Breeding-range and population changes of waders in the former Soviet Union

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The ever-increasing impact on the environment of human activities has long since been comparable to the great geological upheavals of the past. It is therefore not surprising that there are quite frequent changes in birds' distributions and population levels. Waders are one group of birds for which one might expect the most significant modern population changes, since typical wader habitats (wetlands) have undergone the most marked transformation over the last half-century. Large-scale measures leading to the destruction of natural wetlands within the area of the former USSR* include the ploughing of water meadows and steppes and their subsequent use for arable cultivation, draining bogs, and the disappearance of the formerly large number of millponds in association with the destruction of watermills. On the other hand, certain artificial waterbodies and wetlands have created favourable habitat for waders: these include canals and water-collection tanks where irrigation is used in agriculture in the south of the Soviet Union, and also fishponds, rice-fields (paddyfields), water-settlement tanks, and certain barrages used for the generation of hydroelectricity.

Unfortunately, the population and range changes of many birds, in particular waders, are usually not studied with the desired degree of thoroughness. There are two main reasons for this. First, the low and extremely uneven 'density' of ornithologists in the Soviet Union. The number of Soviet ornithologists has increased in recent decades and there are now about 1,000 (Ilyichev & Flint 1982), though, bearing in mind the

*Notwithstanding recent political changes which have led to the break-up of the Soviet Union or USSR, these terms are retained here for convenience and are used throughout this paper to signify the territory occupied by the former union of 15 now-independent republics.
huge size of the country (22,400,000 km²), this means, at a rough estimate, over 22,000 km² per ornithologist. Nor should it be forgotten that amateur ornithologists, who give such invaluable help to professionals in the West, are very few in the USSR. The second main reason is to some extent related to the first: this is the fact that population-monitoring and census studies are poorly developed in the Soviet Union, so that it is almost impossible to make strict quantitative comparison between different time periods.

The result of the above is that any analysis of wader population changes usually has to be based on only very approximate estimates of numbers, which will reveal only the really big changes; in the majority of cases, relevant data on numbers are simply not available. This paper is based, therefore, mainly on data from faunistic studies. As such studies have been carried out by different ornithologists at different times, with varying degrees of thoroughness and often in adjacent rather than exactly the same area, it is not always possible to distinguish with certainty between changes in our knowledge and real changes in the distribution and population of particular species.

There are two Soviet handbooks which provide a detailed account of wader distribution in the country: Dementiev & Gladkov (1951) and Kozlova (1961, 1962), the work by Kozlova adopting a more critical approach in its review of the available data. Attempts in recent decades more accurately to define wader distributions and to identify any changes taking place have invariably taken these books as their baseline, and it seems sensible, therefore, to make comparisons in the present paper with the information presented in these same handbooks.

In many cases, present knowledge suggests that wader breeding ranges differ significantly from the picture presented by Dementiev & Gladkov (1951) and Kozlova (1961, 1962). This is primarily the result of more precise information being obtained during studies in previously unexplored areas. As examples, one may cite the especially important contribution from studies on the Yamal peninsula (Danilov et al. 1984), Chukotka (Portenko 1972; Kondratiev 1982), the Koryak Highlands (Kistchinski 1980), and Kamchatka (Lobkov 1986). In the many cases where breeding ranges have been redefined, it cannot be stated with complete certainty that actual changes have taken place, as distribution maps may previously have been based on only very inadequate information. Thus, for example, the Little Whimbrel Numenius minutus was formerly considered a rare species with a restricted and fragmented range (Dementiev & Gladkov 1951; Kozlova 1962), this being the basis for its inclusion in the Red Data Book of the USSR (Borodin 1984). More recent information (Labutin et al. 1982; Volkov 1986; Artyukhov 1988) indicates a much more extensive breeding range, while counts have shown that at least 250,000 Little Whimbrels spend the winter in Australia (Lane 1987). Nevertheless, it is not clear whether this change of status is the result of a real increase in the population of the species.

For many wader species, there are indications of regional population declines or increases, expansion or contraction of the breeding range. The
trends are not, however, always long-term or well documented. Consequently, only some of the clearest and most interesting cases are considered below. Not included here are the Slender-billed Curlew *Numenius tenuirostris*, about which it would be difficult to add anything significant to what is already widely known; the Sociable Plover *Chettusia gregaria*, whose breeding range has perhaps changed slightly in recent decades, and whose population has apparently continued to decline gradually (Borodin 1984); and the Terek Sandpiper *Xenus cinereus*, whose recent range changes in Europe were summarised by Uhlig (1990).

