

Threatened Birds of Asia:

The BirdLife International Red Data Book

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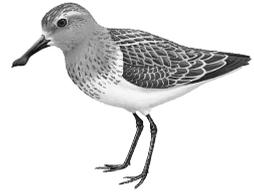
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SPOON-BILLED SANDPIPER

Eurynorhynchus pygmeus

Critical —
Endangered —
Vulnerable C1



This sandpiper has a small population which is declining as a result of habitat loss in its breeding, passage and wintering grounds, compounded by disturbance and hunting. These factors qualify it as Vulnerable.

DISTRIBUTION The Spoon-billed Sandpiper (see Remarks 1) breeds on the Chukotsk peninsula and southwards down the isthmus of the Kamchatka peninsula, in north-eastern Russia. It migrates down the western Pacific coast through eastern Russia, Japan, North and South Korea, mainland China, Hong Kong and Taiwan to its main wintering ground in South and South-East Asia, where it is recorded from India, Bangladesh, Sri Lanka, Myanmar, Thailand, Vietnam, the Philippines, Peninsular Malaysia and Singapore, with unconfirmed reports from the Maldives (see Remarks 2). It is also a rare visitor to the USA and Canada, recorded in north-western Alaska, the Aleutian islands, British Columbia, the Pribolof islands and Alberta (AOU 1998).

■ **RUSSIA** As a breeding bird, it is endemic to the coast of the western Bering Sea (in Chukotka and Koryakia), where it inhabits a narrow belt of coastal tundra around “Beringian” lagoons and bays. There are two major areas of distribution, one a more or less continuous stretch of c.350 km of coast on the northern Chukotsk peninsula between Ukouge lagoon and Serdtse-Kamen’ cape, and the other along the Bering Sea coast for c.2,600 km (almost continuous between Getlyanen and Khatyrka, but then in isolated patches of suitable habitat south-west to Ossora). On migration, it occurs on Kamchatka (including the Commander islands), along the coasts of the Sea of Okhotsk in Magadan, Khabarovsk and Primorye, and on Sakhalin island and the Kuril islands. Records (by province) are as follows:

■ **Chukotka** Wrangel island, “many” reported to have been seen, summer 1911 (Portenko 1972), but this report is probably unreliable and there have been no records during subsequent surveys (P. S. Tomkovich *in litt.* 2000); **Ekviatap lagoon** (Ekvyvataap lagoon), western edge of Vankarem lowlands, displaying males seen and presumably nesting, June 1990 (Stishov and Maryukhnich 1991); **Ukouge-Pil’khin lagoon** (Ukouge lagoon), north coast of Chukotka, 25 km east of the Amguema estuary, broods of downy young found in 1970 (Portenko 1972, Kishchinskiy 1988); **Vankarem lagoon** and spit, north coast of Chukotka, August 1881 (Portenko 1972), two broods, July 1909 (Koren 1910); **Dzhenretlen cape** (Jinrelten), east of Kolyuchin bay, four collected, June and August 1879 (Portenko 1972, male in NRM); **Belyaka spit** (Belyak spit), 45–53 territorial males, June–August 1986–1988 (Tomkovich 1992b, 1995, Tomkovich and Soloviev 2000), six, June 1996 (G. Ouweneel *in litt.* 1999); **Pitlekai**, north coast of Chukchi Peninsula, June 1879 (Portenko 1972), June 1910 (male in AMNH); **Yuzhnyi island**, Kolyuchin bay, totals of 50 and 95 males counted in this area and on Belyaka spit in 1973 and 1974 respectively (Krechmar *et al.* 1978, Kishchinskiy 1988), while in 1986–1988 45, 51 and 45 males were counted in the same area using the same methodology, indicating that the population there had possibly declined (Tomkovich and Soloviev 2000); **Rekokaure cape**, Kolyuchin bay, a “common” breeding species, 8–10 pairs estimated, July 1974 (Krechmar *et al.* 1978, Kishchinskiy 1988); near **Enurmino** village, near Cape Serdtse-Kamen’, two nests collected and one downy chick found, June–July 1970 (Leonovich 1973); **Serdtse-Kamen’ cape**, “common” breeding species, July 1909, July 1910 and July 1911 (Portenko 1972, Dorogoy

