

BREEDING WADERS IN POLAND - THEIR PAST AND PRESENT STATUS

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An attempt was made to reconstruct past wader fauna for the present Polish territories, and to describe changes during historical times. During last two centuries 19, perhaps 20, wader species were known to breed in the country. All of them except one or two (*Limosa limosa*, possibly *Vanellus vanellus*) have recently decreased in numbers and contraction of their breeding grounds. Four species (*Tringa glareola*, *Lymnocyptes minimus*, *Burhinus oedicnemus* and *Calidris alpina*) are now very scarce, while two (*Pluvialis apricaria*, *Eudromias morinellus*) breed no more. The future of the whole group is very grave in inland Central Europe. The waders rather than raptors appears to be the most endangered group of birds.

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INTRODUCTION

The last six thousand years in Central Europe have been characterized by a subatlantic climate, which was relatively cool and wet. The first half especially of this period was very suitable for the development and expansion of peatbogs. This expansion has been revealed with the help of pollen analysis (Srodon 1972). About 4 thousand years ago some resident agricultural tribes began to exert a stronger influence on the vegetation cover of Central Europe. However, in spite of their activity some 2 thousand years ago about 90% of the present Polish territories were dominated by extensive primaeval forests.

There are no data on bird life of those past times, and one is forced to attempt an "informed guess", starting from the knowledge of the historical geographers and botanists, who have jointly reconstructed the past state of the dominant vegetation. Papers such as those by Buczek (1960), Dobrowolska (1961), Kornas (1972), Srodon (1972) and Olaczek (1976), served as a basis for my attempt to reconstruct the past wader fauna from the state of dominant vegetation.

Since the late Neolithic Age, through early historical times and almost to the present day, the forests have been gradually replaced by open anthropogenic landscape, with the primitive fields abounding on some light sandy grounds and fertile loess soils, chiefly in the Cracow region, in Lower Silesia and Lublin Upland, but later also more to the north in Central Poland. Around the year 100 BP (Before Present), when the united Polish state emerged, forests still covered about 80% of the total area. These forests were intermixed with more or less open marshlands, river-valley fens, and especially by extensive raised peatbogs. It is interesting that compared to eastern Poland, western Poland at that time was much more swampy and abounding with hardly penetrable riverine or marshy forests covering extensive flat glacial-river valleys (Dobrowolska 1961). Today the situation is reversed, as a consequence of a much greater human impact on the western compared to the eastern territories.

A further basis for the reconstruction comes from field work in the primaeval forest of the Bialowieza National Park, at the core of extensive (1200 km²) Bialowieza Forest (Tomialojc et al. 1984). The present-day findings from the Bialowieza Forest can be used

to extrapolate a picture of the past wader fauna in the Polish territories. I have also taken into account the conclusions of similar extrapolations made for the neighbouring countries of Central Europe (Glutz, Bauer and Bezzel 1975, 1977, Bezzel 1982).

BREEDING WADERS OF THE PAST

There is no doubt that the most widespread wader in the past landscape was the Woodcock *Scolopax rusticola*, a species now inhabiting most types of the Bialowieza stands, including those in the forest-interior 3-5 km away from the nearest man-made or natural clearing. However, Woodcocks were probably at somewhat lower densities, since natural clearings and forest-edges were less frequent in space than the present, man-made, ones. The second forest inhabitant was the Green Sandpiper *Tringa ochropus*, which nowadays occurs throughout the interior of Bialowieza Forest, with a total of over 100 pairs, especially in good (wet) years. The third is the Common Snipe *Gallinago gallinago*, which is a bird of open marshlands and of the forest-edges. These three species would have been widespread breeders throughout Central Europe, though now they are restricted much due to forest and marshland reduction. The Common Snipe was the most numerous wader for many millenia, and only quite recently and locally has it been superceded in numbers by the Lapwing *Vanellus vanellus*.

Pollen analysis indicates that past forests were interspersed with more or less open marshlands, chiefly with raised peatbogs, and this was a characteristic of the Bialowieza Forest. Until as recently as the 1960s there was a large wedge of fens and raised peatbogs which penetrated the eastern part of the forest complex. These were reclaimed totally, but historical data on their wader fauna are still available thanks to papers by Tischler (1943) and Dackiewicz (1971). This marshland, called Dikij Nikor, was known to be a breeding place of a diverse group of waders. Apart from three forest and forest-edge species mentioned above there were also Great Snipe *Gallinago media*, Curlew *Numenius arquata*, and Ruff *Philomachus pugnax*.

