Current status of the southern subspecies of the Whimbrel *Numenius phaeopus alboaxillaris* (Lowe 1921) in Russia and Kazakstan

V.V.Morozov

Morozov, V.V. Current status of the southern subspecies of the Whimbrel *Numenius phaeopus alboaxillaris* Lowe 1921 in Russia and Kazakstan. *Wader Study Group Bull.* 92: 30-37.

Examination of museum skins of Southern Whimbrel showed that the white lower back and short upper tail coverts are the most reliable diagnostic character. Observations on the species were made during expeditions that took place in 1996 and 1997, and a small breeding colony was studied in the foothills of the Ural mountains. The influences of agriculture and climate change on the species are discussed.

V.V. Morosov, Russian Institute of Nature Conservation (Goskompriroda RF), Znamenskoye-Sadki, Moscow M-628, 113628 Russia.

[Translator's note: this article was first published in Russian in Russkiy ornitologicheskiy zhurnal [Russian Journal of Ornithology], Express-issue 34: St Petersburg, 1998, pp.3-15. Explanatory notes and translations of transliterations in the references are given in square brackets. Thanks are due to Pavel Tomkovich for checking the translation and assisting with the map. Translated by Geoffrey Harper.]

INTRODUCTION

The southern subspecies of the Whimbrel *Numenius phaeopus alboaxillaris* Lowe 1921 [here called Southern Whimbrel] occupies the steppe and forest-steppe zones around the southern end of the Ural Mountains, and is one of the least studied species of Palearctic waders. It was described from specimens obtained on wintering grounds in East Africa (Kozlova 1962) but its taxonomic distinctness was questioned, and some taxonomists considered that the Southern Whimbrel merely represented individual variation in the nominate subspecies *N. phaeopus phaeopus* Linnaeus 1758 (Meinertzhagen 1930; Peters 1934; Vaurie 1965). In our own literature its subspecific status is accepted without qualification by only a few ornithologists (Gladkov 1951; Dolgushin 1962; Kozlova 1962), while others include it in the nominate race (Buturlin 1934; Stepanyan 1990).

Numenius phaeopus alboaxillaris is separated on the basis of measurements, colouring, and distribution. Its breeding range is very small, and is restricted to the steppe areas of Zavolzh'e, Priural'e, Bashkiria, and West and North Kazakstan (Gladkov 1951; Kozlova 1962). There is however hardly any real proof of breeding, such as records of nests or non-flying young. Absolutely nothing is known about the nesting biology of these Whimbrels.

STUDY AREA, MATERIALS AND METHODS

We learned something about the current range, habitats and biology of the Southern Whimbrel during expeditions organised by the Russian Bird Conservation Union in order to search for breeding sites of the Slender-billed Curlew *N. tenuirostris*. The work was funded by Vogelbescherming Nederland, for which we express our deep gratitude.

The field work was carried out from 10th April to 10th June 1996, and from 15th April to 22nd June 1997. The area covered in 1996 took in part of West Kazakstan, from the south-east border of Saratov Oblast in Russia to the western border of Aktyubinsk Oblast in Kazakstan and the south of Orenburg Oblast in Russia. In 1997 several areas were investigated in Bashkiria, Saratov and Chelyabinsk Oblasts in Russia, and West-Kazakstan and Kustanay Oblasts in Kazakstan. Optical equipment used consisted of 12 x 40 BPTs-2 and 10x40 'Optolyth' binoculars, and 20-60 x 'Optolyth' telescope. The birds were sexed by their behaviour, and by comparing sizes of paired birds. We regarded the larger and longer-billed individual in each pair as the female. Numbers of birds were assessed by absolute counts of nests and birds alarming near nestlings within areas having clear natural boundaries. The incubation stage of eggs was determined by means of the water test.

