

## THE STATUS OF WADERS IN BULGARIA

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The territory of Bulgaria is an important place for nesting, passage and wintering waders. Forty-seven species have been recorded in the country. Fourteen species breed: Oystercatcher, Black-winged Stilt, Avocet, Stone Curlew, Collared and Black-winged Pratincole, Lapwing, Little Ringed and Kentish Plover, Redshank, Marsh Sandpiper, Green Sandpiper, Common Sandpiper and Woodcock. Between 2 400 and 5 500 pairs of waders breed in Bulgaria in different years, the most numerous being Avocet (760 - 2 200 pairs), Little Ringed Plover (500 - 1 000 pairs), Lapwing (600 - 800 pairs), Kentish Plover (200 - 400 pairs) and Common Sandpiper (100 - 500 pairs). A total of 34 species are found in Bulgaria in the winter, some of them well north of their main wintering grounds. Vagrants recorded include Spur-winged Plover, Sociable Plover, Greater Sand Plover, Caspian Plover, Spotted Sandpiper, Grey Phalarope and Buff-breasted Sandpiper. Large numbers of waders from various parts of Europe and Asia pass through Bulgaria on migration. Bulgarian-ringed Curlew Sandpipers have been found wintering in north, west and southern Africa, Redshanks, Little Stints and Dunlins on the shores of the Mediterranean, where breeding Avocets, Woodcocks and Kentish Plovers from Bulgaria also spend the winter. All wader species of Bulgaria and their main habitats are protected under the Law on the Protection of the Environment.

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Bulgaria owes its importance for breeding, migration, wintering and summer concentrations of Eurasian birds to its position in the eastern half of the Balkan Peninsula, on the East European flyway which links the arctic regions with southern Africa. The country has many wetlands, including about 350 lakes and marshes, and 29 rivers more than 100 km long (Michev et al. 1980). The main sites for waders lie on the Black Sea coast, along the River Danube and in other river valleys, in the Danubian Plain, around Sofia, and in the Upper Thracian lowlands (Figure 1). With a total length of 378 km, the Bulgarian seaboard has a characteristically varied relief - a multitude of bays, inlets, river estuaries, beaches and steppe, meadows and cultivated fields. The 18 coastal lakes and marshes have a total water surface area of 86 km<sup>2</sup>. There are three lakes of exceptional importance for waders: Lake Atanasov (area 16.9 km<sup>2</sup>, mean depth 0.8 - 0.9

m, salinity 20 - 20.7%, with a rich aquatic invertebrate fauna and excellent wader nesting sites); Lakes Burgas (area 28 km<sup>2</sup>, mean depth 1.3 m, salinity 1.8 - 4.0%); and Lake Pomorie (area 7 km<sup>2</sup>, mean depth 1.4 m, salinity 60 - 80%).

In preparing this paper, I have used not only my own observations, but also of a large number of literature sources: Finsch 1859; Elwes & Buckley 1870; Homeyer 1877; Sintenis 1877; Radakoff 1879; Alléon 1886; Khristovich 1890; Lorenz-Liburnau 1893; Reiser 1894; Yurkevich 1904; Andersen 1903; Collections du Musée, Sophia, 1907; Vurbanov 1912, 1934; Boetticher 1927; Patev 1950; Petrov & Zlatanov 1955; Kumerloeve 1957; Paspaleva-Antonova 1961a; Mountfort & Ferguson-Lees 1961; Boev 1962, 1985; Boev et al. 1964; Donchev 1963, 1970, 1974, 1977, 1984; Prostov 1964; Peshev 1967; Grössler 1967, 1980; Müller et al. 1975; Georgiev 1976; Nankinov 1978, 1980, 1981, 1982, 1985; Nankinov & Darakchiev 1977, 1978; Ernst 1978, 1983; Königstedt & Robel 1978; Robel et al. 1972, 1978; Robel & Willems 1984; Roberts 1980a, b; Petrov 1981, 1985; Uhlig 1982; Dzhuninski 1985; Ivanov 1985; Michev 1985; Borisov 1986, and others. Reference to these and other sources give a more accurate picture of the past and present status of individual wader species and their distribution in Bulgaria.

## SYSTEMATIC LIST

Systematic order and scientific nomenclature follow Howard & Moore (1980).

OYSTERCATCHER *Haematopus ostralegus* L.

The subspecies breeding in Bulgaria is *H. o. longipes* (Buturlin 1910). Nest, eggs, unfledged young and adults, have been recorded in three areas of the country (Figure 2): Black Sea coast (on lakes and islands), River Danube (Kozloduy Island: five pairs in summer 1987) and nearby Karaboaz Marsh, also River Maritsa



Figure 1. Principle wader sites in Bulgaria. 1 Lake Durankulak; 2. Lake Shabla; 3. Cape Kaliakra; 4. Lake Varna and Lake Beloslav; 5. Lake Pomorie; 6. Lake Atanasov; 7. Lake Burgas; 8. Lake Mandra; 9. Lake Alepu.