**Black-winged Stilt *Himantopus himantopus***

In the southern Ukraine, in the view of G. N. Molodan (in Voinstvenskiy 1988), the sharp increase in numbers of Black-winged Stilt and its colonisation of new areas evidently took place in the late 1970s. A little farther north, in Dnepropetrovsk region, this process began in the 1960s and still continues (Gubkin 1988; Gudina 1988). There has, on the other hand, been no more recent confirmation of breeding at the other isolated sites mentioned by Kozlova (1961) (see fig. 1).

A population increase was recorded in the lower Don valley from the mid 1970s, and several thousand pairs now breed there. Ornithologists working in the area (Belik 1988; Minoranskiy & Dobrinov 1990) consider that the development of irrigation and, especially, rice cultivation, have significantly extended the area of suitable nesting habitat, stimulating an increase in numbers and expansion of the breeding range. Published reports (papers from the 4th Wader Symposium) indicate a marked increase in Black-winged Stilt numbers on the eastern seaboard of the Sea of Azov and in the central part of the area north of the Caucasus. According to counts in northern Dagestan (western seaboard of the Caspian), there was a noticeable increase in numbers of Black-winged Stilts from 1984, and the population had reached 200-240 individuals by the end of the 1980s (Spasskaya 1989).

Kozlova (1961) included in the range the south of Orenburg region near the borders with Kazakhstan (at the southern end of the Urals), though breeding in the extreme southeast of the region was actually confirmed only at the beginning of the 1980s (Samigullin 1987).

Unfortunately, there are no data for the greater part of northern Kazakhstan. According to V. V. Sinitsyn, Black-winged Stilts first nested in the extreme north of central Kazakhstan, in Petropavlovsk region, at the end of the 1980s (V. V. Khrokov in litt.). Farther east, they evidently nest throughout the lowland part of the republic. In 1989, for example, nests, chicks and alarmed adults were recorded in many places in the central part of Pavlodar.

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139. Black-winged Stilts *Himantopus himantopus*, Soviet Union (T. Shiube)
region near the Irtysh river (V. V. Khrokov & A. F. Kovshar', MS), where the species was formerly unknown (Dolgushin 1962). Colonisation of this area undoubtedly took place earlier, however, as the species was already established outside Kazakhstan, on lowland lakes of the Altai region, in 1984 (Kuchin & Chekcheev 1987). In the hot, dry summer of 1990, Black-winged Stilts first appeared north of the Altai region, at Lake Malye Chany in Novosibirsk region, where a colony was established (A. K. Yurlov in litt.).

In recent decades, Black-winged Stilt numbers have probably increased appreciably in the republics of Soviet Central Asia. The bird has, for example, colonised many man-made waters, and some lakes and reservoirs now hold large colonies (Kashkarov & Ostapenko 1990). In the early 1970s, the species colonised the montane lakes of Issyk-Kul' and Son-Kul' in Kirgizya (Kydyraliev 1982).

Significant distribution changes have evidently also taken place on the eastern edge of the Black-winged Stilt's range. In Transbaykalia, the first nest was found in the south of Chita region (near the border with Mongolia and China) in 1976 (Zubakin 1979), and breeding has since become more or less regular there, with one report of considerable numbers being present (Ospova & Golovushkin 1986). The first recorded nesting in the Soviet Far East was equally unexpected: following unconfirmed reports of breeding at Lake Khanka (South Ussuriland) in 1972, nests were then discovered in 1974-76, the appearance of Black-winged Stilts in the area being associated with the development of rice cultivation (Glushchenko 1979; Polivanova & Glushchenko 1979). There have been vagrant records of stilts on Sakhalin island from the 1970s, and, in 1987, two were even collected on the northern Sea of Okhotsk coast, near Magadan. The population increase and range expansion are thus taking place almost simultaneously in Europe and Asia.

Collared Pratincole *Glareola pratincola*

The Collared Pratincole was formerly rare in the extreme southwest of the Ukraine and in the Crimea, but there were already hundreds of pairs nesting at the mouth of the Dnepr in the 1940s. Colonisation of the northern Sea of Azov coast took place from the east in the late 1950s; Collared Pratincoles replaced the Black-winged Pratincole *G. nordmanni*, perhaps even assimilating it through hybridisation. In the area between the Danube and Dnestr, Collared
Pratincole numbers fell sharply in the 1970s and early 1980s. Breeding success is extremely low owing to nests being trampled by cattle and preyed upon by Carrion Crows *Corvus corone* (of the race *cornix*). A census in 1984 showed the southern Ukrainian population to number slightly above 600 breeding pairs, with the majority in the east of the region (Molodan & Kabakov 1986; Voinstvenskiy 1988).

