Sightings of Slender-billed Curlew *Numenius tenuirostris*(Vieillot, 1817) in the Balkan countries.

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The first reported sighting of the Slender-billed Curlew *Numenius tenuirostris* in the Balkan countries was made by the Italian traveller Count L.F. Marsili (1726) who visited the Danube between the Kalenberg mountain and the confluence of the Yantra River in 1682-1683. Precise data on this bird however were only gathered after 1840. Since then, and up to 1987, there have been a total of 814 sightings and specimens of the Slender-billed Curlew. Up to 1900 they total 312 specimens, between 1901 and 1950: 45, 1951-1975: 243, and since 1975: 214. The highest number was between 1888-1900 and 1965-1979. The Slender-billed Curlew occurs in Balkan countries throughout the year and is supposed to have nested by the lakes of Dobrudzha and of Greece. As proportions of total records, birds on migration constitute 29.5%, summer records make up 22.8%, autumn records 40.2%, and winter records 7.5%. Migration was most marked in April - 19.2% and between July - October, 62.4%. The greatest numbers were found in lakes and marshes along the Maritsa (150 specimens), along the Bulgarian Black Sea coast, in Dobrudzha, near Sofia, Mesologion, and in Viovodina. Measurements of Slender-billed Curlews are presented and conservation recommendations for the Balkans made.

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This paper was prepared in connection with the programme of the International Council for the Protection of Birds (ICBP) to investigate the past and present status of the Slender-billed Curlew in the Balkan countries and its protection. The Slender-billed Curlew has been mentioned as an extinct species as early as the middle and end of the last century by N.A. Severtsov and M.A. Mansbir. At present it is considered the rarest bird of the West Palearctic, and it is variously considered to be "most threatened bird of the world", a "positively threatened species" or even a "completely extinct species" (Kozlova 1962; Ivanov 1976). It is included in Appendix I and II of the Convention of the Conservation of Migratory Species, in a number of national Red Data Books and has been given legislative protection by several south European countries.

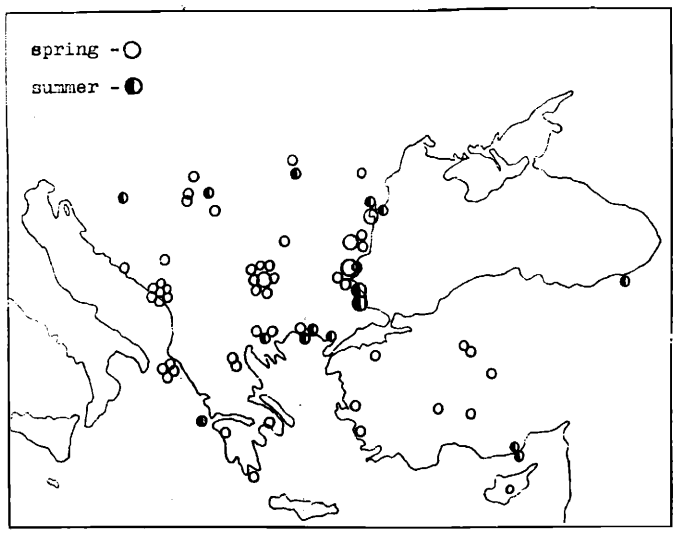
The territory of the Balkan countries is an important area for the Slender-billed Curlew. The largest concentrations of the species since 1975 have been in the countries of the Balkan peninsula. Other observations of numerous Slender-billed Curlews are also reported, which unfortunately are insufficiently known among ornithologists (Figure 1). In order to ensure better and fuller protection of the Slender-billed Curlew we need to take into account the available data from the past, as well as information on precise migration periods and the most important migratory staging sites.

The earliest sighting of Slender-billed Curlew in the Balkan peninsula is attributed to Count L.F. Marsili (1726), the Italian traveller who visited the Danube between the Kalenberg mountain and the confluence of the Yantra River in 1682 and 1683. Nevertheless precise numbers were only given after 1840. Over the past 150 years there have been a total of 814 reports of the Slender-billed Curlew in the area (Figure 2).