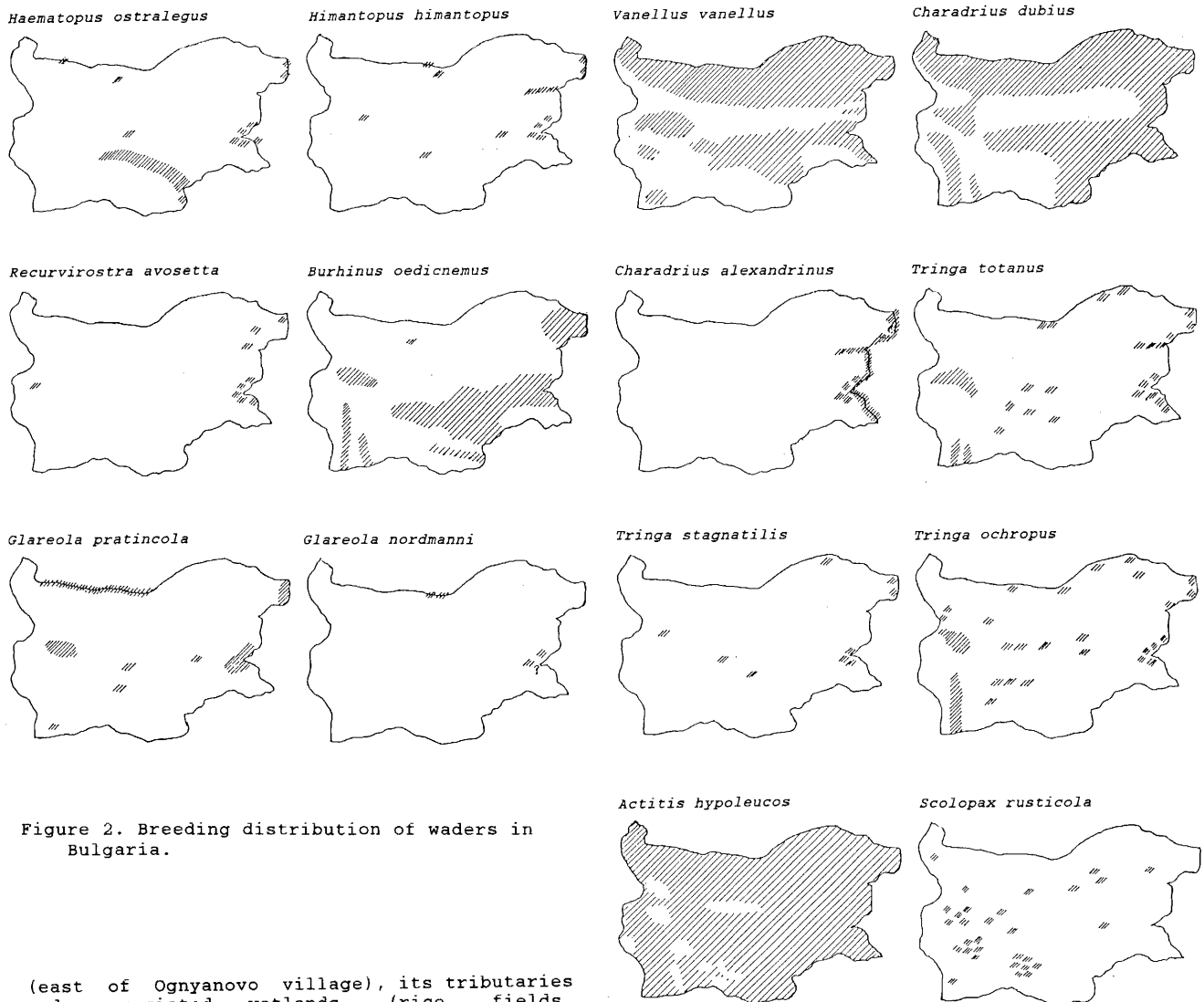


Figure 2. Breeding distribution of waders in Bulgaria.

(east of Ognyanovo village), its tributaries and associated wetlands (rice fields, fishponds). In recent years, the Bulgarian breeding population has numbered between 60 - 95 pairs. The migration period extends from early March to the end of May and from the beginning of August to the end of November, when it arrives singly or in small flocks, rarely up to 30 - 34 birds. In autumn, birds from the northern Black Sea region migrate south-west across Bulgaria (Bianki & Nehls 1985). That the species is recorded near Sofia only in spring suggests different migration routes are used in spring and autumn.

**BLACK-WINGED STILT *Himantopus himantopus* L.**  
Former and present-day breeding grounds are located on the Black Sea lakes and marshes, along the Danube, and in various interior wetlands. In recent years, breeding has been confined to Black Sea lakes near the towns of Burgas, Pomorie and Varna (Figure 2). The breeding population fluctuates between 77 - 168 pairs. Lake Atanasov alone carries between 50 - 90 pairs in different years. Spring migration lasts from the beginning of March to mid-April. The first signs of autumn migration are evident from mid-July, but most birds depart in August-September. In some years, migration continues to November and a few individuals winter in coastal wetlands. Peak numbers of migrants have been recorded at Lake Atanasov: in spring, 119 - 135 birds, and in autumn, 231 - 406.

**AVOCET *Recurvirostra avosetta* L.**

Viewed historically, the Bulgarian Avocet population has been subject to considerable fluctuations. A common breeding bird in the mid 19th century, it had completely disappeared from lakes near Burgas by 1909 (Vürbanov 1912, 1934). Then breeding resumed and the population began gradually to increase. Recent decades have seen the population fluctuating between 760 - 2 200 pairs per year. The principal site is Lake Atanasov, which holds 700 - 2 000 pairs, i.e. over 90% of the Bulgarian population (Nankinov & Darakchiev 1978). There are also breeding Avocets at other coastal lakes: Burgas, Mandra, Pomorie, Alepu, Beloslav, and Durankulak; at smaller waters near Tolbukhin, and at Meschitsa near Pernik (one pair nested in 1986) (Figure 2). Spring migration occurs from February - April, with autumn migration recorded from the end of July and most birds departing in September, October and November. The Bulgarian Black Sea coast is becoming an important European wintering area for Avocets. Hundreds spend the winter at Lake Atanasov alone: in January 1976, 438; in December 1980, 630; and in January 1984, 800. The same lake also carries the biggest concentrations of migrants with, in some springs, up to 22 600 (1 - 4 April 1976) and,

in autumn, up to 28 000 (7 November 1975), or even up to 47 500 (31 October 1974). Ringing has shown that Hungarian and Austrian Avocets migrate through Bulgaria. Bulgarian birds disperse in various directions after breeding, some reaching the Crimean peninsula in the north. They then winter in southern Italy, Greece, and Turkey; apart from the Mediterranean wintering grounds, Bulgarian Avocets may also winter in the Nile valley, in central and north-west Africa.

STONE CURLEW *Burhinus oedicnemus* L.

The subspecies breeding in Bulgaria is the nominate *B. o. oedicnemus* (L., 1758). Breeding grounds are located in the Dobrudzha, in the Maritsa, Tundzha, Arda, Struma, and Mesta valleys, and near the towns of Burgas, Sofia, and Pleven (Figure 2). The population numbers 30 - 60 pairs. Migrants - single birds and small parties of up to 20 birds - have been recorded in April and from July to November.

COLLARED PRATINCOLE *Glareola pratincola* L.