In the area north of the Caucasus, the Collared Pratincole was long known only from near the Caspian Sea. In the west of this region, the first nest was found in 1953 in the Kuban’ delta. By the second half of the 1960s, Collared Pratincoles were already quite widely distributed in the area north of the Caucasus, though all the colonies were small. There were reports of nests being trampled by cattle and destroyed by farm vehicles (Kazakov et al. 1983).

Farther east in the breeding range of the Collared Pratincole, there has been only some redefining of the distribution limits (fig. 2), and the only report of the species expanding its range in the 1970s refers to the Chu valley in Kirgiziya (Fedyanina et al. 1981).

**Black-winged Pratincole** *Glareola nordmanni*

The general outline of the Black-winged Pratincole’s breeding range has changed only slightly over the last half-century or even a longer timespan. In contrast, there have been considerable population changes in some regions of the European part of the USSR. According to a survey by G. N. Molodan (in Voinstvenskiy 1988), at the end of the last century in the Ukrainian steppes, the Black-winged Pratincole was described as a numerous breeding bird, with roving flocks numbering several thousand individuals. Then, at the beginning of the twentieth century, on the northern coast of the Sea of Azov, a marked decline was noted as a result of the rapid reduction in areas of virgin steppe. The Black-winged Pratincole has now almost vanished from the extreme southwest Ukraine, and is rare and still declining on the northern Azov coast. Reasons for the poor breeding success are the same as those described for Collared Pratincole (Voinstvenskiy 1988). A census in 1984 showed only 31 pairs of Black-winged Pratincoles breeding in the northern Black Sea/Sea of Azov coastal belt lying within the Ukraine (Chernichko et al. 1990).

A similar trend was observed farther north, on the Dnepr river in Dnepropetrovsk region.
Waders in the Soviet Union

(Gubkin 1973). Elsewhere in the Ukraine and in steppelands on the right (east) bank of the Volga, the Black-winged Pratincole is rare, its colonies being small and unstable. In Saratov region on the left (west) bank of the Volga and in the area north of the Caucasus, many nests are destroyed during agricultural work, through flooding, or through predation by Rooks C. frugilegus, though the population in these areas remains relatively high (Kazakov et al. 1983; Mishchenko 1988). In the region adjoining the southern Urals, the Black-winged Pratincole is rare, showing a persistent tendency to decline (Ilyichev & Fomin 1988). There is no information on population trends farther east.

Golden Plover Pluvialis apricaria

A number of reports from the north of the Golden Plover’s range cannot be attributed to range expansion in what are relatively little-known areas. Furthermore, it is perhaps simply a lack of information which explains the gap in the species’ range between northern and southern parts of Karel’skaya ASSR close to the border with Finland (fig. 3).

The greatest changes in the distribution and population of this wader have occurred in the south. It was known to nest there in the Baltic republics (Gladkov 1951; Kozlova 1961). Despite the widely practised drainage and reclamation of raised bogs which caused a reduction in numbers or the bird’s complete disappearance (e.g. Stašaitis & Margis 1984), the general trend was for an increase and an expansion of the breeding range. The Golden Plover has only recently been reported to breed in Kaliningrad region (Grishanov 1987). In Lithuania, it is rare and is included in the Red Data Book of that republic (Jankevicius et al. 1981), but, in the 1980s, it began to nest on raised rather than low mires at Lake Zuvintas reserve (Nedzinskas 1990). In Latvia, the Golden Plover was thought to be declining with the reduction in raised-bog habitat, but counts by ornithologists actually showed an increase from 30-40 breeding pairs in the 1950s to over 100 pairs in the 1970s (Viksne 1983), while the most recent censuses (1980-84) indicate a population of 300-400 pairs (Priednieks et al. 1989). According to Kumari (1973), the Estonian population had shown no changes up to the beginning of the 1970s.

In the Leningrad region, which is well researched ornithologically, the Golden Plover was thought earlier to be nesting, but proof came only in 1966-67, and the species was later
shown to be widespread on raised bogs in the region (Mal’chevskiy & Pukinskiy 1983). In 1975-78, nests were found on some of the extensive bogs of the Zapadnaya Dvina river basin in Vitebsk region, northern Belorussiya (Kozlov & Ivanovskiy 1980), and later, slightly farther south in the same region, on bogs in the Berezina Biosphere Reserve, in the Dnepr basin (Byshnev & Tishechkin 1990). A survey of bogs in the southwest of Novgorod region in 1989 (A. L. Mishchenko verbally) showed the Golden Plover to be common there (about 100 pairs). Recent fieldwork by Nikolaev (1990) in Kalinin (now Tver’) region found the species to be widespread, mainly on extensive raised bogs south to the border with Smolensk region, and east roughly to Kalinin (Tver’). Studies of the local fauna in Berezina reserve and the Central Forest reserve (Tver’ region) have been carried out at various times since the 1930s and it is clear that the Golden Plover must have arrived there not later than the beginning of the 1980s, when a new study was undertaken (Avdanin 1983; Byshnev & Tishechkin 1990).