1997, 21 specimens, including nine chicks, in AMNH, BMNH, CM and FMNH), chicks found, July 1913 (Brooks 1915, Dixon 1918; see Portenko 1972); **Kolyuchin bay**, one brood, July 1909 (Portenko 1972); **Egvekinot** settlement, north-western inlet of Kresta bay, four nests, 1974 (Kishchinskiy 1988), at least five birds, June 1992, 11 birds, June 1995 (P. Alström, U. Olsson and D. Zetterström *in litt.* 2000); **Kresta bay**, south-western coast of Chukchi peninsula, undated (Portenko 1972); **Lawrence bay** (St Lawrence bay), eastern coast of Chukchi peninsula, July 1899 (specimen in AMNH), juvenile female collected, August 1932 (Portenko 1972); **Uel'kal' lagoon**, western side of the entrance to Kresta bay, "rather numerous", summer 1961 (Portenko 1972); **Getlyangen lagoon** (Getlyanen lagoon), eastern coast of Chukotsk peninsula, nest found on a spit, July 1984 (Konyukhov and Zubakin 1988); **Anadyr'**, northern coast of Anadyr' lagoon, nests found 3 km south of the airport in 1991 and 1993 (Dorogoy 1997), two, June 1992, one, June 1995 (P. Alström, U. Olsson and D. Zetterström *in litt.* 2000), male displaying in summer 2000, no indication of nesting (E. E. Syroechkovski, Jr. *et al. in litt.* 2000); **Kuymenay lagoon** (Kuimekei lagoon), c.50 km west of Providence bay, one territorial bird, undated (Konyukhov and Zubakin 1988); **Kivak lagoon**, eastern coast of Chukotsk peninsula, four pairs nesting on the spit (two nests found), 1976 (Tomkovich and Sorokin 1983); **Anadyr' bay**, July 1914 (male in FMNH), in northern Anadyr' bay in summer 2000, two displaying males at Nicolai spit, four nests found at Russkiy Koshka and another 6–8 pairs estimated possibly to be breeding in the area, but no sightings in suitable areas at the Sbornaya river spit (E. E. Syroechkovski, Jr. *et al. in litt.* 2000); **Emma inlet**, north-eastern Providence bay, pair seen, June before 1920 (Portenko 1972); **Geka cape** (Gek land), southern entrance to the Anadyr' estuary, 8–10 pairs nesting, specimens collected, 1932 (Portenko 1939), at least five breeding pairs, June 1991 (A. V. Kondrat'ev *in litt.* 1997, P. S. Tomkovich *in litt.* 2000), four birds, June 1995 (P. Alström, U. Olsson and D. Zetterström *in litt.* 2000), but none found, July 2000 (E. E. Syroechkovski, Jr. and P. S. Tomkovich *in litt.* 2000); **Provideniya bay** (Providence bay), 3–4 pairs nesting in an extensive marsh on the western side of the bay, north of Cape Stoletia, June 1913 (Brooks 1915, Dixon 1918, Portenko 1972), pair nesting, male collected, July 1938 (Portenko 1972), breeding pair, July 1993 (G. Ouweneel *in litt.* 1999); **Plover bay**, eastern side of Providence bay, August 1880 (Portenko 1972, juvenile in USNM), downy chicks found in July 1993 (Dorogoy 1997); south and south-west coast of the Anadyr' lagoon/estuary between the **Avtatkuul' river mouth** (Avtatkool' river) and the Tret'ya river mouth, 1–2 nesting pairs in the estuary of every small river or stream that empties into the lagoon (A. V. Kondrat'ev *in litt.* 1997), recorded at the mouths of only two rivers within this area, without any sign of breeding, July 2000 (E. E. Syroechkovski, Jr. and P. S. Tomkovich *in litt.* 2000); **Beringovskiy** settlement, breeding, several juveniles collected, August 1975 (Kishchinskiy 1980), none found, July 2000 (E. E. Syroechkovski, Jr. and P. S. Tomkovich *in litt.* 2000); shingle spits separating brackish lagoons in the mouths of rivers in **Ugol'naya bay** (Gulf of Anadyr'), a fairly common breeder on all spits/bars in 1975 (Kishchinskiy 1988); **Khatyrka river**, from the river mouth to 5–6 km inland and gravel spits separating adjacent lagoons from the sea, specimens collected, July–August 1976, common breeding species on spits and bars and on the low terraces of streams below the point where they flow into the low-lying delta zone (Kishchinskiy 1980); "at sea" (presumably flying over the sea) near the Chukotsk peninsula (not mapped), "large numbers" reported, spring 1879 (Hartlaub 1898);