Recorded in the breeding season (Figure 2) on marshes and islands along the Danube (Lom, Ostrov, Gulyantsi, Somovit, Svishchov), on the Dobrudzha coast (Durankulak, Shabla, Rusalka, Kaliakra), at lakes around Burgas (Pomorie, Atanasov, Burgas, Mandra), and in the interior (Struma river, Plovdiv, Sokolitsa village, Straldzha and formerly near Sofia). There are sharp fluctuations in numbers between years, from 50 to 150 pairs. Lake Atanasov held 7 to 36 pairs between 1978 and 1982. In 1985, the Struma river colony numbered 20 birds (Kotsakov & Kantardzhiev 1986). The migration periods are late March to May and mid-July to early November, with birds moving in flocks. Intensive migration was noted near Burgas in 1972, when 100 birds were counted on 8 August and 600 on 16 August. Collared Pratincoles passing through Bulgaria originate in Rumania, the northern Black Sea region and, probably, in Hungary.

BLACK-WINGED PRATINCOLE *Glareola nordmanni* Nordmann.

The author considers this to be a Bulgarian breeder since a mixed colony (with the previous species) was recorded at Lake Atanasov on 18/19 May 1978 and all the pairs in this colony were holding territories. There are further records of Black-winged Pratincole pairs from near Svishtov and at Lake Burgas (Paspaleva-Antonova 1965), and birds presumed to be of this species have been observed at Lake Mandra (Ernst 1978) - (Figure 2). It is assumed that several pairs breed in Bulgaria each year. A flock of 50 remained in the area between the Maritsa and Topolnitsa rivers from 15 August - 15 September 1889 (Khrstovich 1890). At Akhtopol (Black Sea coast), 80 birds passed south on 2 August 1972. Birds migrating along the Bulgarian seaboard are from the Danube Delta and southern Ukraine, including the Crimean peninsula.

LAPWING *Vanellus vanellus* L.

Breeds in suitable habitats of the Danubian Plain (and on Danube river islands), on the Black Sea coast, in the Upper Thracian lowlands and the Sofia depression, also, in some years, in the Struma valley (Figure 2). Ascends to 1 100 m in the mountains. On the species' southern range limit in Bulgaria, breeding densities vary between years. The largest concentration of breeding birds (up to 59 pairs in 1958 and 1982) has been recorded at Lake Atanasov, and the total Bulgarian population is estimated at 600 - 800 pairs. Migrant flocks of Lapwings are to be seen in Bulgaria all year round, but there is more intensive passage from early February to mid-April and from the

beginning of July to December, and birds then penetrate via river valleys into mountainous parts of the interior. The largest reported concentrations of migrant Lapwings have occurred at Lake Atanasov: in autumn, 3 600 on 24 November and 7 570 on 25 November 1979; in winter, 800 - 1 462 daily between 3 December and 6 December 1980; in spring, 1 020 birds on 4 April 1976. Gatherings of hundreds occur also in other lowland areas. It is assumed that Lapwings passing through and wintering in Bulgaria are birds from central and southern parts of the European USSR, perhaps also from south-west Siberia, which migrate through south-east Europe in autumn (Lebedeva 1957). Lapwings ringed during migration in Hungary and Italy have been found in Bulgaria (Pateff 1931, 1935). Birds head mainly west in autumn and east in winter and spring.

SPUR-WINGED PLOVER *Vanellus spinosus* L.

Vagrant, one record: single bird and pair at Lake Mandra (near Burgas) on 7 May 1960 (Hanzak 1962).

SOCIABLE PLOVER *Vanellus gregarius* Pallas.

The sole report (without reference to location or date) is of two shot birds (Buchvarov 1984).

GOLDEN PLOVER *Pluvialis apricaria* L.

Passage-migrant, winter and summer visitor found in the country's lowland areas. Single birds and small flocks sometimes remain on the coast throughout the year. Movements take place from late February to mid-May and from September to November. The species is most numerous in the steppe-type habitat of Cape Kaliakra: 759 were seen there on 8 November and 1 600 on 9 November 1975. It is known that Golden Plovers migrate to south-west Europe from their northern breeding grounds, then move east-north-east in winter and spring (Dobrynina 1985). Birds from the Baltic have been found during migration in Italy and east to Georgia, USSR (Lebedeva 1957). There appears to be an autumn migration from east to west in southern Europe, and a spring movement from west to east. A migrant ringed at Lake Atanasov on 2 October 1982 moved south-west and was found wintering in Sardinia after two months (Nankinov et al. 1984). There is a report (Caterini 1941) of a bird from Northern Italy (8 March 1937) reaching the Sofia area within 9 days.

GREY PLOVER *Pluvialis squatarola* L.

Occurs all year round in the same areas and habitats as the Golden Plover, but most frequently on lakes near Burgas. Usually encountered singly or in parties not exceeding ten birds. Gatherings of hundreds are confined to Lake Atanasov, the peak counts being 421 (on 25 November 1979) and 344 (13 November 1981). Retraps have shown that some migrants stop over at Lake Atanasov for about a month.

RINGED PLOVER *Charadrius hiaticula* L.

There is a report (Khrstovich 1890) that it formerly bred on islands and sandy banks of the rivers Maritsa, Iskür and Tundzha. The species is now a passage-migrant, which also summers and (rarely) overwinters (6 December 1980, Lake Atanasov) in Bulgaria. It is most frequently recorded on the Black Sea coast from where there is a report of 30 birds together at Lake Pomorie on 2 September 1973. Ringed Plovers arriving in Bulgaria in autumn are assumed to be from Northern Europe or the Baltic coast.

LITTLE RINGED PLOVER *Charadrius dubius* Scop.

Breeds in suitable habitat throughout the country, especially by clean lakes and other water bodies (Figure 2). Penetrates via river

valleys into human settlements, also ascends to 1 000 m a.s.l. in the mountains. The Bulgarian population is estimated at 500 - 1 000 pairs. Migration lasts from early March to mid-May and from mid-July to the end of October. In some years it winters on the Black Sea coast (43 birds at Lake Atanasov on 20 February 1973). Also at Lake Atanasov, gatherings of migrants have numbered up to 33 in spring (4 April 1976) and 94 in late summer (25 August 1978). Little Ringed Plovers passing through Bulgaria are from Scandinavia and Central and Eastern Europe (Liedel 1985).