Among them bred also some pairs of Lapwings, Black-tailed Godwits *Limosa limosa* and Redshanks *Tringa totanus*, although it is not certain whether these last species occurred there in past times, or whether they colonized the marsh after it became part of the

agricultural landscape. There is some evidence for the first possibility: in peatbog fragments of Biebrza Marshes, these three species currently, though in lower numbers than in the river-side parts. The composition of the wader fauna of Dikij Nikor appears thus to be quite similar to that known from Biebrza Marshes (Dyrz et al. 1972, 1984), which suggests some regularity in pattern. However, there is some uncertainty as to the primaevial state of wader fauna of Biebrza fens. It appears that at least some of the fragments along their edges and along the river itself have been changed and/or preserved in their present state by human activity (by mowing or by cattle grazing). Human activity for centuries presumably prevented or hindered the succession of bushy scrub or forest.

The Biebrza Marshes are an example of a fertile riverine fen, characterized by a fairly tall ground vegetation (tall reeds, sedges, grasses, etc.). Only central parts of this complex, far from river-bed, have the mossy, low-growing, open peatbogs, suitable for some northern-breeding waders, developed. This is the only place in Central Europe where a small population of breeding Jack Snipe *Lymnocyptes minimus* survives to this day, though there is no firm evidence to confirm that either Golden Plovers *Pluvialis apricaria* or Wood Sandpipers *Tringa glareola* have bred there within the last 100 years.

Pollen analysis and some historical sources show that until the beginning of the 19th century there were still several extensive raised peatbogs. These were mossy and ombrotrophic, and so were very similar to the Scandinavian type of this habitat, on Polish territories, chiefly in Pomerania and Masuria. They must have served as the breeding grounds of the Golden Plover, a species known to have been still breeding near Ostroleka in NE Poland in the middle of the 19th century (Taczanowski 1882) and near Slawno and Szczecinek in Pomerania in early 19th century (Holland 1871). The Wood Sandpiper had several breeding sites in Pomerania and Masuria until the 1930s (Kirchner 1936, 1939, etc.).

Thus the following group of waders must have been much more widespread and numerous one to two thousand years ago than nowadays: Ruff, Golden Plover, Wood Sandpiper, Curlew, Great Snipe, and Jack Snipe. All of them declined rapidly during the course of the last two centuries. Drainage became an increasingly widespread way of exploitation of marshlands during this period, and it must have been one of the main reasons for this decline, although some natural (climatic ?) causes also probably contributed.

There remains one other primaevial habitat whose past distribution and character is difficult to assess. This is the riversides, river-beds and shores of lakes. Botanists and historians find it difficult to decide to what extent their present state results either from natural processes or from secondary anthropogenic influences. Judging from the present state of some forest rivulets in NE Poland, and using studies of photographs of Siberian and Canadian rivers and lakes, I conclude that the smaller rivers and lakes provided breeding habitat for only one species, the Common Sandpiper *Actitis hypoleucos*. Big rivers and the shores of larger lakes, especially with sandy banks, were inhabited also by the Little Ringed Plover *Charadrius dubius*. It is doubtful, however, if in early times the Ringed Plover *Charadrius hiaticula* bred alongside big Polish rivers. Only after being stripped of their riverine

poplar-willow forests could large rivers become open enough for breeding Ringed Plovers. It was probably only after these clearances (some two to four centuries ago), that the Central-European rivers were colonised by Ringed Plovers. Such an interpretation stems from the fact that even now Ringed Plovers breed mostly on dunes and fallow-lands and overgrazed pastures alongside our rivers, rather than within the river-bed on sand-banks, which are occupied mostly by the Little Ringed Plover (Glutz, Bauer and Bezzel 1975).

The over-exploitation of poor soils, for long managed without fertilizers, have turned some farmland areas, and especially the river-side alluvial light soils, into sandy dunes or fallow lands. Such habitats were not known in most of Central Europe in pristine times (Kornas 1972). These new habitats appeared in Poland at an unknown time, but presumably during the first half of the present millennium. They made possible an increase in the number of breeding Little Ringed Plovers, and a spread of a newcomer, probably from the Mediterranean, the Stone Curlew *Burhinus oedicephalus*.

Into the same process can probably be included the recent attempts by Oystercatcher *Haematopus ostralegus* to colonize inland sites. This follows also the very successful recent colonization of the Vistula river and some other inland sites by Common Gulls *Larus canus* and Herring Gulls *L. argentatus*.

Central European literature (Tomialojc 1976, Glutz, Bauer and Bezzel 1975, Bezzel 1982, etc.) provides evidence of past expansion and also some habitat change in other species, such as the Black-tailed Godwit and the Redshank. Since both these species are birds of open landscape and tolerate tall grass areas, both especially benefitted from the spread of meadows, many of which were wet until very recently. Only with the subsequent intensification of meadow-use, and with drainage, has the trend in the Redshank been reversed. However, some spread by Black-tailed Godwits has occurred even in recent decades.