**Lapwing** *Vanellus vanellus*

This species has shown a tendency to expand north, almost everywhere (fig. 4). The southern range limit has been clarified, but there is no information on changes. Alongside the gradual spread north, Lapwings have also established isolated outposts which later merged with the general nesting range. It is impossible to present the complete picture of range changes over recent decades owing to the lack of definite information.

According to data collected by Semenov (1980) in Arkhangel’sk region (northern European Russia), the Lapwing was nesting only in the extreme southwest of the region in 1930-33. A large influx into the Severnaya Dvina estuary area of Arkhangel’sk in 1939 led to the establishment of an isolated breeding outpost. An increase in the population and expansion of the range both in the south of the region and near Arkhangel’sk then allowed the two parts of the range to merge in the early 1960s (or, more likely, at the end of the 1950s). Over 15 years, Lapwing arrival dates gradually became earlier, until they were starting to appear up to a month earlier than hitherto (Belopol’skiy *et al.* 1970). In 1958-59, Lapwings were already nesting at several sites along the southern White Sea coast, and, by 1965-66, the northern limit of the breeding range had reached the Arctic Circle, on both the west (Belopol’skiy *et al.* 1970) and the east coast (Leonovich 1986). Lapwings are now colonising the Kola peninsula: a nest was found near Kandalaksha in 1970, nesting has been regular at the southern end of Lake Imandra since 1975, and a small colony was discovered near Murmansk in 1980 (Kokhanov 1983), while a probable nesting pair was recorded in the east-central Kola peninsula in 1976 (Mikhaylov & Fil’chagov 1984). On the Kanin peninsula, the northward range expansion stopped just north of the Arctic Circle (Zubtsovskiy & Ryabitsev 1976; Leonovich 1986).

Farther east, in the Pechora river basin, there was no indication that the Lapwing bred before the 1950s, though regular sightings of this species on the upper Pechora were the basis for the inclusion of this area within the breeding range by Kozlova (1961). In 1965, the Lapwing was the second most numerous wader during spring passage on the upper Pechora
Fig. 4. Breeding distribution of Lapwing *Vanellus vanellus* in the Soviet Union. Solid line—after Kozlova (1961); dotted line—range in 1980s; crosses—recent vagrant records (Vengerov 1982). At the beginning of the 1970s, Lapwings were found to be widely spread along the Pechora and its tributaries north to latitude 65°30'N (Demetriades 1976; Estafiev 1977; Rubenstein 1983).

In the middle Ob' basin in western Siberia, the Lapwing was distributed only in the south of Tomsk region at the beginning of the present century. At latitude 59° on the Ob', it appeared in 1952-54 (Strelkov 1976), and by 1963 had spread downstream to latitude 65°30'N (Braude 1973), then crossing the Arctic Circle in the southern Yamal peninsula in 1988 (Grichik 1989). The fact that the middle and lower Yenisey valley has hardly been developed agriculturally is evidently the reason why there has been a less marked spread northward there than in other areas. At the beginning of the twentieth century, the Lapwing bred on the Yenisey north to 58°N, and breeding was recorded there at latitude 59°N in 1977 (Burskiy & Vakhrushev 1983). There were no records of Lapwings on the middle Yenisey in the 1950s, then regular observations in the 1970s, and the species now breeds north to at least 60°30'N (Rogacheva 1988).

At Lake Baykal and in southern Transbaykalia, the Lapwing was rare up to the 1960s, and did not occur at all at the northern end of the lake. Then, over a period of 20 years, following a population increase in the south, the range limit shifted more than 700 km to the north. By the early 1970s, Lapwings were common, locally numerous, in inter-montane depressions of northern Baykal and northern Transbaykalia (Polushkin 1980; Tolchin 1984; Popov 1987).

In 1967, the Lapwing was proved to breed on meadows bordering the middle Vilyuy river in Yakutiya, a considerable distance from the main breeding range. Further evidence of nesting by this species at various localities on the middle Lena came during the period 1972-80 (Larionov 1984b). According to this author, colonisation of new areas in Yakutiya by the Lapwing took place from west to east; though the evidence presented is not convincing. Observations in 1979-82 showed the Lapwing to have increased sharply as a breeding species north of Yakutsk. The isolated Yakutsk breeding area perhaps merged with the main range in the 1980s, but there is no definite information from the relevant areas to support this.