KENTISH PLOVER *Charadrius alexandrinus* L.  
Breeds on the Black Sea coast and nearby lakes (Figure 2), the population being 200 - 400 pairs. At Lake Atanasov, the breeding population has been 141 pairs (1978), 238 (1981), and up to 252 pairs (1979). Spring migration lasts from early March to mid-May, when some pairs are already incubating or have chicks. The first birds leave their breeding grounds and embark on autumn migration from mid-July. Peak passage time is in August, September, and early October, when up to 500 - 700 congregate at Lake Atanasov. Retraps of ringed birds show that migrants stop over on the coast for about two weeks. Wintering Kentish Plovers have been regular on the coast over the last ten years. Bulgarian breeders move south-west and spend the winter in the western Mediterranean. A juvenile from Lake Atanasov (May 1983) was recorded in Malta on 29 September 1984.

GREATER SAND PLOVER *Charadrius leschenaultii* Lesson.  
Vagrant. An adult in breeding plumage was recorded at Lake Atanasov on 30 March 1975 by the Italian ornithologist, A. Rinaldi (pers. comm).

CASPIAN PLOVER *Charadrius asiaticus* Pallas.  
Also a very rare visitor to Bulgaria. There were two sightings of a single bird in breeding plumage near Lake Atanasov Ornithological Station on 31 August 1983.

DOTTEREL *Eudromias morinellus* L.  
Single birds or flocks (not exceeding 25 birds) migrate along the Bulgarian seaboard and also traverse the interior of the country (near Sofia, Panagyurishche, and Plovdiv), from the first days of September to April. The Dotterel uses three migration routes in Europe (Sterbetz 1966), one traversing the Ukraine and following the seaboard of Rumania and Bulgaria. Dotterel recorded in Western Bulgaria are perhaps following the second route which leads from the Hungarian Plains to the Adriatic coast.

BLACK-TAILED GODWIT *Limosa limosa* L.  
Occurs throughout the year in wetlands along the Black Sea, in plains and river valleys. It is presumed to have nested near Sofia at the end of the 19th century, and in 1959 at Lake Durankulak. Seasonal movements occur from mid-February to May and from August to the beginning of November. Large gatherings of migrants have been recorded at Lake Atanasov: 6 060 on 1 - 5 April 1976; 1 227 on 28 March 1981 and 1 672 on 28 March 1982; also, 2 000 near Sofia on 28 March 1976. Bulgaria is probably visited by breeding birds from the European USSR, countries of the Baltic Basin and Central Europe. It has been established (Jögi 1973) that Estonian birds head due south in autumn, traversing the Ukraine, Moldavia, Hungary, and Bulgaria.

BAR-TAILED GODWIT *Limosa lapponica* L.  
There is an unsubstantiated report from the

beginning of the present century of regular passage through Bulgaria (Boetticher 1927). The first specimen was collected near Burgas on 21 March 1940 (Prostov 1955). Since then, single birds have been recorded at Lakes Atanasov, Burgas, and Pomorie, also at Cape Kaliakra. Records are distributed over all seasons of the year. The migration period is March-April and August-October. One bird was recorded in winter (2 - 7 January 1970) at Lake Burgas (Johnson & Hafner 1970), and another (in breeding plumage) at Lake Atanasov on 12 June (Grössler 1967).

WHIMBREL *Numenius phaeopus* L.  
Migrates through Bulgaria in spring (March - May) and autumn (August - September), and most regularly recorded on the Black Sea coast. Wintering birds were shot by hunters on 31 January 1970 and 23 January 1972 near the village of Trivoditsa (Plovdiv district). It has been reported in winter (1 and 17 December 1976) also from Lake Atanasov (Roberts 1980a), and from Lake Mandra (18 January 1980). It is likely that the Whimbrel migrating through Bulgaria are from the European part of the USSR, as Scandinavian and Baltic birds move west-south-west (Lebedeva 1957).

SLENDER-BILLED CURLEW *Numenius tenuirostris* Vieill.

In the 19th and beginning of the present century, this species was a common passage-migrant in Bulgaria, with also some summer and winter records. Passage usually took place in March - May and in August - October, birds sometimes occurring in mixed flocks with other curlews. Flocks of several dozen birds were reported from the Black Sea coast and the Maritsa and Iskur valleys. Between 1951 and 1961 there were four records of flocks each numbering 4 - 7 birds: 22 March 1951, 19 September and 2 October 1958, 15 December 1961 (Prostov 1964), then single birds on 17 and 19 December 1965 (Donchev 1984). The most recent record refers to 21 September 1981 when a Slender-billed Curlew was trapped and ringed at the Lake Atanasov Ornithological Station.

CURLEW *Numenius arquata* L.  
Both the nominate race *N. a. arquata* (L., 1758) and *N. a. orientalis* (Brehm, 1831) or 'hybrids' occur in Bulgaria throughout the year. During the migration periods (February - May and mid-August to mid-December), birds cross the country, but some also spend summer or winter in favourable wetland habitats. The biggest concentrations have occurred at Lake Atanasov: 1 and 4 April 1976 - 2 000 + 439 birds; 27 August 1978 - 140; 3 November 1978 - 115; 18 March 1979 - 198; 25 November 1979 - 248; 28 March 1981 - 195; 28 March 1982 - 482; and 13 August - 109 birds. Ringing results from Eurasia (Bainbridge & Minton 1978; Saurola 1982; Kastepöld 1985) suggest that Bulgaria is visited by Curlews from central and eastern parts of the European USSR.

SPOTTED REDSHANK *Tringa erythropus* Pallas.  
Occurs in Bulgaria at all times of the year, but more frequently during migration - from the first half of March to May and from early August to mid-November. It visits favourable wetland sites throughout lowland Bulgaria, especially the coast. The lakes around Burgas are an important staging-post on the migration route between northern Europe and wintering areas in the eastern Mediterranean. In the last ten years, these lakes have held spring, summer and autumn gatherings of 100 - 300 Spotted Redshanks.