The disappearance of extensive forests and the increasing presence of fields and meadows, has allowed also an ecological and spatial expansion by the Lapwing, a species scarce in primaevial fens. During the early 20th century Lapwings have even colonized fields, although use of fields now seems to be diminishing (Glutz et al. 1975).

THE RECENT STATUS OF BREEDING WADERS

The better known and more rapid changes in wader fauna started from the second half of the 19th century. Written accounts for those times can be found in several detailed papers, such as Taczanowski (1852-1888) from eastern Poland, and several German authors from western and northern provinces. These are quoted in detail in Tomialojc (1976, in press). All their data indicate that by that time the wader fauna, and the numerical trends in most species, were already very similar to those today. Sharp declines in numbers, and the increasing amount of field research made possible the first attempts to estimate the total abundance of some scarce species, either on the regional or on national scale. The characteristics of the present state of waders breeding in Poland have been reported already in an earlier paper (Gromadzka, Stawarczyk and Tomialojc 1985). Here I report some of the recent additions to our knowledge of wader distribution and abundance, and to some of the better documented

Table 1. Numbers of pairs of breeding waders in the lower Bug valley in 1984-86. Data was collected by S.Chmielewski, A.Dombrowski, T.Smolenski and J.Zowadzki (unpublished).

Species	no. of pairs
Lapwing	1198 - 1348
Black-tailed Godwit	488 - 563
Common Snipe	216 - 248
Redshank	195 - 228
Little Ringed Plover	128 - 145
Ringed Plover	86 - 106
Common Sandpiper	67 - 84
Great Snipe	56 ^a
Green Sandpiper	15
Curlew	14
Stone Curlew	4 - 5
Ruff	1 ^b
Dunlin	1 ^c

^a number of individuals in 13 sites

^b one female, probably breeding

^c one pair, probably breeding

changes. As one example of recent studies, I report data collected during 1984-86 by S.Chmielewski, A.Dombrowski, T.Smolenski and J.Zawadzki (unpublished) in the lower Bug valley, the area listed as site 19 in our previous paper in *WSG Bulletin* (Gromadzka et al. 1985). The recent surveys have now been extended to cover the whole 260 km length of the lower Bug valley, including also c. 500 km² of the pastures and meadows surrounding them. The numbers of waders found breeding there are summarised in Table 1.

These more extensive surveys have revealed that the lower section of the Bug river appears to be one of the most important Polish breeding sites of waders with much larger populations than reported by Gromadzka et al. (1985). This example forces us to pose the question: How representative of the total breeding populations of waders in Poland are our estimates reported in Gromadzka et al. 1985?

Some superficial field data suggest that we can expect significant additions to the present-day estimates from only two or three regions in Poland. The first, and most promising, in terms of a possibly abundant breeding area for waders is the lower course of the Oder valley and the surroundings of Szczecin Bay. These areas have been long neglected ornithologically. A second territory whose avifauna is very poorly known covers wide stretches between the Vistula and Narew rivers, reaching northwards to the boundary of Masurian lake-district. A third area, called Kujawy, extends between well-studied Poznan province and the Vistula river. However, I suspect that in spite of the possibility of considerable numbers of waders breeding in those areas, the species composition of the breeding population will be similar to that elsewhere in Poland.

To sum up the changes that have occurred during last two centuries, I conclude that altogether 19 species of wader were breeding within the present Polish territories, with the twentieth species, the Black-winged Stilt *Himantopus himantopus*, possibly breeding ephemerally in the past. All species except Black-tailed Godwit and Lapwing have at one time or another decreased in numbers and/or retreated from several breeding sites. But even these two species have now begun to decrease in numbers locally or regionally, chiefly in the west of the country. In the case of the Black-tailed Godwit these decreases seem still to be compensated for by some increases and slight expansions in other areas.

It is well documented that during the last 150 years two wader species have become extinct in Poland: the Golden Plover from northern peatbogs of Pomerania and of NE Poland, and the Dotterel *Eudromias morinellus* from the Czechoslovakian/Polish state border in the Sudety Mountains. There is no indication of the direct persecution of these two species, nor have their breeding habitats been completely destroyed, the extinction of these species may be attributable to natural processes such as climatic change.

Five other wader species are represented in the whole country only by extremely small populations, composed of less than a few dozen pairs. Among these the Oystercatcher probably has never been numerous in Poland, and now seems to be beginning an expansion. However, the situation for the other 4 species is alarming. These species are:

The Wood Sandpiper. It was still widespread during the 1930s, chiefly in some parts of Pomerania and Masuria (Kirschner 1936, 1939, Robien 1928, 1925, Tischler 1941; all quoted in Tomialojc 1976) although it is uncertain whether it ever bred in Biebrza Marshes. Now only a few pairs remain in Bielawa Bog near the Baltic coast (M.Gromadzka, F.Ulczycski, pers. comm.), plus some ephemeral single pairs sometimes settling to breed in some inland sites (Tomialojc in press).