■ **Koryakia Tilichiki** settlement, Korf bay, nesting, summer 1957 (Portenko 1972); near **Korf** settlement, Koryak highlands, one brood, 1957 (Portenko 1957); **Geka lagoon** (Gek lagoon), 60 km south-west of Tilichiki settlement, two seen on migration among other sandpiper species, June 1976 (Firsova and Levada 1982, Tomkovich 1992a); **Olyutorskiy cape**, male (with brood-patch) collected, July 1912 (Kishchinskiy 1980); **Kayum lagoon**, 60 km south-west of Ossora settlement, four downy chicks, July 1972, on a coastal shingle spit (Gerasimov and Vyatkin 1973); **Karaginskiy bay** (Karaginskaya bay), north-eastern Kamchatka, one, June 1931 (Tomkovich 1992a);

■ **Kamchatka Moroshechnaya estuary**, west Kamchatka, c.100 among a mixed flock of sandpipers (one collected), June 1983, two, June 1989, at least 30, July 1989, three flocks of 6, 18 and 40 individuals, late May 1990 (Tomkovich 1990, Gerasimov *et al.* 1992), total of more than 150, May–June 1990, with daily maxima of 65 in late May and 67 in early June (Gerasimov in prep. in Tomkovich 1992a); **Beringa island** (Bering island), Commander islands, September 1911 (Dement'ev and Gladkov 1951–1954, female in AMNH); **Kronotskiy Biosphere Reserve**, central-eastern Kamchatka, September 1975 (Tomkovich 1992a); **Vakhil' river mouth**, east of Petropavlovsk Kamchatskaya, one, May 1991 (Gerasimov in prep. in Tomkovich 1992a); west coast of **Kamchatka**, collected, August (unspecified year) (Dement'ev and Gladkov 1951–1954);

■ **Magadan Tauy river mouth**, 110 km west of Magadan, August 1986 (Kondrat'ev 1988); **Ola lagoon**, 30 km north-east of Magadan, irregularly seen on migration with other sandpipers, 1991–1996 (Dorogoy 1997);

■ **Khabarovsk** near **Okhotsk**, June 1930 (Tomkovich 1992a, one juvenile in ZMMGU); near **Ayan**, one, August 1961 (Vtorov 1963 in Tomkovich 1992a); **Bol'shoy Shantar islands** (Shantarsk archipelago), juvenile collected, September 1925 (Dul'keyt 1973, Tomkovich 1992a); **Amur estuary**, adult male collected, August (unspecified year) (Kozlova 1962 in Tomkovich 1992a);

■ **Primorye** near **Terney bay**, July–August (unspecified year) (Rakhilin 1973 in Tomkovich 1992a); **Ol'ga bay**, groups of 2–3 with flocks of Red-necked Stint *Calidris ruficollis* and Sanderling *C. alba*, August–September 1975, flocks of 20–25, October 1974 and September 1975, October 1977 (Labzyuk 1979), five juveniles collected, September 1975 (Tomkovich 1992a); **Erdmana peninsula** (De Friz peninsula), Amur bay, a rare passage migrant between 1949 and 1957, seen in August 1952, June 1955, May 1957 (when six were collected: Kozlova 1962 in Tomkovich 1992a), September 1958 (Omel'ko 1971); **Lazovskiy State Reserve** (Sudzukhinsky), collected at Ta-Chin-Gouza bay and Zorya bay in August–September 1945 and August–September 1946 (Dement'ev and Gladkov 1951–1954, specimens in ZMMGU), juvenile collected, August 1960 (Tomkovich 1992a), seen, August 1986 (Banin 1989), a scarce passage migrant, undated (Lapteev *et al.* 1995); **Amur bay**, 1893–1894, including in August (three specimens in BMNH), September 1973 (juvenile in NHMW); near **Vladivostok**, total of 45 birds during 73 autumn counts in July–October 1972–1986 (Glustchenko 1988, 1990 in Tomkovich 1992a); **Mongugay river** estuary, Amur bay, up to three, September 1961 (Panov 1973); **Tumen estuary** (Tumangan estuary), a “rare” passage migrant, undated (Litvinenko and Shibaev 1996);