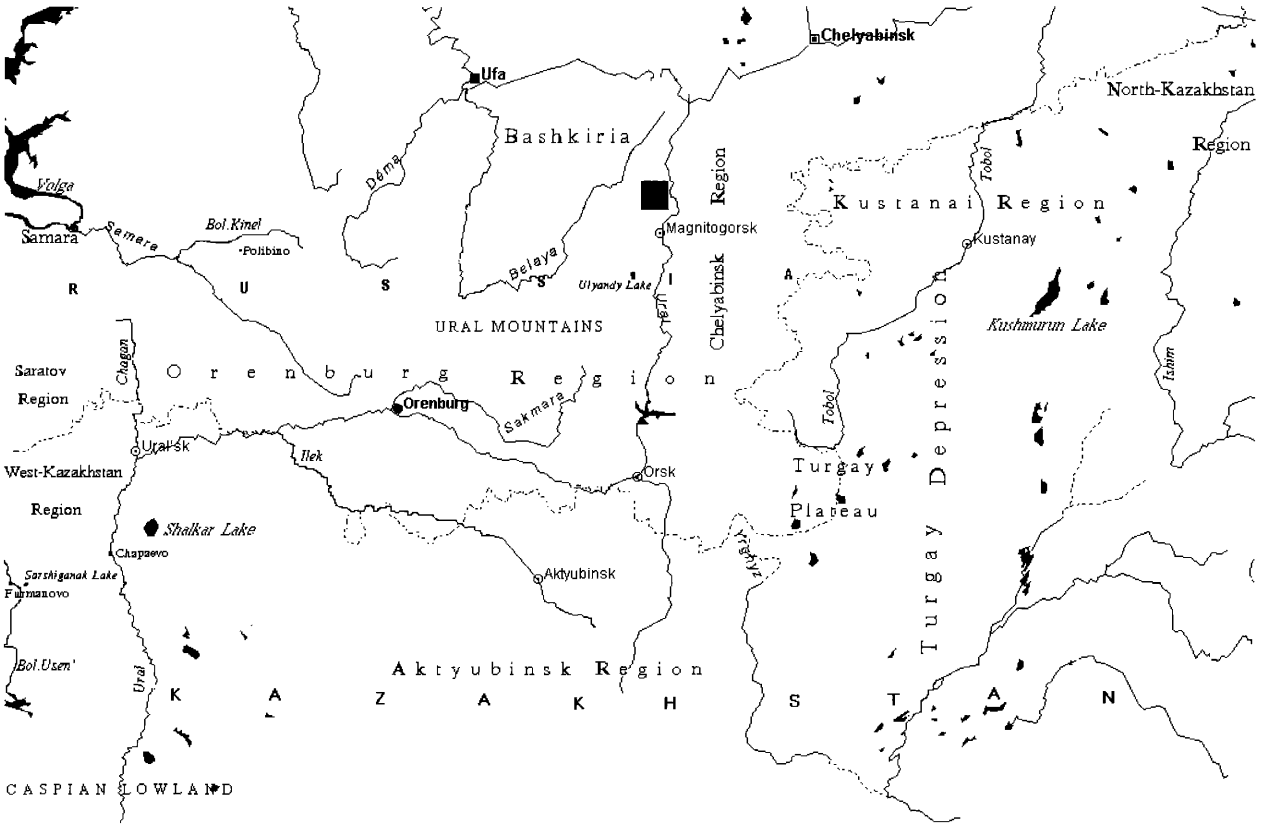

Figure 1. The study area

Twenty-six specimens of *N. phaeopus alboaxillaris*, and nine with characters intermediate between *phaeopus* and *alboaxillaris*, were examined for details of plumage colour. These specimens belong to the collections of the Zoological Museum of Moscow State University (ZM MGU) and of the Zoological Institute of the Russian Academy of Sciences in St Petersburg (ZIN). The bill and tarsus were measured with a slide gauge/vernier caliper to the nearest 0.1 mm, the wing and nests with a ruler to the nearest 1 mm. For diameters of nests and their cups, two measurements were made of each at right angles to each other. Mean values are given (±SE).

RESULTS

Plumage colouring

The Southern Whimbrel is characterised by pure-white axillaries, a white lower back, and white short upper tail coverts. Some specimens, despite the presence on the back or axillaries of occasional dark flecks or blotches, are assigned by experts to subspecies *alboaxillaris* (Gladkov 1951, Kozlova 1962).

Twenty-two of the Whimbrel specimens at ZIN are assigned to *alboaxillaris*. Our thorough examination of these birds showed that only in three of them are all the axillaries pure white. In the rest, either some or all of these feathers had scattered brownish flecks, while in two the flecks on the axillaries were rather numerous. In the collection at ZM MGU four specimens can unambiguously be assigned to *alboaxillaris*. Only three of these are adult, two having pure white axillaries. Of nine specimens in the ZIN collection regarded as transitional to the *phaeopus* race, three have flecks on the axillaries and upper back, five have flecks only on the axillaries, and one in the Menzbir Collection has only isolated flecks on the axillaries. The last should, in my opinion, be assigned to *alboaxillaris*.

Plumage colouration on the lower back and short tail coverts is more consistent: in all birds examined and assigned to *alboaxillaris*, these parts are pure white. Thus the colouration of the back and short tail coverts is a more reliable identification character for separating the Southern Whimbrel.

It must be realised that under field conditions the characters described above are difficult to use for identification if the birds are at some distance. It is usually not possible to make a judgement about the presence of flecks on the lower back, since it can be seen only when the bird is taking to the air or when it is flying away from the observer. The same applies to obtaining a clear view of the axillaries. In flight *Numenius* species

flap their wings rather rapidly, so that it is generally impossible to see at a considerable distance whether there are flecks on the axillaries. In my own experience it is practicable with binoculars of at least x 12 magnification only at 30 m distance or less. It must also be remembered that the Southern Whimbrel's call is identical with that of the nominate race, so that it is unreliable for separating the subspecies in the field.