The Jack Snipe. In the 19th century it bred in several places, including Lublin province, Pomerania and Silesia. Now only a few pairs occur in Biebrza Marshes (Okulewicz and Witkowski 1979).

The Stone Curlew. A relatively recent addition to the breeding avifauna, it was a prospering breeding species throughout in 19th and early 20th centuries. Sometime during 1950s and 1960s a dramatic decline was noticed. Its stronghold was still the Vistula valley dunes, with at least 25-35 pairs in late 1960s in its middle course alone (Luniak 1971). However, today only one pair probably remains there, and the total population in the country is less than 10 pairs (Tomialojc in press).

The Dunlin. The past population size and distribution is unknown. Its present population contains some 80-100 pairs, but 60 of these occur at one breeding site, at Reda mouth. This places it at high risk from localised habitat destruction.

The future of these four species in Poland is highly uncertain. Their continued breeding may be safeguarded only if their last breeding sites are declared as nature reserves strictly protected by law.

The second group of waders may be classified as *vulnerable species*. Their numbers do not exceed 600 breeding pairs each. These species are:

The Ringed Plover. Its present population is c. 400-450 pairs (Tomialojc in press and unpublished). The species inhabits mostly non-regulated sections of big rivers, and the Baltic coast. In the latter area it has become highly endangered by mass tourism. As yet, there are no signs of any change in abundance in the inland population, but some plans for channelling our rivers, if fulfilled, would seriously threaten the Polish population of the species.

The Ruff. All symptoms indicate a dramatic decline and range contraction of this species, which in the 19th century was still a common breeder throughout the lowlands. A marked

decrease has already been reported during 1920s and 1930s, mostly from southern provinces. Now the total population of the country is c. 300 breeding females. The steady pressure to change the last natural marshlands makes the future of this species very uncertain in Poland, especially since the succession of scrub and woodland now threatens the areas already declared marshland reserves.

The Great Snipe. In the 19th century it was still a widespread breeder in the most of our lowlands, including southerly located Silesian or Lublin Province marshlands. Comprehensive knowledge of its distribution and abundance has only been achieved during the 1980s. Recently there have been 550-600 displaying individuals recorded on several leks in the country. Until now the species has managed to thrive in several incompletely reclaimed river valleys of Eastern and even Central Poland. However, further intensification of meadow- and marshland-use will lead to its extinction there, as has already happened in the southern provinces of Poland, and in neighbouring republics of Soviet Union.

The Curlew. About a century ago Curlews were widespread over the most of the Polish lowlands. In the course of the present century it showed a slow but steady decrease in numbers and a retreat from southern (from Silesia to Krakow and Kielce provinces) breeding sites, as well as from northern (coastal) ones. Intensive field work in last decade has revealed that c. 400 pairs still breed in Poland, almost half of them being concentrated in the Notec river valley and its surroundings.

The remaining species of breeding waders cannot be classified as immediately threatened by extinction in Poland, although their numbers are declining steadily. At least three of these species (Redshank, Green Sandpiper and Common Sandpiper) have populations only slightly more than one thousand breeding pairs.

CONCLUSIONS

The inland stretches of Central Europe are now rather suboptimal breeding grounds for most of the wader species, in comparison to the coastal zones of the continent and to Western and Northern European habitats. *In Central Europe waders are now the most threatened group of breeding birds, and appear to be a higher risk than the other seriously threatened group, raptors.*

However, it would be useful to establish more precisely to what extent the wader decline in Central Europe is a consequence of man-made changes to their breeding habitats, and to what extent it stems from naturally suboptimal conditions inland and in the climate of the deciduous forest zone. There is also different geographical adaptability of particular wader populations. There appears to be a notably higher adaptability of some western and northern populations, in contrast to a marked conservatism of their Central European counterparts. For example Polish Curlews never breed among high-intensity pastures and meadows, but do so around Dijon in Burgundy. Nor do they breed on heathland, as they do in Britain, nor on the small mid-forest patches of marshland, which Scandinavian Curlews occupy. Stone Curlews in Poland do not colonize agricultural land, in contrast to the British population.

There is some indication that this low level of

adaptability is correlated with low population numbers, though any cause is not known. The apparently more pronounced plasticity of some of our species (Lapwing, Little Ringed Plover, Black-tailed Godwit) coincides with their higher numbers. The simplest general explanation, that our habitats, due to their more drier climate, are suboptimal for waders would explain much, but not all. This cannot explain the mysterious decline of the Stone Curlew, a question which requires more detailed study.

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