■ **Sakhalin** (where a passage migrant, more frequent on the east coast than the west coast: Nechaev 1988b) near **Rybnoye**, eight adults, August 1979 (Nechaev 1988 in Tomkovich 1992a); **Lakh river mouth**, three adults collected, August 1954 (Tomkovich 1992a), July 1990 (Poyarkov in prep. in Tomkovich 1992a); **Tyk river mouth**, one, May (unspecified year) (Suprunenko 1890 in Tomkovich 1992a); **Viakhtu bay**, several collected, July 1909 (Chersky 1915); **Lun'skiy bay** (Lunski bay), one, September 1989, four adults, August 1990 (Zykov in prep. in Tomkovich 1992a); **Vladimirovka river mouth**, Terpeniya bay, up to 30 birds, May 1977 (Nechaev 1988); near **Kotikovo**, Terpeniya bay, Sakhalin, August 1926 (Tomkovich 1992a), five specimens in YIO); **Sakaehama**, Sakhalin, September 1926 (female in FMNH); **Aniva bay**, September 1906 (at “Ludka”: female in NRM), flock of several tens of birds, October 1914, August 1947 (Gizenko 1955 and Nechaev in prep. in Tomkovich 1992a); **Lososey bay** (Losos' bay), Aniva bay, c.200 birds, May–June 1979, several adults, August 1980, c.10 birds, May 1987, c.20 adults, July 1987 (Nechaev 1988b, Tomkovich 1992a);

■ **Kuril islands Shumshu island**, male collected, June 1952 (Podkovyrkin 1955 in Tomkovich 1992a); **Paramushir island** (Paramushiram), including at Nasanki, August–September 1928 (Yamashina 1929, three specimens in YIO and FMNH); Northern Kuril islands (not mapped), June 1931 (Kiyosu 1965 in Tomkovich 1992a);

province unknown Mouni, July 1911 (two males in AMNH); Sudge, Siberia, July 1911 (female in FMNH).

■ **JAPAN** The species is a rare but regular autumn migrant, occurring mainly in September and October, generally along the Pacific coast from Hokkaido to Okinawa (Brazil 1991), with records (by island and prefecture) as follows:

Hokkaido **Koetoi** coast, Wakkanai-shi, up to three, September 1989 (WBSJ 1990), one, May 1990 (WBSJ 1991); **Komuke-ko** lake, Monbetsu-shi, two, September 1993 (*Birder* 93/11); **Tofutsu-ko** lake, Abashiri-shi, September 1972 (Kidono 1977 in Brazil 1991), one, September 1996 (*Birder* 96/11); Hashirikotan, **Bekkai-cho**, Notsuke-gun, two, September 1996 (*Birder* 96/11); **Shunkunitai**, Nemuro-shi, regular in September, 1970s and 1980s, maximum 29, September 1974 (Takada *et al.* 1981 in Brazil 1991), one, May 1993 (*Birder* 93/8), up to three, September 1993 (*Birder* 93/11, 93/12); Shin-gawa river mouth, **Otaru-shi**, three, April 1995, three, September 1995 (WBSJ 1997a), three, September 1996 (WBSJ 1998); **Otarunai-gawa**, four collected, September 1900 (Fujimaki and Haneda 1976); **Zenibako**, collected in September 1900 and September 1902 (Fujimaki and Haneda 1976); **Hamanaka**, one collected, September 1875 (Fujimaki and Haneda 1976); **Ishikari**, saltflat near the Ishikari-gawa river mouth, 20 km north of Sapporo, three collected, October 1911, seen, September 1957, September 1970, two, October 1971, four, September 1972 (Fujimaki and Haneda 1976); **Suttu bay**, Suttu-cho, Suttu-gun, one photographed, August 1994 (*Birder* 99/9); **Yufutsu-gun**, one collected, September 1874 (Fujimaki and Haneda 1976); **Mu-kawa river mouth**, seen on the sand- and saltflats near the river mouth, August 1974, September 1974 (two), September 1975 (two), September 1975 (up to six) (Fujimaki and Haneda 1976); **Hakodate**, collected at Henson Ho, October 1883 (specimen in BMNH), September 1884, October 1885 and October 1886 (Austin and Kuroda 1953, three juveniles in USNM), one collected, September 1901 (Fujimaki and Haneda 1976);