REDSHANK *Tringa totanus* L.  
Breeds most regularly on lakes near the coast

and noted in the breeding season at wetland sites near the Danube and in the interior of the country (Figure 2). There are considerable fluctuations in numbers. In summer 1979 for example, hundreds of dead Redshanks were found at Lakes Atanasov and Pomorie, the probable cause of death being some kind of epizootic disease. The Bulgarian breeding population is thought to number some 50 - 150 pairs. The Redshank is also one of the most numerous waders migrating through the country almost the whole year round, especially along the coast. As early as June, there is a sharp increase in Redshank numbers at wetland sites along the Bulgarian seaboard with arrival of migrants from other areas. Autumn migration lasts almost to mid-December. Hundreds to thousands remain to spend the winter on lakes by the Black Sea. Intensive spring passage usually extends from the beginning of February to May. Concentrations of over 1 000 Redshanks occur at the Burgas lakes all year round. The biggest such concentrations have been noted at Lake Atanasov: 24 - 27 August 1978 - from 1 050 to 5 349 birds; 30 July 1980 - 5 030; 3 August 1983 - 4 353; and 13 August 1983 - 4 703. Retraps of ringed birds show a regular migration route along the Bulgarian seaboard, being used by the same individuals in different years as they migrate from Europe to Africa and back. Two birds ringed on 21 and 24 September 1981 were retrapped a year later during autumn migration (4 September and 19 October 1982). Another bird, ringed on 24 September 1981, migrated 180 km west and spent the winter in the interior of the country (February 1982). Redshanks migrating through Bulgaria generally stay at wetland sites for an average of 29.8 days (2 - 73). There are two long-distance ringing recoveries: adults ringed at Lake Atanasov on 21 September 1981 and 29 July 1986 were shot, respectively, on 30 November 1982 in Greece and 18 November 1986 in Egypt. The literature gives some indication of the origin of Redshanks migrating across Bulgaria. Birds which appear in summer arrive from the north and east. Many others pass through, their origin being the Baltic basin, Czechoslovakia, and Hungary. It is assumed that two groups of Redshanks occur on the Black Sea coast: a northern group, which appears at the beginning of summer and reaches peak numbers in July/August, and an east-north-east group, which arrives in autumn (Glutz *et al.* 1977; Gromadzki 1985).

#### MARSH SANDPIPER *Tringa stagnatilis* Bechst.

This species is not an annual breeder in Bulgaria, and usually just single pairs are involved. It was found breeding in the Dobrudzha and near Sofia at the end of the last century, and Petrov & Zlatanov (1955) reported it to be a numerous breeding bird of Lake Durankulak. There are breeding-season records for wetlands near Burgas and the Upper Thracian lowlands (Figure 2). Migration periods are from early March to mid-May and from July to the end of October. Retraps of migrants indicate stopovers at Lake Atanasov of 3 to 14 days. In different years, the status of the Marsh Sandpiper varies between a very rare and a numerous passage-migrant. Hundreds have been noted at Lake Atanasov: 14 July 1966 - 100 birds; 12 July 1967 - 400 - 500 birds; 27 June 1970 - 130 to 150 birds (Georgiev 1976). Early departure, in July, is usually the result of a drought in the breeding range (Sterbetz 1965). The latter author also states that there are three migration routes in Europe, one of which follows the Bulgarian seaboard southwards to the Nile valley.

#### GREENSHANK *Tringa nebularia* Gunn.

A breeding pair was found in the Stara-Planina mountains in the mid 19th century (Finsch 1859). The species now occurs at lowland wetland sites throughout the year, but most frequently during migration (from early March to May and from August to November). Hundreds have been recorded at Lake Atanasov (1 May 1975 - 100 birds, 4 April 1976 - 910 birds) and near Sofia. Greenshanks visiting Bulgaria are probably from Scandinavia and the European part of the USSR.

#### GREEN SANDPIPER *Tringa ochropus* L.

In the last century it was considered a common breeding bird throughout Bulgaria (Radakoff 1879; Khristovich 1890). More recently, there have been reports from a total of 30 sites in Bulgaria (Figure 2). The total breeding population is probably in the order of several dozen pairs. Passage is from the first days of March to early May and from early August to the end of November. They regularly winter at sites with open water. Gatherings of 12 - 48 birds have been reported from Lake Atanasov. Green Sandpipers stopping off in Bulgaria are from the European part of the USSR. Two birds, ringed in Latvia on 12 July 1953 and 16 August 1957, were recorded on 26 September 1953 and 23 August 1957, near the towns of Vidin and Gabrovo, having covered, respectively, 1 525 km and 1 570 km (Paspaleva-Antonova 1961b).

#### WOOD SANDPIPER *Tringa glareola* L.

In the last century this species bred near Sofia (two eggs collected on 9 June 1897) and on the Danube (Collections du Musée, Sophia 1907; Radakoff 1879). It now occurs in suitable habitat throughout the country, mainly during migration (early March to May and August to November). A few birds winter at sites with open water. It is more numerous on the Black Sea coast than the Green Sandpiper. At Lake Atanasov alone, from 200 (1 May 1975) to 701 birds (13 August 1983) have been recorded. Wood Sandpipers migrating through Bulgaria are from Scandinavia and the European part of the USSR. Two birds from southern Sweden (21 July 1950 and 27 July 1962) were found near Sofia (on 15 April 1954 and 2 September 1962, respectively). A migrant ringed in West Germany on 27 August 1950 was at Teteven (Bulgaria) on 19 January 1958, i.e. in its 8th year of life. Birds moving through Bulgaria in autumn may return to their breeding grounds via western Europe, though northward migration in eastern Europe is also possible: a bird shot near Ruse on 5 October 1969 had been ringed on 24 April 1969 in northern Italy (Paspaleva 1962; Dontschev 1976).

#### TEREK SANDPIPER *Xenus cinereus* Guld.

The main migration route runs east of the Black Sea. To date, single birds and small parties have been recorded at Drenovets reservoir (north-west Bulgaria) on 19 October 1979 (Dzhuninski 1985), at lakes Durankulak and Shabla on 20 - 23 and 27 August 1980 (Uhlig 1982), at Radievo lakes in Khaskovo district - 8 November, 15 December 1984 and 26 January 1985 (Borisov 1986), at Trud fishponds in Plovdiv district on 9 and 23 April 1983 (H. Nikolov pers. comm.), and at Lake Atanasov on 21 May 1979, 25 April 1980, 3 August 1982, and 13 August 1983. It is likely that the Terek Sandpiper is an annual passage-migrant along the Bulgarian seaboard.