Measurements

It is considered that the Southern Whimbrel is on average larger than other races (Kozlova 1962). Nevertheless all quantitative characters overlap markedly in all four subspecies of *N. phaeopus*. According to Gladkov (1951) the wing length of five male Southern Whimbrel varied from 248 to 275 mm, averaging 257.4 mm, with corresponding figures for females being 252-272 and 259.4 mm. Kozlova (1962) gives the following data in her monograph, based on ZIN material, According to foreign sources (Cramp & Simmons 1983), measurements of Southern Whimbrel are as shown in Table 2 [mean given in brackets]. I measured 25 specimens of adult *Numenius* (skins at ZIN and ZM MGU) assigned to *alboaxillaris*, for 16 of which the sex was indicated on the label. Some of the measurements of these Southern Whimbrel skins are as shown in Table 3.

Distribution

The breeding range of *N. phaeopus alboaxillaris* has before now not been determined even approximately. It was formerly considered to include steppes beyond the Volga and along the River Ural and its tributaries (rivers Sakmara, Chagan, and Ilek) eastwards as far as Kustanay (Gladkov 1951) or even to the lower reaches of the Irtysh and the mouths of the Tobol and Ishim (Kozlova 1962). On the basis of information from Bostanzhoglo (1911) it is thought that to the south this race was distributed at least as far as Lake Chelkar (Cholkhar) in West Kazakstan, and northwards approximately as far as the town of Samara (Kozlova 1962). The range was based mainly on summer records of the birds: no nests or nestlings were found, despite the statement by Eversmann (1866) that 'in the northern Orenburg steppes and in the wide steppe-like valleys of the Urals foothills it nests in large numbers. Its eggs are like those of the Curlew *N. arquata*, but significantly smaller, not so pointed, and with larger brown blotches and not so sharply defined' (p. 454). More detailed quantitative information is not given.

The absence of documented direct evidence indicating undoubted breeding gave Dolgushin (1962) grounds for excluding the Whimbrel from the list of birds breeding in Kazakstan. This exclusion was in principle entirely justified, in so far as breeding in the steppes between the

Table 1

	males	females
wing length (mm)	234.0 - 271.2	245.0 - 263.5
bill length (mm)	73.0 - 83.0	79.0 - 92.2

Table 2

	males	females
wing length (mm)	238 - 278 (259; n = 15)	249 - 270 (259; n = 20)
bill length (mm)	73 - 83 (76.8)	79 - 93 (88.3 ± 3.89, n=4)
tarsus length (mm)	61 - 62 (61.7)	64 - 68 (65.7 ± 1.57, n=4)

Table 3

	males (n = 9)	females (n = 7)
wing length (mm)	239 - 263 (249.3 ± 2.4)	241 - 258 (250.3 ± 2.3)
bill length (mm)	75.8 - 85.7 (81.9 ± 0.98)	81.7 - 93.3 (85.2 ± 2.0)
tarsus length (mm)	57.8 - 66.1 (61.4 ± 0.72)	60.0 - 68.0 (63.6 ± 0.87)

Differences in bill and tarsus length are not significant ($t = 1.48$, $P > 0.05$ and $t = 0.58$, $P > 0.05$ respectively).

rivers Volga and Ural, along the Ural, and in the Turgay Depression (Zarudny 1888, 1897; Bostanzhoglo 1911; Gladkov 1951) was unconfirmed. However, Dolgushin (1962) denied the possibility of Whimbrel breeding in the steppe zone, assuming that breeding was confined to sphagnum peat bogs, and that the southern boundary of the breeding range passed through Tyumen', Lake Chernoye and Tyukalinsk.

At the same time Kozlova (1962) granted the possibility of Whimbrel breeding in the steppes around Orenburg and Samara, since the ZIN collection includes skins of males and females with brood patches collected on 7th, 16th and 17th June. These collections date from as early as the expeditions of Eversmann (1866) in 1861-62 and Karelin (1875) in 1852-68. Examination of the ZIN specimens showed that the brood patches were most clearly developed in individuals obtained on 20th May 1896 in the vicinity of the village of Polibino in the former Samara Guberniya, in the basin of the River Bol'shoy Kinel' (Karamzin 1901). Only small brood patches, starting to regress, were present in birds from near Orenburg. Since these birds were collected in June, they suggest that they were either accompanying part-grown brood, or had lost their offspring and had begun to disperse.