Honshu ■ **Aomori** unspecified locality, five, 1920 (Wada 1922); ■ **Iwate Tsugaruishi-gawa river mouth**, Miyako-shi, undated (WBSJ Miyako Chapter database); ■ **Miyagi Sendai-shi**, May 1963 (Fujimaki and Haneda 1976 in Brazil 1991); ■ **Akita Hachiro-gata**, Minamiakitagun, three, September 1975 (Nishide 1977); ■ **Fukushima Matsukawa-ura** lake, May 1978 (Wild Bird Society of Fukushima 1979); ■ **Ibaraki Mito-shi**, recorded on migration, undated (Mochizuki 1981); ■ **Gunma** southern **Gunma**, rare passage migrant, undated (Ugi 1973); ■ **Chiba Shimosa**, undated (Austin and Kuroda 1953, juvenile male in AMNH); **Gyotoku**, one collected, October 1883 (Austin and Kuroda 1953), male collected, September 1887 (Kuroda 1931b), August 1926 (three females in YIO), eight, September 1966, one, October 1967, one, October 1969, one, September 1972 (N. Yanagisawa *in litt.* 1998); **Yatsu tidal flat** (Yatsu-higata), “rare”, undated (Brazil 1987); Kugata (untraced), October 1883 (female in YIO); ■ **Tokyo Tokyo**, November 1892 (specimen in FMNH), “rare” at Tokyo Port Bird Park, undated (Brazil 1987); ■ **Kanagawa Kawasaki-shi**, “irregularly recorded”, 1986–1991 (WBSJ Kanagawa Chapter 1992); **Tama-gawa river mouth** (Rokugo-gawa), three, October 1916 (Kuroda 1931b, Austin and Kuroda 1953, WBSJ 1975); “rare”, undated (Brazil 1987); **Yokohama**, c.1892, including in July and November (five specimens in BMNH, DMNH and USNM; also Austin and Kuroda 1953, WBSJ Kanagawa Chapter 1992); **Fujisawa-shi**, before 1986 (WBSJ Kanagawa Chapter 1992); **Hiratsuka-shi**, before 1986 (WBSJ Kanagawa Chapter 1992); **Miura**, before 1986 (WBSJ Kanagawa Chapter 1992); **Yokosuka**, before 1986 (WBSJ Kanagawa Chapter 1992); **Uraga**, one collected, January 1914 (Kuroda 1931b, Austin and Kuroda 1953); ■ **Niigata** unspecified locality, undated (Brazil 1991); ■ **Toyama Shimao**, **Himi-shi**, September 1985, September 1986 (WBSJ Toyama Chapter database); **Horioka**, Shimminato-shi, July 1991 (WBSJ Toyama Chapter database); Kaio-machi, **Shimminato-shi**, September 1979, September 1980 (four), September 1983, September 1984 (four), August 1987 (four), September 1989, August 1995 (WBSJ Toyama Chapter database, N. Yanagisawa