HISTORICAL RECORD

Sightings and data prior to 1900

This data comes chiefly from museum specimens. Precise numbers of sightings as well as descriptions are scant. Sightings of single birds in Romania, Transylvania, and along the



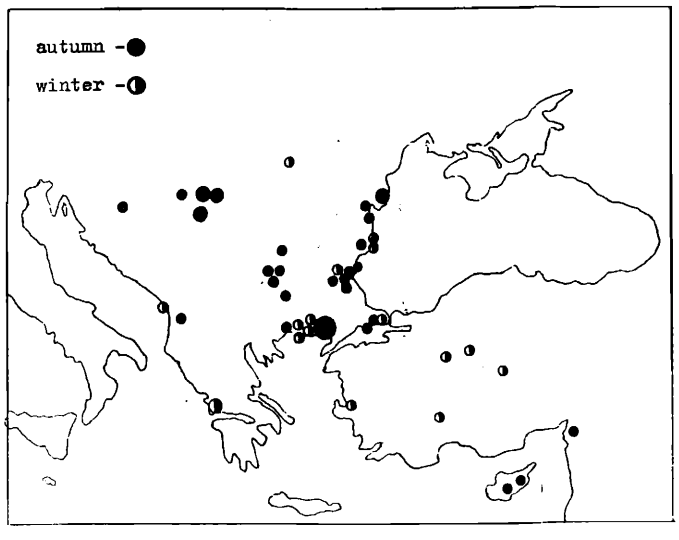


Figure 1. Sightings of the Slender-billed Curlew *Numenius tenuirostris* in the Balkan countries (1840-1987): o = 1-10 birds; O = 11-100 birds; **O** = over

Danube are known (Stetter 1845; Buda 1882; Lintia 1955). Observations in Yugoslavia refer to Dalmatia, Voivodina and Monte Negro (Heine & Reichenov 1882-90; Fuhrer 1895, 1901; Reiser & Fuhrer 1896; Rucner 1959; Antal *et al.* 1971). The Slender-billed Curlew was observed on many occasions in the Zogai marsh, the Hutovo marsh, Lake Skadar and in Stari Vrbas. The only precise numbers for the Slender-billed Curlew in Albania comes from this period (Powys 1860). Many observations of the species are known from Bulgaria. The largest flocks are reported by Reiser (1894) on July 1st and 2nd 1890, south of Burgas (40 birds), and in April 1888, near Ravno Pole, Sofia district (Hristovic 1890). Flocks of Slender-billed Curlews were observed in Dobrudzha and south of Dobrudzha along the Black Sea coast as well as along the Maritsa and Iskar rivers. Single specimen were reported in marshes around Sofia, the Upper Thracian plain and the coastal lakes (Elwes & Buckley 1870; Alleon 1886; Yurkevich 1904; Collections du Musee Sophia 1907).

The Slender-billed Curlew was a much more frequent bird in Bulgaria than the Whimbrel *Numenius phaeopus*, since Reiser (1894) claimed that the latter species had not been observed in Bulgaria at all. For that period single Slender-billed Curlews were reported about ten times from various regions of continental Greece and Corfu (Powys 1860; Reiser 1905). The birds were occasional visitors in Cyprus, where many of them were reported in Larnaka and Limasol (Lilford 1889; Bucknill 1910). The collection of the National Museum of Natural History, Sofia has specimens of Slender-billed Curlews, gathered by Count A. Alleon in Turkey near Istanbul, during December 1892, and in Marikyoi on 11 September 1895. Three more sightings are known from Asia Minor

