

The Slender-billed Curlew quest

On the very brink of extinction, the once numerous Slender-billed Curlew is a true enigma. *Tim Cleeves, Nicola Crockford and Peter Köhler* report on a last-ditch attempt to find the bird – and how you can help.

Slender-billed Curlew is the rarest bird in the Western Palearctic. It is one of the five bird species in Europe – and 190 in the world – most threatened with global extinction, and classified as Critically Endangered by BirdLife International and the IUCN.

There have been no verified records anywhere since 1999, when birds were seen in Greece in April and Oman in February and August. This last sighting involved three juveniles, indicating that breeding must have occurred that year. At the last-known regular wintering site, Merja Zerga in Morocco, there have been no verified records since 1995.

The only verified records of nesting Slender-billed Curlews all date from the first quarter of the 20th century and occurred near Tara, east of the Urals in the Omsk region of south-west Siberia (Ushakov 1909, 1912, 1916 and 1925;

Gretton *et al* 2002). The last flocks of more than 100 were seen in Morocco at Lagune de Puerto Cansado, Khnifiss, in January 1964 (500-800 birds) and at Oued Chebeika in December 1974 (123 birds).

However, Slender-billed Curlew is easily overlooked and challenging to identify, and could be present in countries such as Iraq and Iran, which have been relatively inaccessible to skilled birders in recent years.

Last chance

This article is intended to help launch a 'final push' to find this enigmatic species before it is too late. If we lose Slender-billed Curlew, it will be the first extinction of a European bird since Great Auk in June 1844 and Canary Islands Oystercatcher in 1981 (BirdLife International 2008a). Eskimo Curlew, the birds' close relative in the Nearctic, is already classified as Critically Endangered

(possibly extinct) by BirdLife – with no verified sightings since the early 1980s. We hope it can be proven that Slender-billed Curlew still exists. The most urgent priority is to thoroughly search sites where the species is known to have wintered previously, as well as potential moulting sites, although no moult site has yet been identified.

It is likely to be easier to search the relatively few discrete, identifiable candidate sites in the putative wintering and moulting range than the vast continuous area of potential breeding habitat. Thus, unless stable isotope research narrows the search to within a radius of about 100-200 km, it is less of a priority to continue the 'needle in the haystack' search for Slender-billed Curlew in its probable breeding range in Russia and Kazakhstan.

There is a higher chance of catching birds at wintering sites, where they stay for prolonged periods, rather than passage sites that they may go through quickly. This makes satellite tagging easier, which is vital to find the breeding, passage, moult and wintering sites in order to take conservation action for the species.

We hope this article will inspire readers to plan their birding holidays and organise expeditions to the most likely Slender-billed Curlew sites. In addition, the special ►

This adult Slender-billed Curlew, one of several that used to winter at Merja Zerga, Morocco, in the early 1990s, was last seen in February 1995. There have since been no verified records at the site.



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Past records

The Slender-billed Curlew Working Group (SBCWG) collects and documents all records of the species on a database; visit www.slenderbilledcurlew.net. It separates those listed before and after 1990. It also distinguishes three categories of records:

- **Verified records:** these are authenticated by national organisations – rarities committees, BirdLife partners and so on – or, in the absence of such bodies, by other experts. They include records regarded as ‘confirmed’ by Gretton (1991 and 1994) unless proved otherwise by the relevant national organisations or by the original observer.
- **Unverified records:** these are unsubstantiated by any details such as a description or photograph, or are those on which a national organisation has not yet reached a decision or suggests that there is doubt, but are not yet rejected. This includes those treated by Gretton (1991 and 1994) as unconfirmed, unless proven otherwise.
- **Rejected records:** these have been rejected by a national organisation or other relevant experts.

More than half of the 617 verified records for 1900 to 1999 come from four countries: Italy – 99 verified records, mostly spring but some also in autumn and winter; Greece – 85, all seasons but mainly in spring; Morocco – 76, mainly in winter; and Hungary – 66, all seasons but mainly in

autumn. Almost a third are from another eight countries: Ukraine – 33 in all seasons, but more in autumn; Serbia – 30 in autumn and spring, but also in summer; Tunisia – 29 mainly winter; Turkey – 24, in all seasons but more in summer; Bulgaria – 23 in spring, autumn and winter; Iran – 19, mainly in winter; Romania – 18 in all seasons, but mainly autumn; and Russia – 17, mainly in spring but some also in summer and autumn.