in litt. 1998); ■ **Ishikawa Takamatsu** coast, September 1986 (N. Yanagisawa *in litt.* 1998); ■ **Fukui Mikuni-cho**, Sakai-gun, one, September 1978, three, October 1978, one, October 1979 (Fukui Prefecture 1982); Kawashiri, **Fukui-shi**, one, September 1967 (Fukui Prefecture 1982); ■ **Nagano Shinano** (Shinano-Koyama), undated (Austin and Kuroda 1953); ■ **Gifu Hirata-cho**, Kaizu-gun, one, September 1995 (Y. Sakai *in litt.* 1998); ■ **Shizuoka Ota-gawa river mouth**, Fukude-cho, Iwata-gun, one, September 1977 (WBSJ Totomi Chapter database); **Omaezaki**, Omaezaki-cho, Haibara-gun, two, September 1985, six, September 1985 (WBSJ 1986); ■ **Aichi Nagoya** (Owari), November 1906 (Austin and Kuroda 1953, two specimens in AMNH and FMNH); Reclamation no.2, **Hekinan-shi**, one, September 1976, four, September 1977, two, September 1977, single birds in September 1978, September 1979, September 1982 and September 1985 (N. Yanagisawa *in litt.* 1998); Lot number 14, **Nishio-shi**, single birds in May and June 1991 (N. Yanagisawa *in litt.* 1998); **Mito-cho**, Hoi-gun, one, October 1987 (N. Yanagisawa *in litt.* 1998); **Isshiki-cho**, Hazu-gun, single birds in September 1981 and September 1991 (N. Yanagisawa *in litt.* 1998); **Tahara-cho**, Atsumi-gun, one at Tahara-ichiku, September 1974 (N. Yanagisawa *in litt.* 1998), single birds recorded at Shiokawa tidal flat, August 1977, September 1979, September 1982, September 1985, October 1987 and September 1991 (N. Yanagisawa *in litt.* 1998); ■ **Mie Ano-gawa river mouth**, Tsu-shi, one, December 1993 (*Birder* 93/12); ■ **Osaka** unspecified locality, undated (Brazil 1991); ■ **Hyogo Himeji-shi**, juvenile, September 1995 (WBSJ 1997), one, May 1972 (N. Yanagisawa *in litt.* 1998); **Kakogawa-shi**, two, September 1983 (N. Yanagisawa *in litt.* 1998); **Nishinomiya-shi**, one, September 1973 (N. Yanagisawa *in litt.* 1998); ■ **Wakayama Minabe-cho**, Hidaka-gun, one, September 1997 (WBSJ Wakayama Chapter database); Aizu-gawa river mouth, **Tanabe-shi**, juvenile, September 1993 (*Birder* 93/11); ■ **Tottori Karo-ko** (Karo-kaigan) coast, Tottori-shi, one, September 1995 (M. Fukuda *in litt.* 1998); **Koyama-ike** pond, Tottori-shi, one, August 1995 (M. Fukuda *in litt.* 1998); ■ **Shimane Nakano-umi** lake, October 1975 (Uchida 1982); **Iinashi-gawa** river, one, September 1978 (Uchida 1982); ■ **Hiroshima Fukuyama-shi**, one at Fukuyama port, September 1981 (WBSJ Hiroshima Branch 1998), at Minoshima landfill, one, September 1976, four, September 1977, one, July 1978, one, August 1979, two, September 1978, one, September 1980 (WBSJ Hiroshima Branch 1998, N. Yanagisawa *in litt.* 1998); Keio-hama, **Yanaizu-cho**, Fukuyama-shi, single birds in September 1983 and September 1986, but not subsequently (WBSJ Hiroshima Branch 1998); ■ **Yamaguchi Tsuno-jima** island, Hohoku-cho, Toyoura-gun, Shimonoseki-shi, four, September 1963, one, September 1969 (N. Yanagisawa *in litt.* 1998), undated (WBSJ Yamaguchi Chapter 1976); **Chidori-hama**, Shimonoseki-shi, ten, September 1970 (WBSJ Yamaguchi Chapter 1976); Yokono coast, **Shimonoseki-shi**, three, September 1985 (N. Yanagisawa *in litt.* 1998); **Ajisu reclamation**, Ajisu-cho, Yoshigi-gun, one, September 1962 (N. Yanagisawa *in litt.* 1998); **Ayaragi-gawa river mouth**, Shimonoseki-shi, single birds in April 1986 and April 1987 (N. Yanagisawa *in litt.* 1998); **Chofu tidal flat**, Shimonoseki-shi, three, October 1971, one, April 1986 (N. Yanagisawa *in litt.* 1998); Nishioki reclamation, **Ube-shi**, two, September 1975 (WBSJ Yamaguchi Chapter 1976); **Ozu** paddyfields, Iwakuni-shi, one April 1987 (N. Yanagisawa *in litt.* 1998);

Hachijo-jima island, Izu islands, 1939 (Momiyama in Yamashina 1942);