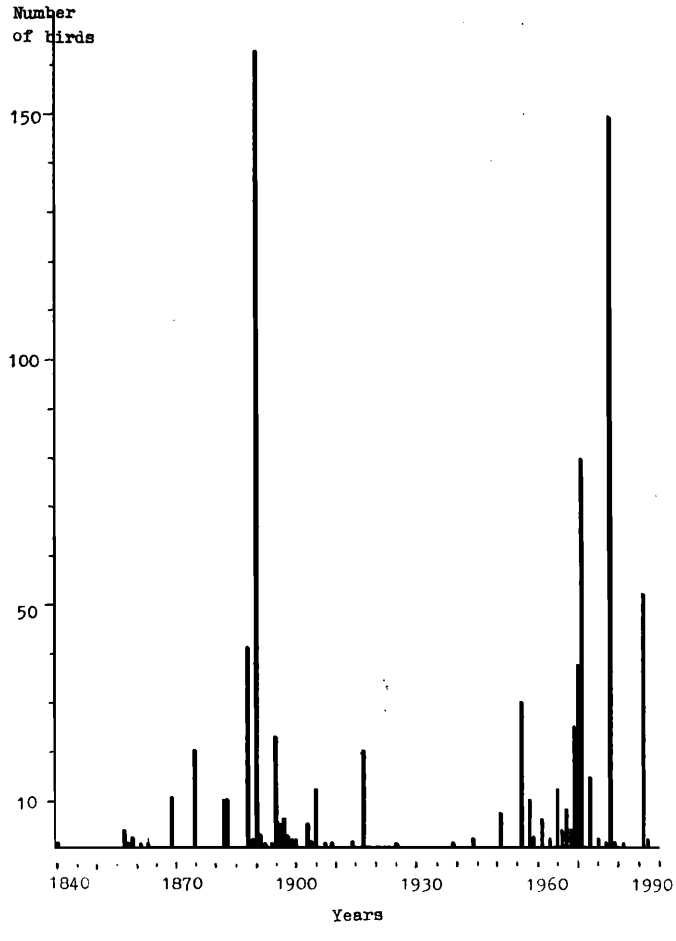


Figure 2. Sightings of the Slender-billed Curlew *Numenius tenuirostris* in the Balkan countries.

(Schrader 1891; Sharpe 1896). The total number of observations is 312 for that period prior to 1900 (38.3% of all observations for this region.)

Records between 1901-1950

The period has the smallest number of observations (45 or 5.5%) (Figure 2). Nevertheless this does not necessarily mean that the species visited the Balkans less frequently, rather the effort of ornithologists was possibly less. According to the definition of Molineux (1930), the Slender-billed Curlew has been an infrequent visitor in Bulgaria, a migratory and wintering species in Romania, Yugoslavia, Greece and Cyprus. Reported as migratory in Dobrudzha and Bessarabia (Vasiliu & Rodewald 1940) it has been seen on several occasions in Voivodina and in the Hutovo marsh (Csornia 1937-40; Reiser 1939; Antal *et al.* 1971). At the beginning of the century an insignificant migration of Curlews occurred in Sofia. The Slender-billed Curlew was accepted as a regular migrant, and in the Burgas region one bird occured regularly (Andersen 1905; Varbanov 1912; Harrison & Pateff 1933). Over the period the Slender-billed Curlew was observed in Greece only once (Makatsch 1950). Data exist for Turkey which probably gave grounds for Kumerloeve (1961) to express doubts whether the Slender-billed Curlew belonged to Turkish bird fauna.