#### COMMON SANDPIPER *Actitis hypoleucos* L.

Breeds throughout the country, in the lowlands, and in the mountains up to 2 000 m a.s.l.

(Figure 2). The total population may number 100 - 500 pairs. Seasonal movements are usually inconspicuous: in spring from the end of February to early May and in autumn during August and September. Only in a few years (e.g. autumn 1973, 1982, 1986, and spring 1975, 1983) have there been above-average numbers of migrants at Lake Atanasov and in other parts of the country. Retraps of ringed birds show autumn stopovers of 2 - 16 days. Single birds winter at open waters in Bulgaria: near Plovdiv (25 February 1968; 20 February 1972), and at Lake Atanasov (6 December 1980).

SPOTTED SANDPIPER *Actitis macularia* L.

Vagrant: one record - 17 April 1973 near Sofia (Nankinov 1982).

TURNSTONE *Arenaria interpres* L.

A regular migrant at waters along the Bulgarian seaboard, with some birds also spending the summer or winter there. Spring migration is from the end of February to early June, autumn migration from August to November. On 3 December 1980 there were two birds at Lake Atanasov. The Turnstone usually migrates in small flocks, pairs, or singly. Gatherings of over 100 birds have been recorded at Lake Pomorie (2 and 3 September 1973 - 100 + 230 birds) and Lake Atanasov (13 November 1981 - 139 birds). Birds traversing Bulgaria are from northern Eurasia (east of the Kanin Peninsula); they migrate across the Black Sea and eastern Mediterranean. It has been established that some individuals follow the same migration route from year to year (Branson et al. 1978; Liedel & Bianki 1985).

RED-NECKED PHALAROPE *Phalaropus lobatus* L.

A scarce but regular migrant in Bulgaria, occurring mainly in the coastal belt; there are also some summer records. Seasonal movements are from March to May and from August to October. The largest concentration (21 birds) was recorded at Lake Atanasov in May 1979 (Nankinov 1979). Red-necked Phalaropes occurring in Bulgaria are from the Scandinavian population (Schiemann 1972, 1977), which migrates south-east in autumn.

GREY PHALAROPE *Phalaropus fulicarius* L.

An adult female was shot at Lake Shabla on 17 December 1965 (Donchev 1967).

WOODCOCK *Scolopax rusticola* L.

Nests mainly in the mountains, on high-mountain plateaux and depressions (Figure 2). The Bulgarian population is estimated at 10 to 30 pairs in different years. Seasonal movements: February to April and September to early December. Passage has been recorded throughout the country. Spring passage is inconspicuous. Over the last 100 years there has been a sharp decline in numbers of breeding birds and migrants. It is likely that the Woodcock which pass through Bulgaria are from the breeding grounds in the vast area between southern Sweden and the Urals. Birds from southern Sweden have been found in Yugoslavia. Five percent of Swedish and 25% of Finnish Woodcock winter in Italy, in the Balkans, and in (Asiatic) Turkey (Clausager 1974). On the other hand, birds from the Urals and Western Siberia spend the winter months in the Caucasus and near the Caspian (Nemetschek 1975). A migrant, ringed on 25 October 1961 on the Kurische Nehrung (Kaliningrad, USSR), was shot near Shumen on 6 April 1962. Breeding birds from Bulgaria winter in the south of the Balkan Peninsula. A bird ringed as a nestling on 26 May 1962 in north-east Bulgaria wintered (18 January 1963) on Ithaca (Greece), 730 km from the ringing site (Paspaleva 1965).

GREAT SNIPE *Gallinago media* Latham.

In the last century and up to the 1940s, the Great Snipe nested in the Danube valley and in other parts of the country. Even now, single pairs perhaps breed in favourable habitats in Bulgaria. Migration occurs from the end of February to early May and from September to November. It regularly winters where there is open water. There has been a considerable decline in numbers over the last 100 years and most records are now of single birds. Bulgaria lies on the main migration route between Europe and Africa (Panchenko 1971).

SNIPE *Gallinago gallinago* L.

Passage-migrant, winter and summer visitor; perhaps an exceptionally rare breeder in Bulgaria. At the end of the 19th century, Snipe bred at Batak Marsh (Rhodope Mountains) and, in the 1950s, perhaps also in north-east Bulgaria. Spring passage is from February to early May, and autumn passage from the end of July to November. The Snipe is a nocturnal migrant, which traverses the whole country and whose main stopovers are at wetlands on the Bulgarian seaboard, near the River Danube, in the Upper Thracian lowlands and near Sofia, where concentrations of several hundred birds have been recorded. Snipe visiting Bulgaria are presumed to be from the European part of the USSR.

JACK SNIPE *Lymnocyptes minimus* Brunn.

Rare passage-migrant and winter visitor, found at wetlands in Bulgaria from August to late April. It is a nocturnal migrant and is usually solitary, although there is a record of 55 at fishponds near Sofia on 22 February 1974. Retrapped migrants at Lake Atanasov in the autumn stayed for 8 - 16 days. Jack Snipe visiting Bulgaria are probably from northern Europe, but the ringing data are too scanty to allow any definite conclusions to be drawn about this. A bird migrating through West Germany (16 November 1961) was found wintering in Bulgaria's neighbour, Greece, after 41 days (Schlenker 1977).

KNOT *Calidris canutus* L.

At the beginning of the present century, Knots were regular visitors to Bulgaria and sometimes occurred in large flocks (Boetticher 1927). They are now rare passage-migrants and summer visitors, with a total of seven records at Lakes Atanasov and Pomorie between 16 May and 7 September (Robel et al. 1972; Müller et al. 1975; Königstedt & Robel 1978; Ernst 1978; H. Todorov pers. comm.). There are two main migration routes: along the west European coast and from central Russia to the east African coast (Dick et al. 1976; Andreassen & Rad 1977). Bulgaria lies between these two routes and a few individuals sometimes turn up as vagrants.

SANDERLING *Calidris alba* Pall.