About 85 per cent of the verified records since 1900 are from these 12 main range states, all of which have had at least 10 verified records during that period. There are another 12 range states with between three and nine verified records since 1990: mainly summer – Kazakhstan; mainly autumn – Poland, Austria, Malta, Iraq and Yemen; mainly winter – Algeria, Egypt, Iraq, Oman, France and The Netherlands; mainly spring – Bosnia-Herzegovina and Cyprus.

Only about 20 per cent (128) of the verified records since 1900 have been of more than three birds, with just over half referring to single birds.

Slender-billed Curlews have often been seen in close association with Eurasian Curlews. Associations with other waders such as Whimbrel, Black-tailed Godwit, Grey Plover, Northern Lapwing and *Tringa* species are not usually close (Gretton 1991).

It should be borne in mind that the number and distribution of records are heavily influenced by the number and distribution of skilled birdwatchers.

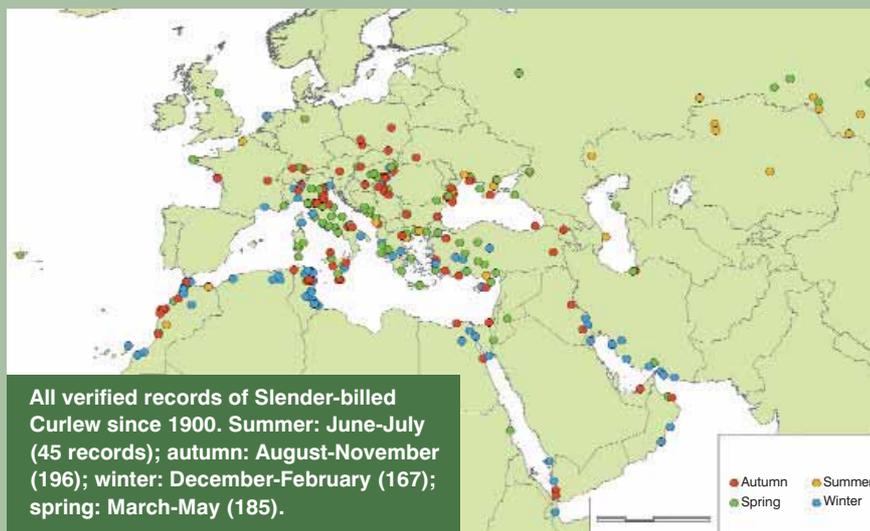
laminated ‘toolkit’ enclosed exclusively with this month’s *Birdwatch* has been designed to be taken into the field, and includes an identification guide and advice on steps to take if you are lucky enough to find a potential Slender-billed Curlew.

Breeding ecology

Like Eskimo Curlew in North America, in the 19th century Slender-billed Curlew was regarded as common in Europe in countries such as Romania, Hungary, Italy and Greece. It outnumbered the two other European curlew species – Eurasian Curlew and Whimbrel – in several areas, including Sicily, Malta, Tunisia, Morocco and Algeria, and sometimes occurred in spectacular, thousands-strong flocks. Even then, before its dramatic decline, which was probably due to overhunting and exacerbated by habitat loss, very little was known about the bird’s ecology.

According to Ushakov’s 1925 paper, confirmed nest sites near Tara, including a colony of 14 nests, were in an extensive quaking peat bog with dense cover of sedge mixed with Mares’ Tail *Equisetum*, with willow, birch and pine present. The birds arrived in the area from 10 May.

With such a small sample and an account dating back more than 80 years, when the species was already in decline, it would be wrong to conclude that all Slender-billed Curlews bred or breed in taiga marsh, or that the breeding dates remain the same now as they did in Ushakov’s day. The bog-forest transitional habitat he described during the early 20th century appeared similar in 1990 but by 1997 was already destroyed, having become afforested, and with adjacent areas cultivated (Gretton et al 2002).



The only known breeding site for Slender-billed Curlew was in the forest-steppe zone in the vicinity of Omsk and Novosibirsk.

Danilenko et al (1996) analysed vegetation maps in these areas and in other locations where birds had been recorded during summer in the 1800s. They summarised the breeding habitat requirements as forest-steppe: "Open, locally wet areas with dense sedge or grass vegetation, with patches of bare ground, relief which is not flat (moderate elevations and depressions), and with adjacent shrubs or woodland patches formed by deciduous trees and/or pines." Such habitat within western Siberia extends in area to between 200,000 and 400,000 sq km.