The most recent mention of finding Whimbrel in the steppe zone within Russia is found in the book by Il'ichev & Fomin (1988). One bird - a male in which the brood patches had almost disappeared - was collected in the Southern Urals on 1st June 1974 in the Ulyandy system of lakes, and another was a young individual collected on 13th August 1974 on the River Belaya in Bashkiria (in the ZM MGU collection). Subsequently, on account of the absence of new records in the last 20 years, it came to be believed that the steppe subspecies of the Whimbrel had died out, at least within Russia (Sotnikova 1992; Belik 1994). However, the Whimbrel was discovered in 1985 by V.L.Shevchenko & N.V.Slyusar' nesting in West Kazakstan in the Ural valley north of the village of Chapayevo and east of Lake Chelkar (Shevchenko et al. 1993). The exact identity of these Whimbrel was not established, but we assume that they were *alboaxillaris*. Unfortunately, the clutches found were not measured, which raised a number of doubts about the species' identification. Our 1996 expedition visited the same site, but nesting by Whimbrel there was not confirmed. We saw only birds of the nominate race on passage in considerable numbers (Morozov 1996). At the same time Curlew seemed to be very common: several nests were found both in the Ural valley and near Lake Chelkar.

We encountered *alboaxillaris* Whimbrel between the rivers Volga and Ural in the basin of the River Bol'shoy Uzen', on the Slamikhinski flooded area of this river near the village of Furmanovo and near Lake Sorshiganak (see Figure 1). Two separate birds, obviously on passage, were observed on 26th April 1996 at the edge of shallow flooding to the north of Lake Sorshiganak. These birds were marked by comparatively light plumage, a somewhat less prominent dark browstripe, and white underwing, which in one individual could be seen clearly at a distance of 25 metres, when it performed the 'wing-up' display.

Eventually, in 1997, a small colony of *N. ph. alboaxillaris* was discovered in the steppe zone of the Southern Urals foothills, coexisting with Curlews. The Whimbrel were nesting in the valley of a nameless tributary of the River Maly Kizel on the border between Bashkiria and Chelyabinsk Oblast (Figure 1). The birds displayed anxiety near the nest and nestlings, and permitted a close approach. This allowed detailed observation of them, including the underwing. It was clearly seen through the x 10 binoculars and the x 20-60 'Optolyth' telescope that the axillaries of some birds were pure white, while in others they had a few small dark flecks. The upper back and tail coverts were pure white, that is, the main distinguishing characters of the birds in this population were entirely consistent with the diagnostic characters of the Southern Whimbrel.

Breeding biology

Habitat

The Whimbrel occupied the floodplain and adjacent slopes of the valley of a steppe stream at the foot of low foothills of the Southern Urals, situated south-east of the Kutantau Range. The floodplain was occupied by water meadows or meadows partly subject to flooding, dissected by numerous open drainage channels, the edges of which are to various degrees overgrown with bushes (rose, willow) and young trees (birch, willow). The meadows are mainly grass-sedge, since the floodplain is very flat, and with many depressions. In the lowest-lying parts of the floodplain are sedge marshes (*Carex* spp) or tussocks of *C.caespitosa*. On the higher parts there is short mixed-herb grassland. The slopes of the river valley are generally ploughed and occupied by fields of cereal crops or clover, but there are also patches of virgin steppe, mostly on the more stony sites. The stream banks are open, covered with low willow scrub with wormwood [*Artemisia*] and *Chenopodiaceae*. The stream bed and drainage channels are in places filled with reeds, reedmace [*Typha*] and other hydrophytes (water plantain [*Alisma*], sweet-grass [*Glyceria*], flowering rush [*Butomus*] and sedges). The floodplain meadows are used as private hay meadows by the inhabitants of the nearest settlement. The area of the floodplain meadows is quite considerable - at least 3,000 ha - and the fields occupy about 500 ha; the steppe vegetation covers an insignificant area.

Spatial distribution and numbers

The spatial distribution of Whimbrels occupying the area was uneven. The left-bank part of the floodplain, which was more open and with taller herb vegetation, was used only for foraging, by both Curlews and Whimbrels, but only by a few individuals. Most of the birds, of both species, fed on the right bank of the river, mainly within their individual territories. The Whimbrels appeared to nest around the edges of the Curlew area. Like the Curlews, they preferred slightly raised dry places as nest sites.

The total number of Whimbrels was six pairs. They formed two subpopulations of two and four pairs respectively, and within each of these the territories were adjacent to each other. Within each subpopulation the members were in constant visual and auditory contact. The Whimbrels' territories overlapped those of the Curlews, but no interspecific aggression was observed; there was simultaneous/mutual alarm around each others' nests or offspring.