Occurs in Bulgaria throughout the year, most frequently on the Black Sea coast and nearby lakes. The migration periods are from the end of February to May and from August to November. A gathering of 170 birds was recorded at Lake Atanasov on 16 May 1978. There is no information on the origin of Sanderlings that occur in Bulgaria.

LITTLE STINT *Calidris minuta* Leisler.

This species is a numerous passage-migrant, and winter and summer visitor. Visits wetlands throughout the country, but chiefly in the coastal belt and near Sofia. It migrates from April to June and August to October. Gatherings at Lake Atanasov have reached 5 176 birds in spring (21 May 1979), up to 3 080 during autumn

passage (3 August 1982) and 1 130 birds in winter (17 January 1978). In autumn, Little Stints traverse the country from north-east to south-south-west, in spring, vice versa. This is confirmed by other publications on this species' migration in Europe (Gromadzka & Kania 1985) and by Bulgarian ringing results. To date, about 800 Little Stints have been ringed in Bulgaria. Retraps of ringed birds indicate that autumn stopovers average 13.2 days (1 - 39), after which birds depart south-west towards the Mediterranean coast. A bird ringed on 24 September 1982 was found wintering in Greece two weeks later. Another, shot in Greece on 11 May 1987, had been ringed on 7 July 1986 at Lake Atanasov. Two other Little Stints, ringed on 27 October 1986 in Tunisia and 8 May 1982 in northern Italy, were retrapped at Lake Atanasov on, respectively, 6 May 1970 and 16 August 1982. The second date shows that some Little Stints which winter in Africa do not reach their breeding grounds in spring, but spend the summer at wetlands in Bulgaria.

TEMMINCK'S STINT *Calidris temminckii* Leisler.

A regular passage-migrant, occurring throughout the year at wetlands in Bulgaria (most frequently on the Black Sea coast). Spring passage is from March to May, and autumn passage from August to October. A flock of 25 (wintering) birds was observed at Lake Atanasov on 8 December 1980. The same lake has held the largest gatherings of Temminck's Stints during migration with counts of 150, 498, and 635 during 25 - 27 August 1978, and 200 birds on 3 August 1982.

DUNLIN *Calidris alpina* L.

Two subspecies - nominate *C. a. alpina* (L., 1758) and *C. a. schinzii* (Brehm, 1822) - have been recorded in Bulgaria. The Dunlin occurs widely at wetlands throughout the year, with peak numbers at Black Sea coastal lakes during the migration period. Spring passage is from March to May, with autumn passage from August to November. At Lake Atanasov, the highest spring count (4 April 1976) is 6 900, and in autumn (31 October 1974), up to 4 300. To date, about 1 000 Dunlins have been ringed in Bulgaria and retraps of autumn migrants show average stopovers at wetlands of 12.5 days. In winter, one individual migrated south-west from the Black Sea coast and was retrapped after 18 days (26 December 1980) 140 km away in the interior. Two Dunlins, ringed at Lake Atanasov in October 1982, were retrapped at the same place after 3 months and 2 years 6 months, respectively. Two other birds, ringed on 8 and 14 November 1981, also migrated along the same route in the following autumn, being retrapped, respectively, on 19 and 14 October 1982. Among long-distance recoveries of Dunlins ringed at Lake Atanasov in October 1982, are two from Turkey (20 February and April 1983). These examples show that Dunlins move south-west, south and south-east across Bulgaria in autumn. Another example that may be quoted concerns a bird ringed at Lake Atanasov on 19 October 1982 and retrapped on 29 July 1983 on the coast of Poland. Dunlins which have migrated in late summer and autumn through southern Sweden and Denmark have been recorded during migration and in winter on the Bulgarian seaboard. It is known (Gromadzka 1985) that Dunlins traverse the whole of Europe during their southward migration in autumn. Some birds first move west to the Scandinavian peninsula, then turn south.

CURLEW SANDPIPER *Calidris ferruginea* Pontopp.

This species occurs widely at lowland waters throughout the year, but chiefly on the Black Sea coast. Migration is most conspicuous from March to May and July to November. There are

fluctuations, but high numbers have been recorded from early spring to late autumn in recent years. Peak gatherings at Lake Atanasov in spring are 5 458 birds on 21 May 1979; 2 760 and 3 000 on, respectively, 16 and 17/18 May 1981; and in autumn, 1 741 on 25 August and 5 922 on 27 August 1978; 2 300 on 1 September 1985. Autumn stopovers are on average 10.8 days. There is a well-defined migration route through Bulgaria, from the Siberian tundra to Africa and back. Curlew Sandpipers ringed at Lake Atanasov on 22 August 1982 and 28 July 1986 were found, respectively, wintering in Egypt (early 1987) and Guinea-Bissau (3 February 1987). Birds ringed in Namibia, South Africa, the Balearic Islands and Tunisia (2 birds) were found at Lake Atanasov, Pazardzhik and Pomorie. The last two birds wintered in Bulgaria (Nanikov & Djingova 1979, 1981; Nanikov et al. 1986). The largest winter gathering of Curlew Sandpipers (900) was recorded at Lake Atanasov on 8 December 1980.

BROAD-BILLED SANDPIPER *Limicola falcinellus* Pontopp.

A passage-migrant also recorded in summer and (rarely) in winter. Over the last 30 years, a total of 830 birds have been recorded on the Bulgarian seaboard (January -1, April -9, May -19, June -10, July -1, August -196, September -593, and October -1) (Nankinov 1985a). It is more numerous during autumn passage (August - September) than in spring (April - June). A total of 51 Broad-billed Sandpipers was ringed at Lake Atanasov between 3 August and 3 September 1982 and one bird was present from (at least) 24 August to 11 September. Another was retrapped a year later on a coastal lake near Odessa (USSR), a further indication of the direction taken on autumn migration by this species.

BUFF-BREASTED SANDPIPER *Tryngites subruficollis* Vieill.

Vagrant, with a single record: Lake Durankulak (north-east Bulgaria) on 24 August 1972 (Kneis 1974).

RUFF *Philomachus pugnax* L.