Indeed, Ushakov's observations were made towards the northern edge of the forest-steppe zone, with parts of the marsh having some characteristics of the taiga, such as the presence of conifers. It is possible that the main breeding habitat of Slender-billed Curlew was further north, in the taiga, or further south even in the true steppe (Gretton et al 2002).

Moult strategy

The post-breeding moult of Slender-billed Curlew is complete, and includes flight feathers, wing coverts, body and tail. It occurs early in the year, from June to August; this is in contrast to the post-breeding moult of nominate Eurasian Curlew, which doesn't start until early July and is completed by early October. The eastern *orientalis* form of Eurasian Curlew starts its primary moult later still, mostly from mid-August to mid-September, with completion by December, though there is overlap with the nominate form.

The timing of Slender-billed Curlew's moult could indicate that birds start shedding their feathers near their breeding sites as, according to Ushakov, after fledging in early July the "birds stay around the nesting area for quite a long time". After breeding, he said that migration probably starts "in the second half of August". However, this would be unusual for a *Numenius* species, and is certainly untrue according to the new isotope data that show a very clear separation between adult and juvenile feathers, the latter having been grown on the breeding grounds (Geoff Hilton, pers comm).

Flight-feather moult is occasionally suspended, and then completed in wintering areas before January-February. Juveniles undergo a partial moult,

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Britain's sole record of Slender-billed Curlew (left, with Eurasian Curlew), at Druridge Bay, Northumberland, dates back to early May 1998.



complete by October-December, which excludes flight feathers, upperwing coverts, tail, some scapulars and most tertials. In spring, most feather tracts are renewed again, but flight feathers remain unmoulted.

Habitat preferences

At wintering and migration stop-over sites the species appears to be something of a generalist, found in both inland and coastal saline, brackish and freshwater habitats. Coastal wetland complexes with seashore, estuary, lagoon, brackish marshes, saltmarshes, beaches, mudflats, arable and grazing land seem favoured. Inland, the species has used salt lakes and dried-up fish ponds in areas of steppe and freshwater lakes and marshes, even in montane areas (Gretton 1991).

In many parts of the species' former migratory and wintering range, for example in Morocco, Tunisia and Italy, the available habitat and food supply has diminished. This is often due to large-scale drainage, irrigation, water supply and flood control schemes. Wars in Iraq and Iran have also impacted on large areas of marshland that are now rendered unsuitable as stop-over habitat, due to drainage and pollution.

The only food items recorded for the species have been insects and their larvae, molluscs, crustaceans and annelid worms. Feeding behaviour has been seen to involve pecking and probing, and in shallow water, the species has been noted moving more quickly than Eurasian Curlew, recalling Spotted Redshank (Glutz von Blotzheim et al 1977).

Searches so far

In the past 19 years there have been at least 17 expeditions, all unsuccessful, to try to locate Slender-billed Curlew at wintering, breeding and passage sites. These expeditions have varied in time from two or three days to more than six weeks. The most recent expeditions have included Russia and Kazakhstan (1996-97), Russia (Baraba and Karasuk steppe,

1997), Kazakhstan (July-September 1998), Russia (Tumen plains and Omsk region, 1999), Iran (January-February 2000), Morocco (Lagune de Khnifiss, December 2001), Yemen (November 2001-January 2002), Iran (January 2002), Tunisia (January 2003), Libya (January 2005), Ukraine (July-August 2006) and Uzbekistan (April-May 2007 and April-May 2008).

Where next?

To maximise the conservation gains from any find, the first priority is to search wintering areas or sites where birds are likely to stay for more than a few days, for example if they are moulting. The following north African and Middle Eastern countries merit searches during the winter months:

- Morocco: the well-documented sightings at Merja Zerga on the Atlantic coast are the best known in the last 30 years, with 30 verified records since 1980 from September to February.
- Tunisia: seven of the 10 sightings since 1980 were from Kairouan and Monastir down to Sfax, from November to February and in September.
- Algeria: the last two counts of more than 30 birds came from here in January 1982.
- Iran: there were 15 records in Iran during the 1990s; 12 in January, with all but one, in the Gulf of Oman, on the Persian Gulf, plus one in February, as well as in May and October on the south-east coast of the Caspian Sea.
- Oman: two of the last verified records of Slender-billed Curlew were from here in 1999.
- Iraq: the last of five records, spanning September to January, was in 1979.
- Egypt: the last of six records, between September and February, was in 1980.