Nesting

Three nests of *N. ph. alboaxillaris* were found. One of them was sited on a level meadow of mixed herbs and grass, partly flooded in spring, in a scarcely noticeable depression. On 25th May 1997 in this nest two eggs were cracked and two hatched. The other two nests contained, on 26th May, three fresh and four well-incubated eggs respectively. The first of these nests was located in a clover crop at the upper edge of the floodplain, while the second was on a dry mound, on a field left from the previous year, bordering a patch of virgin steppe along the upper slope of the stream valley. The lining of the nest on the meadow consisted of dry grass leaves. The nest diameter, cup diameter and cup depth were 18.5, 12.0 and 4.4 cm. The nest in the clover field was in the form of a deep pit in the earth, lined with cereal straw; its dimensions were 22.0 x 19.5, 12.5 and 5.5 cm respectively. The nest on the field was a fairly massive construction of dry cereal straw from the previous year; its dimensions were 30.0, 14.5 and 4.5 cm respectively. The average measurements of these nests were 23.0 ± 2.1 (n= 6), 13.0 ± 0.4 (n = 6), and 4.8 ± 0.3 (n = 3). We assume that the clutch containing three fresh eggs on 26th May was a second laying.

The eggs were coloured like those of the nominate race of Whimbrel: the background colour in two clutches was dark green, and in the third yellow-brown. The sizes of the eggs were (in mm): first clutch - 59.9 x 42.8, 60.7 x 44.4 and 60.8 x 45.2; second - 64.5 x 43.9, 62.7 x 43.2 and 63.7 x 42.7; third - 58.8 x 42.7, 60.0 x 43.0, 58.6 x 42.7 and 57.9 x 44.4. The average measures of these ten eggs were: length - 59.56 (0.39, largest diameter - 43.5 (0.27. In comparison with eggs of the *phaeopus* race, those of *alboaxillaris* are slightly larger. In his monograph Makatsch (1974) gives average measurements for *phaeopus* which do not overlap those of *alboaxillaris*, whereas the extreme measures do in all cases. More recent reports affirm that there is no clear geographical variation in egg sizes (Cramp & Simmons 1983).

In the nest on the floodplain meadow two nestlings hatched between 10.00 and 14.00 hours (local solar time) on 25th May 1997. The third nestling appeared on the morning of 26th May before 08.00. They do not differ in colour from nestlings of the race *phaeopus*. Bill length in the *alboaxillaris* downy young was 17.3, 17.4 and 18.2 mm, and the tarsus was 36.9, 36.0 and 37.8 mm.

Both males and females incubated, although the females were as a rule found on the nest during daylight hours. Both parents watched over the nestlings once they had left the nest. On 26th May 1997 two pairs had nestlings, and the other birds had clutches. All six pairs of Curlews in the same area had nestlings, to judge by their behaviour.

DISCUSSION

The work described here resulted in the discovery of the breeding site of the steppe race of the Whimbrel. This is the only one known at present. Judging by the rather sketchy investigation of the steppes between the rivers Volga and Ishim, it is reasonable to assume that there are other sites. In all probability other Southern Whimbrel nesting sites are also situated in river valleys of the steppe and forest-steppe zones of Zaural'e, and possibly of Priural'e. Although our searches in Kustanay Oblast (Kazakstan) were not successful, it is still possible that the Southern Whimbrel inhabits similar sites on the Turgay Plateau and in the Turgay Depression.

As our experience has demonstrated, *Numenius* is absent from many places with entirely suitable conditions, meaning that the birds' distribution is patchy. The discovery of new nesting sites is very much a chance affair. Nevertheless, guided by the type of habitat preferred by Whimbrels, searches are best concentrated in the forest-steppe zone and the northern half of the steppe zone. There are as yet no grounds for dismissing the possibility that the Southern Whimbrel may nest in the dry steppes, but it may be that nesting occurs in the southern part of the steppe zone only occasionally, mainly in cooler and wetter years. A similar pattern has been noticed for Curlews between the rivers Volga and Ural, where the southern boundary of their breeding range shifts 30-60 km in a meridional direction according to the dampness of the season (Shevchenko *et al.* 1993). We think similar considerations apply to not only the possible but also the demonstrated facts of Southern Whimbrel nesting in the steppes around Lake Chelkar (Bostanzhoglo 1911; Shevchenko *et al.* 1993). It is probable that the extent of fluctuation in the southern

boundary of the Southern Whimbrel's breeding range is different, and could exceed 100 km.

We found Whimbrels nesting on meadows and fields of crops adjacent to floodplain meadows. After the nestlings had hatched the birds moved onto the meadows. Unfortunately there are no descriptions in the literature giving a clear idea of the nesting habitats of *alboaxillaris*. Only information from the work of Karamzin (1901) and a collected specimen with brood patches confirms that this subspecies of Whimbrel also formerly nested mainly on meadows along valleys of steppe and forest-steppe rivers, whereas encounters with them in steppe habitats were much rarer.