Records between 1951-1975

During this period there are numerous sightings (243 or 29.8% of all observations) (Figure 2). The highest numbers were found in the marshes in Voivodina, where it regularly stopped on migration. Three flocks of 'tens of birds' are reported (Marcetic 1958-59; Dimitrijevic 1977; Stefanovic & Ham 1972). It was considered to migrate through Northeast Slovenia, Slavonia, Dalmatia, Bosnia and Herzegovina, southern Montenegro, Voivodina and possibly Macedonia (Matvejev & Vasic 1973). During the migration the Slender-billed Curlew was reported on several occasions in the marshes along the Danube Delta, including a flock of 28 birds (Bacescu 1961, Cramp & Simmons 1983). The observations came entirely from the Bulgarian Black Sea coast "at any rate flocks of 4-7 birds" (Prostov 1964). Several solitary migrants are also reported (Peshev & Boev 1962). Slender-billed Curlews crossed northern and central Greece regularly in the course of its migration (Bauer *et al.* 1969). A number of observations are known from the Maritsa estuary, the Porto Lago lakes, Langada, the Axios estuary, and in Mesolongion (Bezzel & Muller 1964; Bauer & Muller 1969; Cramp & Simmons 1983). The Slender-billed Curlew has stopped in Turkey, one to three specimens in water-bodies of the Central Plateau (Morgan *et al.* pers. obs.), Western Anatolia (Cirvil, G. & Apolyont, G. pers. obs.) and along the Black Sea coast and the Mediterranean coast in Hayran marsh (Amik, G. pers. obs.), in Goksu Delta (*The OST Bird Report* 1969, 1972, 1975).

Records since 1975

We have observations of 214 Slender-billed Curlews (26.3%) since 1975 in the Balkan countries. There are no exact numbers from Romania. Papadopol (1986) reports the species as a transit bird in the Oltenia region. Two sightings come from Croatia, from the fisheries at Kanchanitsa, several birds were seen in October 1986 and 2 specimens on August 16 1987 (Delic 1988). On the 21 September 1981 students of Polvdiv University caught and ringed an adult in the Atnasovo Lake, Bulgaria (Nankinov 1989). Bulgarian ornithologists observed 48 Slender-billed Curlews along the marshy meadows in the western part of the Atnasovo Lake on April 5 1986 (K. Popov, I. Stefanov, N. Dimitrov, H. Voinikov, L. Argirov, S. Simeonov, D. Lilyanov and B. Borisov). On April 28 1986 and on May 2 1986, P. Yankov and L. Rose observed several groups of 2-3 birds in the same location. A flock of 150 birds was observed in the Maritsa estuary on October 20 1978 (Cramp & Simmons 1983), this was the largest concentration since 1975. In Porto Lago, northern Greece another specimen was observed, on September 28 1977 (Magerl & Francis 1979).

Two Slender-billed Curlews were also sighted in Kucuk Menderes Delta Turkey on September 23 1979 and on July 10 1986 at Goksu Delta. Only few birds cross Turkey on migration.

SEASONALITY

Timing of Spring migration

A variable number of birds occur on migration according to climatic factors and changes in the suitability of migratory staging areas. The birds fly on their own or in mixed flocks with Curlews and Whimbrels*Numenius arquata, N. phaeopus* as well as with other waders. According to the literature during spring Slender-billed Curlews cross the Balkans in March and April and even as early as the end of February. The number of sightings begins to increase in March (Figure 3), reaching a maximum in April and falling in May. In spring a total of 240 Slender-billed Curlews were sighted (29.5% of total Balkan sightings). In April alone there were 156 sightings (19.2%). During the spring, solitary individuals and small flocks cross the entire studied region. Tens of birds have been observed only in the vicinity of Sofia and in the lakes in Dobrudzha and around Burgas.