In the Amur river basin and in the south of the Soviet Far East (Ussuriland), as in Transbaykalia, the Lapwing was formerly rare, but is now a common breeder virtually everywhere where there is suitable habitat. By the 1960s, the species was distributed along the Amur downstream to Komsomol'sk-na-Amure (Kistyakovskiy & Smogorzevskiy 1973),
and was even not rare at Lake Chukchagirskoe at latitude 52°N (Nechaev 1963). By the 1970s, Lapwings were found along all the rivers and lakes of the Lower Amur region, wherever there are water meadows (Roslyakov 1980), and it was probably during the same years that the species spread north along the middle Amur tributaries where the valleys had been developed agriculturally (Leonovich & Nikolaevskiy 1976; Il'yashenko 1986). The species is now common at about 54°N on coastal saltmarshes of the Sea of Okhotsk (V. V. Pronkevich in litt.). There was also some expansion north in the estuaries of small rivers which run down from the Sikhote-Alin’ mountains to the Sea of Japan (Elsukov 1984).
An analysis of the Lapwing's distribution in areas into which it has expanded makes it clear that the spread almost exclusively followed the extensive water meadows, which are mostly man-made (created for stock grazing or hay-making), and only to a lesser extent other types of fields. It was only later that Lapwings colonised natural habitats, such as the White Sea and the Sea of Okhotsk saltmarshes or areas of steppe with lakes near Yakutsk. The range expansion was probably also aided by adaptive changes by the Lapwing, which allowed it to occupy new habitats. In particular, Kumari (1973) wrote about the spread of the Lapwing in Estonia by way of open raised bogs in the 1950s and 1960s; according to Dorofeev & Kozlov (1980), this process led to the formation of a special raised-bog population with specific ecological features. The complete cessation of stock-grazing, with meadows consequently becoming overgrown, overgrazing, drainage and ploughing of meadows, and cultivation using toxic chemicals are factors leading to a reduction in Lapwing numbers in many parts of its range (Utinov & Zaborskaya 1980; Golovina 1987; Nedzinskas 1990).

**White-tailed Plover* *Chettusia leucura**

In the mid twentieth century, the White-tailed Plover was distributed in the desert regions of Soviet Central Asia and Kazakhstan to the south and east of the Aral Sea (Gladkov 1951; Kozlova 1961; Dolgushin 1962; fig. 5). Surveys of the area to the north of the Aral Sea during the years 1947-60 confirmed that the species' range did not extend farther north than the lower Syr-Dar'ya river. Then, in 1966, the White-tailed Plover was recorded in the Aral Karakumy desert (northeast of the Aral Sea), and the discovery of a colony 300 km north of the Aral Sea in 1975 was a clear indication of range expansion (Khrokov et al. 1979). These last authors suggested that the extension of the range northwards was a result of the severe drought in southern Kazakhstan in 1974-75, a wide-ranging survey of the same areas in the very wet year of 1971 having produced no records of the species. There have been more recent breeding records in the same area, in the 1980s. White-tailed Plovers were unknown along most of the eastern seaboard of the Caspian, but the first record from the Mangyshlak peninsula dates from 1960, and was apparently linked to irrigation schemes (Zaletaev 1968); there has, however, so far been no proof of breeding.
Range expansion has probably also taken place on the western side of the Caspian Sea: a colony was discovered on lakes in central Azerbaydzhan in 1961, and the species may well have been breeding there since 1954 (Vinogradov 1963).

On the north Caspian coast, the White-tailed Plover started nesting in the late 1970s, a probable breeding pair being shot in May 1980 and nests found in 1987 (Belik 1989).

The increasing number of reports of colonies and the colonisation of man-made lakes in the deserts of Central Asia are probably an indication of population growth within the species' original range. In Uzbekistan, for example, it is now breeding not only at natural waters, but also in cultivated areas, at filtration tanks on land being developed for agriculture, lakes taking run-off from irrigation schemes (sumps), reservoirs, and water-bodies formed by Artesian wells (Kashkarov & Ostapenko 1990).

**Marsh Sandpiper** *Tringa stagnatilis*

This species inhabits water meadows with an abundance of small bodies of water mainly in the steppe and forest-steppe zones. Population trends are to some extent contradictory. There are many reports of a sharp decline in Europe during the present century (Spangenberg & Zhuravlev 1967; Popov 1977; Ilyichev & Fomin 1979; Zinoviev 1980; Zubakin 1988). At the same time, a clear tendency to range expansion had been noted in recent decades (fig. 6). It seems likely that the wide distribution of treeless farmland, especially extensive grazing meadows in river valleys, has been the reason for the almost universal slight extension of the Marsh Sandpiper's range to the north.