In contrast with the Curlew, the Southern Whimbrel is evidently a more specialised meadow species. Although the Curlew also likes occupying meadows, our observations showed that in the steppe zone it equally successfully settled in fresh-water and solonchak flooded meadows, sandy feather-grass [*Stipa*] steppes, and black-wormwood [*Artemisia*] associations in complex dry steppes. More rarely and at lower density, it occupies virgin feather-grass steppes on chernozems and in *Eurotia* semi-desert. Thus, of 19 Curlew nests found by us in 1996, two were on solonchak *Puccinellia* meadows by lagoons, three on non-saline *Agropyron* meadows by lagoons, two on ordinary water meadows of river floodplains, two in feather-grass/fescue [*Festuca*] steppes, three in feather-grass steppes on sand, three on black-wormwood associations of the dry steppe subzone, three in *Eurotia* semi-desert, and one on a field under potatoes the previous year. According to Ryabov (1982), in North Kazakstan the Curlew nests in various open habitats from forest-steppe to semi-desert inclusive.

The impression is gained that the two main habitat requirements of this species are height and structure of the vegetation cover, and the presence of nearby water (especially important in the south of the steppe zone). As for the vegetation, the most important factor is that it should not be too high, allowing clear observation of any danger. According to our observations on floodplain meadows of tributaries of the River Klyazma in Vladimir Oblast, Curlews nested only in parts of the meadows with low vegetation which was mown or damaged by stock [by grazing and/or trampling] the previous year. They never occupied meadows which emerged from the snow in an unmown state. Another important factor is the presence of areas with relatively sparse vegetation, which evidently allows more effective foraging since the food items are more accessible. In addition the birds prefer such habitats for their nest sites.

We suggest that the Southern Whimbrel's habitat requirements are similar to those of the Curlew. The latter has however a greater partiality for damp conditions, so it preferentially occupies meadow habitats. Karamzin (1901) made a point of noting the Whimbrel's preference for river floodplains and low-lying places in steppe. If these observations are correct, the most promising places in which to search for this extremely rare bird should be floodplain meadows of steppe and forest-steppe rivers, used as pasture or for hay.

The current low numbers and fragmented range of the Southern Whimbrel may be explained in part by the severe transformation of its nesting habitats. Even a century ago Karamzin (1901) was drawing attention to the severe degradation and transformation of open herbage-covered habitats in the steppe and forest-steppe in the Samara Guberniya of his day, resulting from the steppe being ploughed up and overstocked. Lavrenko (1980) pointed out that the steppes of the southern part of European USSR had been mostly ploughed as early as the 18th-19th centuries. In the second half of the 20th century, in connection with the development of the virgin steppe in West Siberia and Kazakstan, the area of arable land once again increased massively and as a result meadows in dry regions were also subject to severe changes as a result of agriculture. The drier types of meadow vegetation, like the steppe, were ploughed for crops. In places fields in the valleys of steppe streams come right up to the water or to the steep bank. On the remaining patches of meadow vegetation the stocking density increased drastically, which increased disturbance and nest destruction from trampling, which in turn reduced the birds' breeding success. The mechanised handling of the hay also had a negative effect on nests and nestlings.

At the same time the negative effects of stock on wader breeding should not be exaggerated. It is well known that in the absence of grazing the species composition and structure of meadow and steppe vegetation changes (Pachoski 1917; Alekhin 1925; Lavrenko 1940, 1952; Rabotnov 1955, 1974, 1982). With moderate grazing pressure the species richness, numbers and density of breeding waders on meadow pastures is higher than on areas lacking stock (Morozov 1990; 1995). On unmown and ungrazed meadows in Vladimir Oblast, occupied mainly by tall clumps of Tufted Hair-grass *Deschampsia caespitosa*, waders are generally not seen. These tall-herb meadows are occupied only by Yellow Wagtails *Motacilla flava* and Whinchat *Saxicola rubetra*. The situation is similar in the steppes. For example, after the creation of the Orenburg Zapovednik and the cessation of grazing within it (in the section 'Burtinskaya Steppe'), the fallow fields were overgrown by tall herb communities, as a result of which Demoiselle Cranes *Anthropoides virgo*, Sociable Plovers *Chettusia gregaria* and White-winged Larks *Melanocorypha*

leucoptera stopped breeding - species of semi-desert and dry steppes, occupying habitats with low vegetation or requiring the presence of open ground (A.V. Davygora, personal communication).