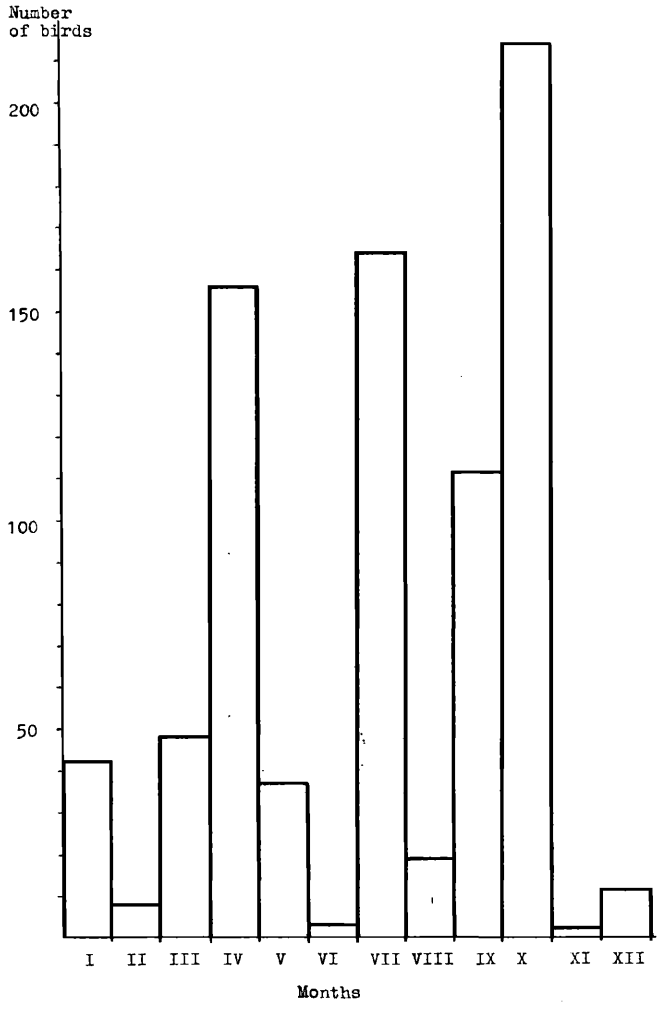


Figure 3. Seasonal distribution of Slender-billed Curlews *Numenius tenuirostris* in the Balkans.

Summer sightings and nesting

Sightings in summer are less numerous than in autumn and spring but are still significant at 186 records or 22.8% (Figure 3). This may show that Balkans are regularly visited and used as a summer ground for the species. Summer concentrations of tens of birds were observed in the past along the Bulgarian Black Sea Coast, while sightings of single birds or small flocks are known from all Balkan countries: along the Danube and its confluents, along the coastline, and in the neighbouring wetlands in Eastern Romania and Bulgaria, northern and southern Turkey and southern Greece. During the past three decades the Slender-billed Curlew has stayed in Dobrudzha on Lupilor Island (Vielliard & Talpeanu 1971), in northern Yugoslavia near Novi Bicei (Dimitrijevic 1977) and the Konchanica fisheries (Delic 1988), in northern Greece at Porto Lago lake (Bezzel & Muller 1964; Knotzsch 1965) as well as near Alexandroupolis (Ritzel 1977), and in Turkey in Rize of the Goksu delta (*The OST Bird Report* 1975; Martens 1989). The largest numbers of Slender-billed Curlews were observed in July (164 specimens; 20.1% of all sightings) in contrast to August - 12 (2.3%), and in June even fewer - 3 sightings (0.4%) (Figure 3).

Suspected breeding in the Balkans

The first reports of Slender-billed Curlews nesting in the Balkans refer to Greece (Muhle 1844, Lindermayer 1860, Arrigoni 1902). These reports have been cited and disputed on numerous occasions. The observations of Floericke (1918) are of great interest and presuppose Slender-billed Curlew breeding in the Sinoe Lake in Dobrudzha where a large number of Curlews nested together with many Slender-billed Curlews. Kurk Floericke writes: "Evidently I saw before me the rare Slender-billed Curlew, about whose nesting we know nothing. Unfortunately neither I nor Reiser, Almazu or Dombrowski could find a nest of this rare bird, because of the short time at our disposal, and thus to prove beyond doubt that it nests in Dobrudzha. The high time, the behaviour of the pairs of birds and their overall behaviour made this site a probable nesting site. It will be a noble task for the future ornithologist to visit Dobrudzha again..."

However, neither before Floericke nor after him has a nest of the species been found in Dobrudzha. It is well known that curlews reach maturity at three years old and that during the nesting period immature birds remain along the migratory route, far from their homes. In spite of the insufficient development of their gonads they show features of nesting behaviour such as defending their territory and "nest", and pretending to be wounded in order to divert visitors. Similar behaviour of Slender-billed Curlews has been observed in Kazakhstan, in the Turghai valley, and as Dolgushin (1962) writes, this behaviour continued for two days, after that the birds flew to other places and demonstrated the same behaviour.