So too would the following European countries with winter records since 1980:

- Italy: the Gulf of Manfredonia had 19 verified sightings since 1980, from December to May and also in August.
- Greece: the main site is the Evros Delta, ►



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A Slender-billed Curlew (left) with a Eurasian Curlew and other waders in north Yemen in January 1984. Could such under-explored countries still provide refuge for this species in winter?

with 28 verified records since 1980, mainly in spring, but also in August and October, and from December to February. Sites without wintering records include Porto Lagos, with eight verified records since 1980, mainly April-June, but also August and September. The second last verified record of the species comes from the Evrotas Delta in April 1999.

- Hungary: five birds were reported from the Hortobágy region in September 2002, and there have been seven verified records since 1980, from September-December and in May.
- Bulgaria: the Burgas region of the Black Sea coast has produced most records, especially in autumn – 11 since 1980, in September, November-January, April and May.
- Ukraine: since 1980 there have been nine records from the Danube Delta – July to October and April – and eight from the Lebyazhy Islands Reserve on the Crimean Black Sea coast, August-October and April-May, and a winter record exists from the 1970s.

It is strange that there are no verified 20th-century records of Slender-billed Curlew from Spain, considering that the species used to regularly winter in Andalucía in the 19th century.

Relative to the other two European *Numenius* species, but in common with Eskimo Curlew, Slender-billed Curlew appears to have a relatively inland migration route. Past records from before the decline suggest that the species moved west from its breeding grounds in Siberia

or Kazakhstan, with birds peeling off southwards down a succession of increasingly westerly routes.

Birds that used the more western paths presumably went north of the Caspian Sea to the Azov and Black Seas, stopping at the Crimean wetlands and Danube Delta. They would head for the Pannonian Plain of Hungary and Serbia, and finally down through either France and Spain to Morocco, or via Italy and Malta to Algeria and Tunisia.

More central routes seem to exist, for example down through Bulgaria into Greece or continuing down through Turkey to Egypt and the Red Sea, and perhaps onward to Yemen. A more easterly route ran down along the Caspian Sea and eastern Black Sea to the Persian Gulf, perhaps to Iran and Iraq, and the Arabian Sea, Oman. Migrant and wintering Slender-billed Curlew could still potentially be found on suitable habitat anywhere along these routes.

Stable isotope work might help narrow down some potential breeding areas in Siberia, or perhaps in the steppes of Kazakhstan or on passage in Uzbekistan.

In any case, for observers travelling to potential locations to look for this species, please report any places and dates searched without any Slender-billed Curlew records including, if possible, any information on habitats and threats, including habitat changes and disturbance.

Identification

Successful conservation of Slender-billed Curlew depends on reliable data. These can only be obtained if every record of a possible Slender-billed Curlew is carefully distinguished from Eurasian Curlew and Whimbrel. This is by no means easy, especially as observers also need to

consider their clinal intergrading subspecies, or forms, breeding further east. These share more common features with Slender-billed Curlew than nominate Eurasian Curlew and Whimbrel. They are the eastern *orientalis* race of Eurasian Curlew, breeding east of the Urals, and *suschkini* Eurasian Curlew and *alboaxillaris* ('Steppe') Whimbrel, both rare and breeding in steppe regions of southern Russia and Kazakhstan.

Therefore, searching for Slender-billed Curlew requires a broad knowledge of the two more common and widespread curlew species in the Western Palearctic, including their variability in plumages and size. Within the species, females average larger and heavier, and have longer bills. Bills of juveniles are much shorter in summer and will attain final length only in their first autumn. Freshly moulted feathers are darker and show stronger contrasts than older faded ones.

The distinguishing characteristics of the three species are compared and summarised in detail in the ID 'toolkit' accompanying this issue – please refer to the table on page 3 of the toolkit for detailed information.

Stable isotope research

The RSPB is nearing completion of a research project involving stable isotope analysis of carbon, nitrogen, hydrogen and hopefully strontium. This entails studying Slender-billed Curlew feathers from a number of international museum collections in order to examine their geographical origins. This forms part of the RSPB's continuing commitment to the work of the Slender-billed Curlew Working Group (SBCWG).

The work offers the possibility of delimiting Slender-billed Curlew breeding areas, and ruling in or out potential moulting sites. It could thus help refine the search for the world's remaining Slender-billed Curlews.