Our work in 1996-97 showed that in North and particularly in West Kazakstan, in the zone of marginal agriculture (dry steppes), there is still a sufficiently large area of steppe habitats. For instance, according to official statistics, in West-Kazakstan Oblast the arable area comprises 22.1% (Priroda 1991). In Kustanay Oblast there is more arable, although only in the subzone of mixed-herb/feather-grass steppe is not less than 80% of the land ploughed; the corresponding figure for the turf/feather-grass steppes is 30-40%, and it is insignificant in the dry fescue/feather-grass steppe subzone (Ryabov 1982). Thus the alarmist view of the total ploughing-up of the virgin lands and the consequent disappearance of most of the steppe populations of Curlew (Belik 1994) is not entirely accurate. It is true, probably, only in relation to the Curlew populations occupying the forest-steppe and northern steppes on chernozm. There is no doubt that the numbers of this species have significantly declined after the virgin lands were ploughed up in these zones, but it is still not a particular rarity in the southern part of the Kustanay steppes (Ryabov 1982; our data). It became clear from our 1996 work that the Curlew is common not only in the steppes between the rivers Volga and Ural but also beyond the Urals as far as the border of Aktyubinsk Oblast (Kazakstan). It is highly polytopic (see above) and widely distributed, and in general its situation in this region is favourable. Accordingly it is suggested that probably one of the main causes of range reduction and population degradation of the Southern Whimbrel may be global climate change, in particular the increasing dryness of the climate in southern Europe, in Western Siberia and in Central Asia during the last century. Krivenko (1991) has suggested that this is the main influence on changes of range in a variety of bird species. A further possible negative factor might turn out to be changed conditions on the wintering grounds or at points of concentration while on migration, though this calls for separate specialised analysis.

ACKNOWLEDGEMENTS

The 1996 and 1997 expeditions were funded by Vogelbescherming Nederland. Simultaneous work in the field and consultation with local ornithologists - V.L.Shevchenko, P.V.Debelo, V.N.Moseykina and V.D.Zakharova - were invaluable for the organisation and successful completion of our searches. We express our sincere gratitude to S.N.Erokhov and V.P.Belik for close and fruitful cooperation during the expedition and creative discussions on many ornithological questions. I thank the curators of the ornithological depts of ZIN RAN and ZM MGU - V.M.Loskot and P.S.Tomkovich - for permission to study their collections.

REFERENCES

Alekhin V.V. 1925. *Nashi poyemnyye luga* (Our Floodplain Meadows), Moscow, pp.1-122.

Belik V.P. 1994. 'Gde zhe obitayet tonkoklyuvy kronshnep?' (Where on earth does the Slender-billed Curlew breed?, *Informatsionnyye materialy Rabochey gruppy po kulikam*, 7: 30-32. [English translation: *Wader Study Group Bull.* 75: 37-38.]

Bostanzhoglo V.N. 1911. *'Ornitologicheskaya fauna aralo-kaspiyskikh stepey'* (Avifauna of the Aral-Caspian steppes), Materialy k poznaniyu fauny i flory Ros. imperii, 11: 1-410.

Buturlin S.A. 1934. *'Kuliki, chayki, chistiki, ryabki i golubi'* (Waders, gulls, auks, sand-grouse and pigeons), Polny opredelitel' ptits SSSR, Moscow & Leningrad, 1: 1-254.

Cramp S. & Simmons K.E.L. 1983. *Birds of Europe, West Africa and the Middle East: The Birds of the Western Palearctic*, Oxford Univ. Press, 3: 1-913.

Gladkov N.A. 1951. *'Otryad kuliki'* (Order Waders), Ptitsy Sovetskogo Soyuza, Moscow, 3: 3-372.

Dolgushin I.A. 1962. *'Otryad kuliki - Limicolae'* (Order Waders - Limicolae), Ptitsy Kazakhstana, Alma-Ata, 2: 40-245.

Eversmann E. 1866. *Estestvennaya istoriya ptits Orenburgskogo kraya* (Natural History of the Birds of Orenburg Kray), Kazan', 3: 1-621.

Il'ichev V.D. & Fomin V.E. 1988. *Ornitofauna i izmeneniye sredy (Na primere Yuzhno-Ural'skogo regiona)* (Avifauna & Changes to the Environment, exemplified by the South-Urals Region), Moscow, pp.1-248.

Karamzin A.N. 1901. *'Ptitsy Buguruslanskogo i sopredelnykh s nim chastey Bugul'minskogo, Buzulukskogo uezdov Samarskoy gubernii i Belebeyskogo uezda Ufimskoy gubernii'* [Birds of Buguruslanski and adjacent parts of Bugul'minski, and Buzulukski uezds of Samarski guberniya and Belebeyski uezd, Ufimski guberniya], *Materialy k poznaniyu fauny i flory Ros.imperii*, 5: 202-394.

Karelin G.S. 1875. 'Razbor stat'i A.Ryabinina "Estestvennyye proizvedeniya zemel' Ural'skogo kazach'ego voyska", izvlechennoy iz knigi ego: *Materialy dlya geografii i statistiki Rossii - Ural'skoye kazach'e voysko. 2 chasti*. Spb. 1866 [Analysis of A.Ryabinin's article 'Natural products from the lands of the Urals Cossack District', extracted from his book Contributions to the Geography and Statistics of Russia - Urals Cossack District. 2 parts., St Petersburg, 1866], Trudy S-Peterburgskogo obshchestva estestvoispytateley, 6: 1-113.