The view has been expressed that Ruffs may have bred in Bulgaria at the beginning of the present century, as leks were reported from wetlands near Sofia and the Danube Valley (Petrov 1925). The Ruff is now a passage-migrant, summer and winter visitor, occurring in low-lying wetlands throughout the country. Spring movements are from February (in warm winters, from the end of January) to the last few days of May. Autumn passage occurs from August - November. Winters regularly in coastal wetlands, especially at Lake Atanasov, where 200 birds were noted on 4 December 1980. The same lake and the Sofia area have held the largest concentrations of migrants: 9 940 birds at Lake Atanasov on 4 April 1976 and 7 000 north of Sofia on 28 March 1976. Thirteen foreign-ringed birds have been recorded in Bulgaria (Paspaleva 1962, 1965; Dontschev 1976; Nankinov & Djingova 1979) as follows: Finland (4), Sweden (3), Norway (1), West Germany (1), Denmark (3), and Holland (1). Finnish birds vacate their breeding grounds in the period July to September and fly south-east for 1 775 to 2 360 km to spend the period 12 December to 2 April in Bulgarian wetlands. Swedish and Danish Ruffs have been found in Bulgaria between, respectively, 10 February and 20 March (distance covered 1 068 - 1 750 km) and 16 August to 13 March. A Norwegian-ringed bird was trapped 2 500 km from its breeding grounds at the age of 9 years. The extent of Ruff dispersal shows that Bulgaria is visited also by birds from the USSR, perhaps from East

Germany and Poland (Lebedeva 1957; Lätzel 1974); Ruffs passing through Bulgaria in spring will have spent the winter in south-west and southern Africa (Lebedeva & Dobrynina 1985).

#### DISCUSSION

A total of 47 wader species has been recorded in Bulgaria. Fourteen of these are on the country's list of breeding birds: Oystercatcher, Black-winged Stilt, Avocet, Stone Curlew, Collared and Black-winged Pratincole, Lapwing, Little Ringed and Kentish Plover, Redshank, Marsh Sandpiper, Green Sandpiper, Common Sandpiper, and Woodcock. Lapwing and Woodcock are on the southern limit of their ranges in Bulgaria. In different years, the total population of all wader species breeding in Bulgaria is between 2 400 and 5 500 pairs. The most numerous breeding wader in Bulgaria is the Avocet (760 - 2 200 pairs), then come Little Ringed Plover (500 - 1 000 pairs), Lapwing (600 - 800 pairs), Kentish Plover (200 - 400 pairs), Common Sandpiper (100 - 500 pairs), and so on. A further five species formerly bred in the country: Ringed Plover, Greenshank, Wood Sandpiper, Great Snipe, Snipe, and perhaps also Black-tailed Godwit and Ruff. The southern range limit of these species now lies north of Bulgaria. Further north lie also the main breeding grounds of Green Sandpiper, Marsh Sandpiper and Black-winged Pratincole.

Bulgaria is an important wintering area for the waders of Eurasia, 34 species occurring there during the winter months: Black-winged Stilt, Avocet, Lapwing, Golden Plover, Grey Plover, Ringed Plover, Little Ringed and Kentish Plover, Dotterel, Black-tailed and Bar-tailed Godwit, Whimbrel, Slender-billed Curlew, Curlew, Spotted Redshank, Redshank, Greenshank, Green Sandpiper, Wood Sandpiper, Terek Sandpiper, Common Sandpiper, Turnstone, Red-necked Phalarope, Woodcock, Great Snipe, Snipe, Jack Snipe, Sanderling, Little Stint, Temminck's Stint, Dunlin, Curlew Sandpiper, Broad-billed Sandpiper and Ruff. In recent decades, we have seen a process of increased wintering by a number of species in Bulgaria, birds whose main winter range lies far to the south. These are Black-winged Stilt, Avocet, Ringed, Little Ringed and Kentish Plovers, Bar-tailed Godwit, Whimbrel and Slender-billed Curlew, Wood Sandpiper, Terek Sandpiper, Common Sandpiper, Great Snipe, Temminck's Stint, Curlew Sandpiper and Broad-billed Sandpiper. It is difficult to give a figure for the total winter wader population in Bulgaria, though maximum winter counts from Lake Atanasov may give some idea of the total numbers involved: up to 3 000 Redshanks, 1 500 Lapwings, about 1 100 each of Little Stint and Dunlin, 800 Avocets and 200 Ruffs.

Concentrations indicate the most numerous spring migrants to be Avocet (up to 22 600 birds), Ruff (c. 10 000), Dunlin (6 900), Black-tailed Godwit (c. 6 000), Curlew Sandpiper (c. 5 500), Dunlin (c. 5 200), Curlew (2 000), Lapwing (c. 1 000), and the most numerous in autumn Avocet (47 500), Lapwing (c. 7 500), Curlew Sandpiper (c. 6 000), Redshank (c. 5 300), Dunlin (4 300) and Little Stint (c. 3 000).

Vagrant waders recorded in Bulgaria include Spur-winged Plover, Sociable Plover, Greater Sand Plover, Caspian Plover, Spotted Sandpiper, Grey Phalarope and Buff-breasted Sandpiper.

Avocets passing through Bulgaria come from Hungary and Austria; Oystercatchers and Marsh Sandpipers from the northern Black Sea region; Lapwing, Curlew and Whimbrel, Green Sandpiper, Snipe and Great Snipe from the European part of the USSR; Little Ringed Plover, Wood Sandpiper, Woodcock, Ruff, Black-tailed Godwit and Redshank from Scandinavia, central and eastern Europe; Golden Plover, Ringed Plover, Spotted Redshank, Greenshank, Dunlin, and Little Stint from northern Europe; Turnstone from the north of Eurasia; and Curlew Sandpiper from the Siberian tundra. Bulgarian-ringed Curlew Sandpipers have been found wintering in north, west and southern Africa, Redshanks, Little Stints and Dunlins on the Mediterranean coast, where Avocets, Woodcocks and Kentish Plovers from Bulgaria also spend the winter.

All waders occurring in Bulgaria as well as their main habitats are protected under the Law on the Protection of the Environment. The following species are listed in the Bulgarian Red Data Book (Botev & Peshev 1985): Oystercatcher, Black-winged Stilt, Avocet, Stone Curlew, Collared Pratincole, Kentish Plover, Redshank, Marsh Sandpiper, Green Sandpiper, Woodcock, Great Snipe and Snipe.

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