Today it is difficult to assess the historic status of the Slender-billed Curlew in the Danube delta. It is not difficult to refute it nested on grounds of the cited facts. Nevertheless there are also considerations which might support the observed and supposed nesting. Probably the marshy biotopes are the only ones in southeast Europe which resemble, to a certain degree, the natural biotope of the species - vast peat bogs in the Siberian taiga. Close to the Danube delta, in the vicinity of Odessa in 1837 A.D. Nordmann found "two half grown chicks" (*i.e.* immature birds) of this species. Another supposition of the nesting of the species in South Ukraine also exists (Kistyakovskii 1957).

Autumn migration

Slender-billed Curlews are most numerous in the Balkans during the autumn migration period. Some 327 specimens have been noted (40.2%). Despite the data concerning the timing of autumn migration, namely September-November (Vasiliug & Rodewald 1940), August-September (Matvejev & Vasic 1973; Nowak 1980), September-December (Simeonov 1978 and others) it appears that migration begins during the second half of August, increases in September (111 birds - 13.6%), and reaches its maximum in October (214 birds - 26.3%). There are fewest records in November (2 birds in total). During the autumn migration we also noted the highest concentrations of the species (on the delta of the Maritsa River - see above). Concentrations of tens of birds have been observed in the Danube Delta (Cramp & Simmons 1983), in Koviliski Rit near Novi Sad (Marcetic 1958-59) and the Perlez marsh (Dimitrijevic 1977, Stefanovic & Ham 1972).

Winter records

During the winter small numbers of birds remain in the Balkans (61 birds - 7.5%), which may show that some birds, sighted during autumn migration, move to more favourable wintering grounds. Gjurasin (1901) states that in some places the Slender-billed Curlew comes in great flocks from July to October and many of the birds winter there. In winter the largest number (42 birds) were found in January (5.2%). With the exception of an observation in Transylvania (Stetter 1845) and in the Zogai marsh on the Adriatic coast of Yugoslavia (Reiser & Fuhrer 1896) most Slender-billed Curlews wintered along the coasts of Bulgaria, Greece and Turkey, Asia Minor. This contradicts to some extent claims by Kozlova (1962) that in winter Slender-billed Curlews avoid coastal areas and prefer river valleys, steppes and lakes. Sightings in winter in the Balkans are rare and consist chiefly of single individuals and rarely 2-3 birds. Larger flocks have been sighted in Burgas region only and in Lake Mesolongion, Greece, in January 1970, when the largest concentration of the Balkan peninsula was observed - 33 birds (Cramp & Simmons 1983).

Slender-billed Curlew biometrics

Table 1 compares Balk. data with those published for the Palearctic, the Ukraine, Kazakhstan, and for the USSR. Body length of Slender-billed Curlews in the Balkan Peninsula varies between 360-475 mm. Males (360-470 mm) are smaller than females (370-475 mm). There is no difference in wing span and tail, compared to data from the Western Palearctic, the Ukraine, Kazakhstan and the total for the USSR, however there appears to be substantial differences in bill lengths and tarsus. Some Slender-billed Curlews in Romania have bills 9-13 mm longer than the reported values for other populations. These individuals also have 4-5 mm shorter tarsus length than the tarsi measured so far. The bill of some young birds in Kazakhstan is 55 mm (Dolgushin 1962), and with females, found in Greece it was smaller - 52 mm. These differences may, however, be due to the different ways of measuring.

Slender-billed Curlew habitat in the Balkans

The breeding biotopes differ substantially from migration and wintering biotopes. Nesting biotopes constitute spacious marshy areas, while in the southern part of the west Siberian taiga, it is thickly overgrown with *Equisetum* and *Carex* covering small islands, overgrown with low trees and shrubs. During migration in Kazakhstan the Slender-billed Curlew occurs in the thick grass of the humid meadows, steppe and along the banks of reservoirs and other water bodies (Dolgushin 1962).