Kozlova E.V. 1962. *'Rzhankoobraznyye. Podotryad kuliki'* [Plovers. Suborder waders], *Fauna SSSR*. Ptitsy, Moscow & Leningrad, 2/1 (3): 1-433.

Krivenko V.G. 1991. *Vodoplavayushchiye ptitsy i ikh okhrana* [Waterbirds and their Protection], Moscow, pp.1-217.

Lavrenko E.M. 1940. *'Stepi'* [Steppes], *Rastitel'nost'* SSSR, Moscow & Leningrad, 2: 1-265.

Lavrenko E.M. 1952. *'Mikrokompleksnost' i mozaichnost' rastitel'nogo pokrova stepey kak rezul'tat zhiznedeyatel'nosti zhivotnykh i rasteniy'* [Microcomplexity and mosaic structure of steppe vegetation as a result of animal and plant activity], Trudy Botanicheskogo instituta AN SSSR, 8: 40-70.

Lavrenko E.M. 1980. *'Kharakteristika stepey kak tipa rastitel'nosti'* [Characteristics of steppe as a vegetation type], *Rastitel'nost' evropeyskoy chasti SSSR,* Leningrad, pp.203-206.

Makatsch W. 1974. *Die Eier der Vogel Europas* [The Eggs of European Birds], Leipzig: Neumann Verlag, 5: 1-468.

Meinertzhagen R. 1930. *Nicoll's Birds of Egypt*, London, 2: 1-770.

Morozov V.V. 1990. *'Redkiye gnezdyashchiyesya kuliki poymennykh lugov rek Moskvy i Klyaz'my'* [Rare nesting waders of the floodplain meadows of the rivers Moskva and Klyazma], *Redkiye vidy ptits tsentra Nechernozem'ya,* Moscow, pp.144-149.

Morozov V.V. 1995. *'Okhrana ptits lugovykh ekosistem sredney polosy Rossii'* [Protection of birds of the meadow ecosystems of the central belt of Russia], *Problemy sokhraneniya raznoobraziya prirody stepnykh i lesostepnykh regionov,* Moscow, pp.52-53.

Morozov V.V. 1996. *Slender-billed Curlew Surveys in Russia and Kazakhstan*. Unpublished report, pp.1-24.

Pachoski I.K. 1917. *Opisaniye rastitel'nosti Khersonskoy gubernii*: *Stepi* [Description of the Vegetation of Kherson Guberniya: Steppes], pp.1-366.

Peters J.L. 1934. *Check-list of the Birds of the World*, Cambridge, Mass., 2: 1-401.

Rabotnov T.A. 1955. *'Prirodnyye usloviya poym evropeyskoy chasti SSSR'* [Natural conditions of the floodplains in the European part of USSR], *Lugovodstvo v poymakh rek*, Moscow, pp.7-51.

Rabotnov T.A. 1974. *Lugovedenie* [Meadow Management], Moscow, pp.1-384.

Ryabov V.F. 1982. *Avifauna stepey Severnogo Kazakhstana* [Avifauna of the Steppes of North Kazakstan], Moscow, pp.1-176.

Sintsov R.V. (ed.) (1991) *Priroda Ural'skoy oblasti i eye okhrana* [Nature of Uralski Oblast and its Protection], Ural'sk, 1: 1-149.

Sotnikova E.I. 1992. *'Kuliki, predlagayemyye k vklyucheniyu vo vtoroye izdaniye Krasnoy knigi RSFSR'* [Waders proposed for inclusion in the 2nd edition of the Red Data Book of RSFSR], *Informatsiya Rabochey gruppy po kulikam,* Ekaterinburg, pp.18-19.

Stepanyan L.S. 1990. *Konspekt ornitologicheskoy fauny SSSR* [Conspectus of the Avifauna of USSR], Moscow, pp.1-728.

Shevchenko V.L., Debelo P.V., Gavrilov E.I., Naglov V.A. & Fedosenko A.K. 1993. *'Ob ornitofaune Volzhsko-Ural'skogo mezhdurech'ya'* [Avifauna of the Volga-Ural watershed], *Fauna i ekologiya ptits Kazakhstana*, Almaty, pp.7-103.

Vaurie C. 1965. *The Birds of the Palearctic Fauna: a Systematic Reference, Non-Passeriformes*, London, pp.1-763.

Zarudny N.A. 1888. *'Ornitologicheskaya fauna Orenburgskogo kraya'* [Avifauna of Orenburg Kray], *Zap. Imper. Akad. nauk,* 57, Appendix 1: 1-338.

Zarudny N.A. 1897. *'Dopolneniya k 'Ornitologicheskoy faune Orenburgskogo kraya'* [Addenda to Avifauna of Orenburg Kray], *Materialy k poznaniyu fauny i flory Ros. imperii,* 3: 1-142.