The first reports of nesting in Latvia came in the years 1974-75 (Viksne 1983; Priednieks et al. 1989), but the alleged discovery of a Marsh Sandpiper's nest in Leningrad region (Mal'chevskiy & Pukinskiy 1983) is based on an error in identification. Nevertheless, a nest was found on the outskirts of Leningrad (now St Petersburg) in 1986 by A. M. Sokolov (plate 142). Marsh Sandpipers were first recorded breeding near Moscow in 1966 (Spangenberg & Zhuravlev 1967), and the species was later found to be more widely spread in Moscow region (Zubakin et al. 1986), Tver' (Zinoviev 1980), Kirov (Litun & Makarov 1984), and Perm' region (Bolotnikov et al. 1989). A series of records in western Siberia (Sharonov 1963; Gyngazov & Milovidov 1977; Yaskov 1981) suggests that the northern range limit has also shifted farther north there.

![Fig. 6. Breeding distribution of Marsh Sandpiper *Tringa stagnatilis* in the Soviet Union. Solid line—after Kozlova (1961); dotted line—current range](image-url)
A gap still existed in the Marsh Sandpiper’s range between southwest Siberia and Transbaykalia at the beginning of the twentieth century (Gladkov 1951; Kozlova 1961). The southern edge of the taiga forests in the eastern part of western Siberia and Krasnoyarsk region merged with the montane taiga on the northern extensions of the Altai-Sayan mountain system, thereby dividing the forest-steppe zone, which is relatively poorly developed at this point, into two separate sections. Forest clearance and the creation of new tracts of farmland during the Soviet period have changed the natural landscape of southern Siberia beyond recognition (Rogacheva 1988). Creation of these new conditions undoubtedly helped typical steppe and forest-steppe bird species to become more widely distributed, and also allowed the two parts of the Marsh Sandpiper’s range to merge. Records from a number of observers (Gyngazov & Milovidov 1977; Tolchin 1976; Kuchin 1983; Zhukov 1988) suggest that the former gap in the range has been filled.

Important changes have taken place in eastern Siberia. In the view of Tolchin (1983a), the Marsh Sandpiper has considerably expanded its range in the south of eastern Siberia, penetrating into the Upper Angara and Muya depressions of Transbaykalia in the early 1970s. Intensive agricultural development along the middle Lena valley, near Yakutsk, has evidently caused considerable changes to the landscape and the resulting new habitat has proved attractive to both Lapwing and Marsh Sandpiper, allowing them to colonise the area. Previously known in Yakutiya from a single vagrant specimen (Vorobiev 1963), the Marsh Sandpiper was found breeding in the area between the Lena and Anga rivers in 1979, and had become common in some places (Larionov 1984a). In the 1980s, Marsh Sandpipers began to be recorded regularly along the Vilyuy river (a tributary of the Lena), where it is now also presumed to be nesting (Andreev 1987). A nest was found in 1985 on the middle reaches of the Amur, not far from Blagoveshchensk (S. M. Smirenskiy verbally), this indicating that the species is starting to colonise the Amur valley farther downstream than its upper reaches.

**Ruff Philomachus pugnax**

As with other widely distributed species, population and distribution changes vary in different parts of its breeding range. In intensively farmed land in most administrative regions
Fig. 7. Breeding distribution of Ruff *Philomachus pugnax* in the Soviet Union. Solid line—after Kozlova (1962); dotted line—current range; dashed portions—approximate

of the European part of the USSR, there has evidently been a gradual decline in the numbers of breeding Ruffs over recent decades, and the species has become more irregularly distributed owing to habitat loss through the reclamation and ploughing of water meadows. There are, for example, reports of a sharp decline in Latvia (Viksne 1983), and the Ruff is included in the Red Data Book of Lithuania as a rare and endangered species threatened by habitat loss (reclamation of bogs for agricultural use) and hunting (Jankevičius et al. 1981). In Moscow region, the species is now confined to a single locality in the Moskva river valley (Zubakin et al. 1986), and no longer breeds in Bashkinya (Ilyichev & Fomin 1979). On the other hand, the population was reported to have increased in Estonia in the late 1960s (Kumari 1973), and in Kirov region (Zlobin 1973), while there has been a marked extension of the range in Siberia (fig. 7).

Apart from clarification of the range limits in some areas, there has also been confirmation of breeding Ruffs from the beginning of the 1970s in many localities on Lake Baykal and in adjoining areas (Tolchin 1983b), from the 1980s near Yakutsk (Larionov 1984b) and in the middle Viluy valley (Andreev 1987). Breeding was confirmed near Magadan on the Sea of Okhotsk coast in 1972 (Leonovich 1981), in northern Sakhalin in 1976 (Nechaev 1979), and on the Kamchatkan isthmus in 1977 (Kishchinski 1980; Lobkov 1986). The Ruff was formerly only a rare visitor to the Chukotka (Chukchi) peninsula (Portenko 1972), but records became frequent in the 1970s and there were reports of breeding (not annual) along the north coast east almost as far as Uelen (Kondratiev 1982; Tomkovich & Sorokin 1983). Breeding was also recorded on Wrangel Island in 1981 (Dorogoy 1985).