In the Balkans the Slender-billed Curlew gathers on meadows and pastures around water bodies and reservoirs, in large marshes, and river banks. Observations from the turn of the century show that contrary to other Curlews, the Slender-billed Curlew gathers on drier pastures in Dobrudzha, at a distance from the coast where it feeds on small *Helix* (Elwes & Buckley 1870). Alleon (1886) added to this observation in Dobrudzha, noting that the birds always stay in the fields and never in marshes. This was confirmed by later studies in xerophylic areas in Central Asia (Selevin 1935), where the species fed on locusts.

According to Papadopol (1970) the Slender-billed Curlew stays along the coastline, feeds in water and on the ground on small shell crustaceans, insects and their larvae, and rarely on small fish and plants. It seems that the biotopes of major significance for the species during migration and wintering are above all open meadows and pastures in close proximity to water bodies. What appears to be attractive for Slender-billed Curlews is not so much large water bodies alone, rather their proximity to meadows and pastures. In Bulgaria they still exist in the vicinity of the Atanasovo lake, particularly to the northeast and northwest of the lake, where most of the Slender-billed Curlews in Bulgaria have been observed. A classification of habitats suitable for the Slender-billed Curlew in the Balkans will probably place the Maritsa Delta, where the largest concentrations of the species has been observed at the top of the list. The Atanassovo lake and water bodies around Burgas come next. I believe that Slender-billed Curlews visit these sites almost annually and only regular, systematic observations can prove their pre-

Table 1. Measurements (in mm) of Slender-billed Curlew *Numenius tenuirostris*.

Sites	Date	Sex,	Age	Length of the body	Wing	Tail	Bill	Tarsus	Source
Romania					250-258		75-89	64-69	Vasiliu & Rosewald 1940
		5	ad	413-470	242-270	90-104	90-109	55-66	Lintia 1955
		7	ad	410-465	235-266	84-103	85-105	54-66	Lintia 1955
Yugoslavia	Feb-March 1895			360	245		70	55	Reiser & Fuhrer 1896
	Feb-March 1895			370	270		100	65	Reiser & Fuhrer 1896
Bulgaria	7 April 1894		ad		255				Collections du Musee Sophia
	31 March 1939				240				Collections du Musee Sophia
				384	270	96	90		Petrov 1950
				360-380					Klein 1909
Greece				425	245	103	74	58	Reiser 1905
				414	250	102	72	59	Reiser 1905
				426	249	92	74	60	Reiser 1905
				430	262	100	(52)	64	Reiser 1905
				475	259	107	92	62	Reiser 1905
West Palearctic			ad		242-259	87-99	68-78	59-66	Simmons 1983
			juv		234-260	82-98			Cramp & Simmons 1983
			ad		258-274	96-108	82-96	64-69	Cramp & Simmons 1983
			juv		257-275	92-104			Cramp & Simmons 1983
Ukraine					238-268	96-102	69-89	64-69	Kistyakovskii 1957
USSR		12			238-266		69-88		Gladkov 1951
		8			247-268				Gladkov 1951
					230.4-253.8	90-101	67.5-86.6	61.2-65.2	Kozlova 1962
					240.5-260	90-101	73.5-95.2	61.2 65.2	Kozlva 1962
Kazakhstan					230-260		67-90	60-70	Dolgushin 1962

sence. The wetlands in the Danube Delta (above all the Raselm-Sinoe lake complex), the wetlands of Voivodina (the Perlez marsh, Koviliski rit and elsewhere) as well as the vicinity of Mesolonghion in Greece.

Recommendations for preservation

Along the migration route in the Balkans the Slender-billed Curlew has been badly affected by two factors: destruction of habitat and hunting. Several urgent steps should be undertaken and coordinated through an efficient, well financed international programme.

