66±9	41±10	59±16	64±6
Purple Sandpiper <i>Calidris maritima</i>	114±7	34±4	156±15	98±5	96±9

Results

Red-necked Phalarope *Phalaropus lobatus*

The number of migrating birds is highly variable from year to year, from 50-60 up to 1,000-1,200 birds per season. Spring migration of adult birds is the least pronounced: on average only about 30 (5-70 in different years) adult Phalaropes were recorded. At the beginning of July, the first adult females return from the breeding grounds. During one to two weeks of autumn migration 1-250 are recorded, with an average of about 70 birds. Adult males and juveniles appear in late July-August. Their numbers are the most variable: none were found in 1964, 1970 and 1972, but up to 1,100 birds were recorded in 1973.

Seasonal and long-term changes in numbers of Red-necked Phalarope are shown in Figures 2 and 3 respectively.

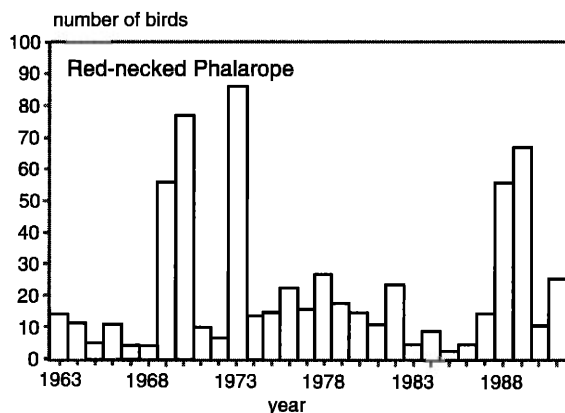


Figure 3. Mean annual numbers of Red-necked Phalarope on Bol'shoy Ainov Island.

Ruff *Philomachus pugnax*

Spring migrants do not occur on the Ainovy Islands and only local breeders appear here. Early summer-autumn migration starts between late June and the beginning of July with the appearance of adult males, still displaying, followed by adult females and then juveniles. Only small numbers of adults pass through. The majority of migrating birds are juveniles. On average, about 250 Ruffs are recorded on the island during autumn, but in different years their numbers range from single birds up to 1,000 individuals (e.g. 1966 and 1977). Seasonal and long-term population changes in Ruff are shown in Figures 2 and 4 respectively.

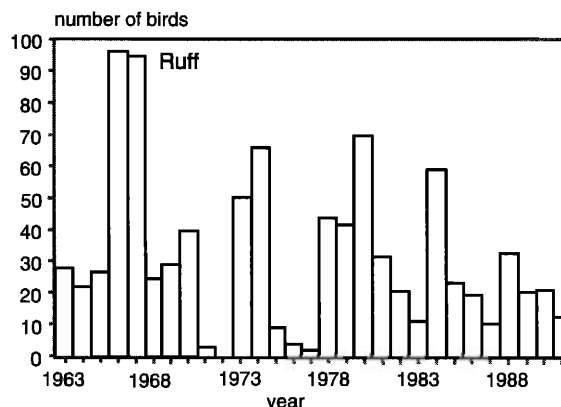


Figure 4. Mean annual numbers of Ruff on Bol'shoy Ainov Island.

Little Stint *Calidris minuta*

This species occurs regularly during spring and autumn migration, although in autumn its numbers are usually larger than in spring. On average, about 130 birds are recorded on the island each season, but numbers also fluctuate annually. Thus, in spring 1971 only 11 Little Stints were recorded and autumn migration was not observed at all, whereas about 550 migrating birds were censused in 1974. The seasonal and annual variation in numbers is shown in Figures 2 and 5 respectively.

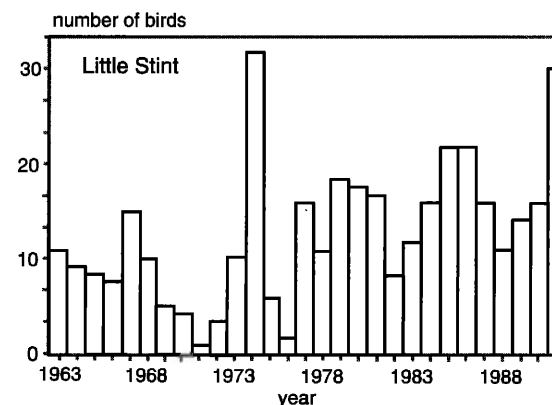


Figure 5. Mean annual numbers of Little Stint on Bol'shoy Ainov Island.

Dunlin *Calidris alpina*

This wader is usually one of the most numerous migrating species. An average of about 1,000 Dunlins are recorded on the island during a season, numbers ranging from 15-20 individuals (e.g. 1969) to 3,500 individuals (e.g. 1974).

Of the annual total recorded, 5% are recorded in spring and 95% in autumn. During autumn migration the vast majority are juveniles. The autumn migration usually lasts till the second half of July, but in some years (e.g. 1963, 1966, 1978, 1982, 1991) it occurs during the whole of September as well. The seasonal and annual variation in numbers is shown in Figures 2 and 6 respectively.