The discovery of new Ruff nesting localities in Chukotka and in the Koryak Highlands (south to Kamchatka) was cautiously interpreted by Kishchinski (1980) as either the result of possible fluctuations in the eastern distribution limit of the species or as the beginning of a progressive range change. A noticeable increase in numbers of Ruffs on migration in the Crimea from the end of the 1960s (Kostin 1983), Transbaykalia (Shkatulova 1979) and the start of regular though light passage in Ussuriland (Soviet Far East/Glushchenko 1979; Polivanova & Glushchenko 1979) bear witness to positive changes in the status of the species which have probably also led to an extension of the range.

The reason for the population growth of the Ruff has perhaps been an improved food-base
for passage and wintering birds associated with an expansion in the area of cultivated land. In Ussuriland, for example, Ruffs are mostly recorded on rice-fields (Glushchenko 1979), and the huge numbers which congregate in autumn in the south of the European USSR also feed on waste grain in harvested cereal fields or paddyfields (Kazakov et al. 1982; Kostin 1983).

**Great Snipe** *Gallinago media*

The Great Snipe’s breeding distribution shows a close association with river valleys in the humid belt. This wader occupies a relatively narrow ecological niche, occurring only on especially rich water meadows with an abundance of earthworms (its main food). The area occupied by meadows on a natural river flood-plain is not great, as they exist at the early stages of a succession. The transformation of river flood-plains into meadows for hay-making and grazing, which took place in past centuries, encouraged the creation of large and flourishing Great Snipe populations. In the present century, cultivation of river valleys following drainage (reclamation) and subsequent ploughing has meant the destruction of the water-meadow habitats. The new agricultural land is unsuitable for the Great Snipe and the consequence is a steady decline in numbers and fragmentation of the breeding range; in such conditions, the species is now endangered according to Nikiforov & Gipet (1981). This is true, but not entirely so. First, the Great Snipe’s decline began at the end of the nineteenth century (Buturlin 1902; Gladkov 1951), so that land reclamation could not have been the original and main cause of the population changes. Secondly, the Great Snipe is typical of boglands rather than meadows (e.g. Buturlin 1902; Popov 1977). The preferred breeding habitat is slightly damp but not wet tussocky bogs with a sparse growth of small shrubs. Breeding in meadows should evidently be viewed as a secondary development. Further, it is for this reason that the Great Snipe, unlike the Marsh Sandpiper, was always widely distributed in the forest zone, even penetrating into the tundra, making do with relatively small bogs in river valleys.

The decline in Great Snipe numbers is probably still continuing. Whereas in the last century and beginning of the present century hunters quite often used to bag hundreds per season in the spring and autumn (Popov 1977; Zinoviev 1980), the maximum bag for a good hunter specifically going after this quarry in the 1950s and 1960s was 38 Great Snipe over an autumn season, and the average was less than one bird per hunting trip (Pavlov 1973). The Great Snipe is now one of the rare waders of the central European USSR and, as suggested reasonably by Zubakin (1988), its present status is due not only to habitat loss, but also to poisoning by toxic chemicals. The species has been proposed for inclusion in the Red Data Book of the RSFSR (Russian Federation). In Latvia, it was a common breeder in the eighteenth and nineteenth centuries, and nesting was confirmed in the republic in 1953 (Viksne 1983). It is included in the Estonian Red Data Book (Kumari 1982). The Great Snipe is rare in Leningrad region, and the 1960s and 1970s saw a decline in the number of leks and of birds visiting them (Mal'chevskiy & Pukinskiy 1983). Drainage has led to a sharp decline in the Ukraine (Voinstvenskiy et al. 1981), such that censuses in the years 1982-88 showed a total of only ten to 15 'pairs' in the republic's western regions (Gorban' 1990). Only a few breeding sites are still occupied in Bashkiriya (Ilyichev & Fomin 1988). There is no information on population trends in western Siberia.

Information is insufficient to determine the limits of the present breeding range, but data from the sources mentioned above indicate not only retreat in some western and southern parts of the range, but also, above all, a fragmentation of the range (i.e. a change in its structure).