The analysis involves measuring the proportions of different stable isotopes of a given element in a sample, such as a feather. Isotope ratios in a sample vary depending on where, geographically, that tissue was grown (among other factors, such as habitat and diet). For example, the proportions of strontium stable isotopes in a feather will vary according to the origins of the rocks from which the metal originally came, before being ingested by the bird in its food.

Once grown, feathers retain the isotopic 'signature' of the place where they were grown, regardless of where the bird subsequently moves. Furthermore, the isotope signature will remain unchanged in the feather even after many decades in a museum. Birds in their first autumn/winter will have juvenile flight feathers that were grown on the breeding sites, while adult birds will have flight feathers grown at the post-breeding moult sites. By sampling a range of museum skins, we have the potential to obtain information about both areas.

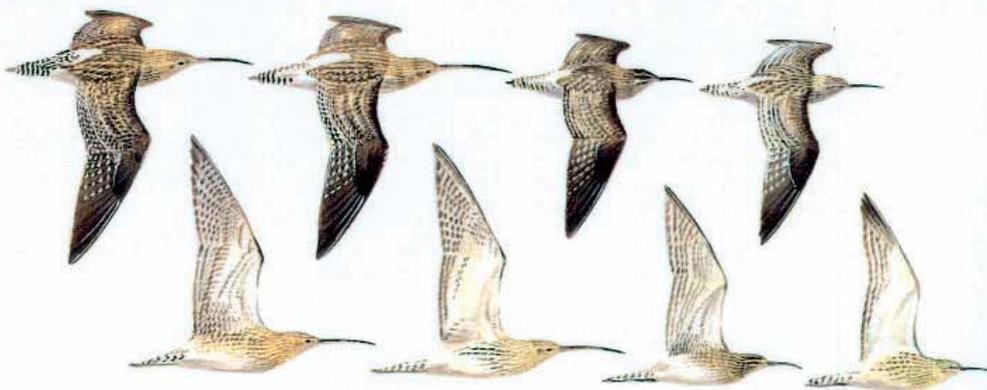
The second part of the project is to 'ground-truth' the Slender-billed Curlew isotope signatures using feathers of similar species from across the potential range, to create an 'isotopic map'.

Co-ordinated action

Slender-billed Curlew is subject to the highest level of protection under the relevant international treaties. In 1994 the Convention of Migratory Species (CMS) established a Memorandum of Understanding (MoU) concerning conservation measures for the species (see www.slenderbilledcurlew.net) which has now been signed by 18 of the species' 30 range states, as well as 13 potential range states, although unfortunately not yet Russia.

In the framework of the MoU, to co-ordinate concerted action for the species, the SBCWG was established in 1997. After several years of dormancy,

Curlews in adult plumage (reproduced from the toolkit enclosed with this issue). From left: Eurasian Curlew (*N a arquata* and *N a orientalis*), Whimbrel and Slender-billed Curlew. Compare size, bill shape and length, head markings, and the pattern of the upperwings, underwings and tail.



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since mid-2008 it has been chaired by Nicola Crockford, with Tim Cleeves as the database and fieldwork co-ordinator.

Its activity is guided by the international action plan for the species. This was published in 1996, and is now in the process of revision. The most recent draft of the revision dates back to 2002, and it is intended to finalise it by 2010 for approval by governments.

One of the key roles of the SBCWG is to maintain the database of records of Slender-billed Curlew and the bibliography. Another is to catalyse research, especially to help locate the bird. Historical data on habitat preference and diet throughout the range needs to be compiled and an analysis of the distribution of suitable habitat conducted.

It might also be instructive to examine the wet/dry cycle in relation to reproduction and distribution by examining Russian meteorological data, and to undertake a comparative study of other declining waders of similar habitats, such as 'Steppe' Whimbrel, Sociable Lapwing and Eskimo Curlew.

At the moment the work operates without a budget, although the RSPB is undertaking the isotope work and underwrites the costs of the SBCWG, including the roles of chairman and co-ordinator. Further funds are now needed, especially for search expeditions.

Conclusion

We trust that those who seek to follow the quest to find Slender-billed Curlew now have all the basic information they will need. We have suggested where and when the birds are most likely to be found, including giving relevant clues (where known) regarding their ecology, and have provided detailed guidance to help identify the species in the field, report it and seek verification of any records. We

have also outlined research, especially on the use of stable isotope analysis, as a tool to track down this most threatened species in the Western Palearctic.

All we need now is for you to find one, or make it possible for others to find one. So please do whatever you can to help, and check those curlews – the Slender-billed Curlew challenge is on! ■

Acknowledgements

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