The following steps are necessary with the Balkans:

1. All habitats, where the Slender-billed Curlew has ever been observed, should be closely observed so that its present status can be established. If sites have not been destroyed completely, they could be preserved and if possible, extended. Many marshes and swamps were drained during the first half of this century. Their territory to this day has not satisfactorily been used for agriculture and it would be wise to restore them to their original state. Avoidance of pollution with chemicals and regular ecological monitoring is necessary.

2. Regulation of hunting practices have yielded no positive results to date. The ban on hunting of the Slender-billed Curlew and generally the ban on the hunting of waders is largely ineffective. This is because they fly together with other waders and hunters make no difference between them. To many Bulgarian hunters curlew-like birds are simply "woodcocks" and "snipes". Probably what is needed is an international convention banning the hunting of all curlew-like species for at least 5-10 years. In Bulgaria we have succeeded in banning the hunting of "woodcocks" and "snipes". At present hunting regulations refer to the restricted species as "woodcock" (*Scolopax rusticola*), which could not be declared a protected species! We should recommend that hunting of such game should be allowed only in rare forests, not in open pastures and nearby water bodies. This could, to a certain extent, help to preserve the Slender-billed Curlew and a number of other rare curlew-like birds from open biotopes. Nevertheless everything is up to the conscience of the hunter, and education remains a high priority.

3. Campaigns for the protection of the Slender-billed Curlew should be directed above all towards hunters and the owners of habitats which are threatened or already affected. A press campaign should be organized, and in particular, articles should be published in hunters' journals. Nature conservation propaganda and the mass media could be used to address this goal. The protection of birds and of nature as a whole is not possible without the instilling in young people an awareness for the need of such activities.

4. Regular systematic studies of the curlew in all habitats is necessary. Studies in the Balkans, accompanied by a broad

range of investigations along the entire nesting, migratory and wintering range would lead to the accumulation of vital information, namely the true population size, and the minimum viable population. Only then can we begin measures for its protection.

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Effeciency of censusing Golden Plovers

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Yalden, D.W. & Yalden, P.E. 1990. Efficiency of censusing Golden Plovers. *Wader Study Group Bull* 62: 32-36.

Two study sites were each surveyed once a week throughout the breeding seasons of 1987 and 1988, and sightings of Golden Plovers *Pluvialis apricaria* were later aggregated into probable territories. We make the assumption that the aggregate number of territories registered over the season is equivalent to the true population of each census plot. The proportion of territories registered on each visit was around 20% during incubation, but increased to 70% or more in weeks 2 to 7 after the earliest dates of hatching, before declining as birds left their breeding grounds. Out of 39 site visits in the post-hatching periods, only two recorded 100% of the apparent territories.

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INTRODUCTION

A great deal of effort has been expanded in recent years on extensive surveys of moorland breeding birds in Britain, by the RSPB *e.g.* Cadbury 1987), the NCC (*e.g* Stroud *et al.*1987) and individual researchers (*e.g.* Yalden 1974; Bell 1979; Jones 1983). Such surveys usually depend on one or two observers making only one or two visits to study areas during the breeding season. For comparisons between different moorlands, such methods are perfectly adequate. If, however, the requirement is to obtain an absolute value for the population, or to compare estimates of the breeding population derived from such censuses with, for example, direct counts of wintering flocks, then some idea of the censusing efficiency is essential. Reed & Langslow (1985) analysed a sequence of line transects across twelve sites in Caithness which were visited three or four times during the season. They emphasized that the most efficient censusing was achieved in June when the parents, guarding their chicks, "alarm" loudly at any intruder. However, they noted that breeding failures and variation in the timing of the breeding season from year to year because of weather fluctuations could affect censusing efficiency to an unknown degree, and that repeated censuses would be needed to resolve the extent of such affects.

During 1987 and 1988, we censused two study areas for Golden Plovers *Pluvialis apricaria* at weekly intervals throughout their breeding season, and can offer some empirical evidence on these aspects.