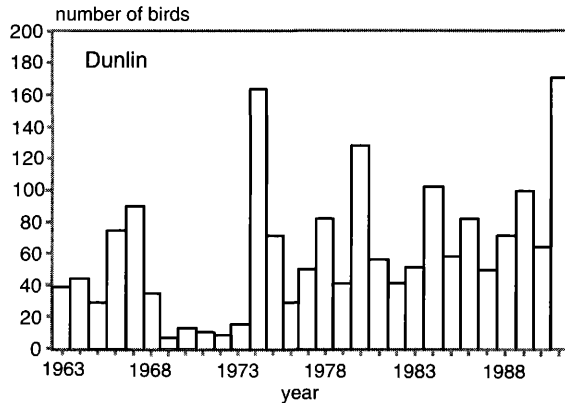


Figure 6. Mean annual numbers of Dunlin on Bol'shoy Ainov Island.

Purple Sandpiper *Calidris maritima*

The most abundant wader species, it is found on the island all year round. However, it cannot be described as a sedentary species, because seasonal turnover of individuals, age-groups and probably different populations, occur.

During the winter, most birds recorded are juveniles. The composition of wintering flocks remains constant up to the middle of May before spring migration and gradual departure of wintering birds occurs. Only single Purple Sandpipers are observed during June and July.

Between the end of July and the beginning of August, the first wave of migrating adults passes through. In late September and early October, the second migration peak takes place; wintering birds start appearing from late October onwards. Between 100 and 200 Purple Sandpipers overwinter on the island's coast, while on spring and autumn migration, an average of about 2,800 birds are recorded. A maximum of 6,200 individuals was recorded in 1967 and a minimum of about 500 individuals in 1985. Seasonal and annual population changes are shown in Figures 7 and 8 respectively. Unlike the majority of waders on the Ainovy Islands, higher numbers of Purple Sandpipers occur in spring than in autumn.

Average wader numbers on migration in 1963-1991, annual variations and long-term trends are shown in Table 1.

Discussion

The numbers on migration of all the species studied are highly variable. The greatest annual variation in numbers is found in Red-necked Phalarope and Ruff, the least in Purple Sandpiper. There is no clear

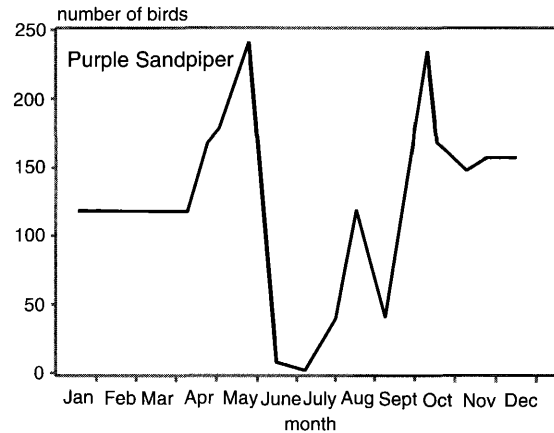


Figure 7. Seasonal occurrence of Purple Sandpiper on Bol'shoy Ainov Island.

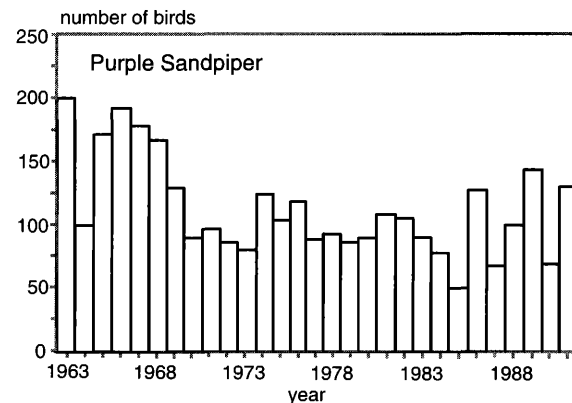


Figure 8. Mean annual numbers of Purple Sandpiper on Bol'shoy Ainov Island.

pattern or link with the between-year variability in numbers (coefficient of variation) and the trend in numbers between years. In the last three decades, numbers of Red-necked Phalarope have remained stable, whereas Ruff and Purple Sandpiper have declined. The number of breeding Ruff on the island has also declined. Active leks, formed by large numbers of males (up to 50), were observed for the last time in 1979. In the following years, no more than ten birds were recorded on the island in spring and only five to six females were recorded breeding. In addition, spring migration is later: the average arrival date between 1963 and 1980 was 21 May, whereas between 1981 and 1991 it was 27 May. Unlike Ruff and Purple Sandpiper, numbers of Little Stint and Dunlin have increased.

Comparison of the figures for a single season with the average for many years, gives an idea of the relative size of the migrating population. To discover the reasons for long-term population changes of migrating waders, one also needs to know the climatic and ecological conditions on their breeding grounds. Unfortunately, in spite of the large number of ringed waders, no records from the breeding grounds have yet been received.

Reference

- Tatarinkova, I.P. 1982. On the migration of waders in the Varanger-Fiord. In: *Ecology and morphology of birds in the extreme north-west of the USSR*, pp. 98-108. Moscow. In Russian.