**Long-billed Dowitcher** *Limnodromus scolopaceus*

Observations indicating an expansion of the Long-billed Dowitcher’s range were summarised by Kistchinski (1988), with a map showing distribution in Siberia up to 1920 and the state of knowledge at the end of the 1970s. During the present century, this species has spread from Chukotka and the Anadyr' lowlands both to the south, where it has colonised all the Koryak Highlands, and west to the Yana delta. In fact, it has spread even farther west (fig. 8). In 1977, downy young were recorded in Buor-Khay bay (Tomkovich 1988), and, in 1982-83, there were a number of sight records and some were also collected in the Lena delta (including a female with egg ready for laying) (Tabutin et al. 1985). The situation farther west is
Fig. 8. Breeding distribution of Long-billed Dowitcher *Limnodromus scolopaceus* in the Soviet Union. Shaded area—supposed range before 1920; solid line—range in 1970s (both after Kistchinski 1988); dotted line—range in mid 1980s; crosses—recent summer records of adults.

not clear as no serious ornithological fieldwork has been carried out on the tundra between Taymyr and the Lena delta over the last quarter of a century. Summer records of adults on the lower Anabar in 1961 (Gladkov & Zaletaev 1964) and in southeast Taymyr in 1981 (Chupin 1987) suggest that the species is continuing to spread westwards. Chupin (1987) commented that 'judging by the birds' behaviour, they had a nest or chicks nearby', but he

143. Long-billed Dowitcher *Limnodromus scolopaceus*, Soviet Union, June 1977 (P. S. Tomkovich)
Unfortunately gave no further details. There is thus still no proof that the Long-billed Dowitcher has bred west of the Lena river.

Conclusion

Among the wader species for which population changes have been established and which are considered here in detail or briefly mentioned in the Introduction, the changes have been largely positive for eight species: Little Whimbrel, Black-winged Stilt, Golden Plover, Lapwing, White-tailed Plover, Terek Sandpiper, Ruff, and Long-billed Dowitcher. For two other species (Collared Pratincole and Marsh Sandpiper), the changes have been generally positive, but in some areas in the European part of the Soviet Union numbers have declined significantly. Finally, four species show predominantly or exclusively negative trends: Black-winged Pratincole, Sociable Plover, Great Snipe, and Slender-billed Curlew. On the basis of simple arithmetic, it may appear that positive trends predominate slightly over negative trends. This, however, is evidently not the case. The fact is that it is much easier to record an increase in numbers and the appearance of new species in areas where they have not been observed previously than the reverse processes. Confirmation of population declines requires, as was noted at the outset, monitoring and census studies, which have hardly been developed in the USSR. Moreover, even where there is a considerable population decline, isolated pockets of breeding birds survive for a certain period in most cases, so that only the structure of the range changes while its general outline remains the same. This also tends to mask negative population trends. It may therefore be supposed that population declines and range contractions among the waders of the Soviet Union are a more

144. Little Whimbrel *Numenius minutus* on nest, Soviet Union, June 1978 (M. Omelko)
widespread phenomenon than might appear from the information presented in this paper.

The data presented here allow another important conclusion regarding the way in which new areas are colonised by expanding species. For many species, the spread may take the form of both a gradual expansion (i.e. as it were an opening-up of the range limits) and a colonisation of areas well away from the main breeding range and the establishment there of independent centres of distribution. In the examples considered here, the range expansions of Black-winged Stilt, Lapwing and Marsh Sandpiper have proceeded simultaneously in both the ways described above. The Ruff, which shows virtually no fidelity to breeding site, has a greater tendency than other species to establish isolated pockets of distribution.

It is striking that the changes apply mainly to species which breed in southern and central regions of the former USSR. Ruff and Long-billed Dowitcher are the only northern species and they are both increasing and expanding their breeding ranges. The difference is readily understandable and reflects the varying level of man-made changes to the environment in different regions. For most species, explanations have been suggested for the changes which have taken place. All the explanations relate to human activity, primarily to agricultural development. For example, ploughing of steppes has led to the fragmentation of populations, or complete disappearance, of Black-winged Pratincole, Sociable Plover, and perhaps Slender-billed Curlew and Marsh Sandpiper. Forest clearance and the creation of new open tracts of farmland far to the north have encouraged a northward spread by Lapwing and Marsh Sandpiper. The widespread development of irrigation and rice-cultivation in the south of the Soviet Union and in other countries has perhaps become the main reason for the population growth of Black-winged Stilt and Ruff; irrigation in Central Asia probably enabled the White-tailed Plover to increase its population and consequently to expand its range. In contrast, the reasons are not at all clear for population and distribution changes of Collared Pratincole (range expansion), Golden Plover, Terek Sandpiper and Long-billed Dowitcher, but, even in these cases, some human factors may be at work, affecting, for example, survival in the winter quarters.

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