Shikoku ■ **Tokushima Yoshino-gawa river mouth**, Tokushima-shi, one, October 1974, two, September 1975, two, October 1975, two, September 1976, two, September 1977, single birds in September 1978, October 1978, September 1980 and October 1981, five, September 1983 (Ishihara 1982, N. Yanagisawa *in litt.* 1998); Miyajima, Kawauchi-cho, **Tokushima-shi**, one, September 1981 (N. Yanagisawa *in litt.* 1998); **Komatsushima-shi**, one, September 1978 (N. Yanagisawa *in litt.* 1998); Tatsumi, Tatsumi-cho, **Anan-shi**, two, September 1984, one, September 1986 (WBSJ Tokushima Chapter 1988, N. Yanagisawa *in litt.* 1998); ■ **Kagawa Shin-kawa** river mouth (untraced), September 1974 (Ishihara 1982); **Utazu-cho**, Ayauta-gun, May 1975 (Ishihara 1982); Himehama (untraced), September 1974 (Ishihara 1982); ■ **Ehime**

Toyo-shi, one on the Takasu-kaigan coast, Takasu, September 1993 (*Birders* 93/11), one, September 1994 (WBSJ Ehime Chapter database); **Shigenobu-gawa river mouth**, Masaki-cho, Iyo-gun, and Matsuyama-shi, two, September 1975, two, September 1976, up to five, September–October 1979, two, September 1980, one, September 1991 (Ishihara 1982, N. Yanagisawa *in litt.* 1998), one, September 1995 (WBSJ Ehime Chapter database); unspecified locality, two, April 1984 (Brazil 1991);

Kyushu ■ **Fukuoka Sone tidal flat**, Kokuraminami-ku, Kitakyushu-shi, single birds in October 1989, January 1996 and February 1998 (WBSJ Kitakyushu Chapter database), up to two, October 1995 (*Birders* 95/12, 96/1); **Imazu**, Nishi-ku, Fukuoka-shi, up to 10 juveniles, September 1984 (P. Alström, U. Olsson and D. Zetterström *in litt.* 2000), two, September 1993 (*Birders* 93/12); unspecified locality, 18 birds, September 1984 (Brazil 1991); ■ **Saga Daijukarami, Higashiyoga-cho, Saga-gun**, one, September 1994 (*Birders* 94/12), up to three, September–October 1997 (*Birders* 97/12); ■ **Nagasaki Isahaya**, four, September 1984 (P. Alström, U. Olsson and D. Zetterström *in litt.* 2000), April 1987 (Brazil 1991); ■ **Kumamoto** unspecified localities, nine, September 1983 (Brazil 1991), January 1986 (Environment Agency 1988 in Brazil 1991); ■ **Oita Kuresaki reclamation, Bungotakada-shi**, juvenile, September 1996 (*Birders* 96/11); ■ **Miyazaki Hitotsuse-gawa river mouth**, Shintomi-cho, Koyu-gun, one, September 1994 (*Birders* 94/11); Ishizaki-gawa river mouth, **Sadowara-cho**, Miyazaki-gun one, September 1994 (*Birders* 94/11), one, September 1995 (WBSJ 1997a); unspecified locality, two, April 1985 (Brazil 1991); ■ **Kagoshima Izumi-shi**, at Izumi reclaimed land, October 1995 (Katoh 1997), two at Jyabuchi-gawa river mouth, September 1996 (*Birders* 96/11); **Manose-gawa river mouth**, Kaseda-shi, juvenile, October 1993 (*Birders* 93/12), up to four juveniles and one adult, September 1994 (*Birders* 94/11, 94/12), juvenile, September–October 1995 (*Birders* 95/12), juvenile, October 1995 (*Birders* 96/1), juvenile, September 1996 (*Birders* 96/11), one, August 1997 (*Birders* 97/11); unspecified localities, nine, September 1983, 23, September 1984 (Brazil 1991);

Amami-ooshima island, on Ose coast, juvenile, October 1995 (*Birders* 95/12), one, January–February 1996 (*Birders* 96/3, *Birders* 96/4), juvenile, October–November 1995 (*Birders* 96/1, WBSJ 1997a);

Okinawa island, at least seven records in the period 1977–1986 (McWhirter *et al.* 1996); Ohyama, **Ginowan-shi**, one, April 1985 (McWhirter *et al.* 1996, N. Yanagisawa *in litt.* 1998); Nishizaki, **Itoman-shi**, one, October 1985 (McWhirter 1987, McWhirter *et al.* 1996), one, April 1987 (N. Yanagisawa *in litt.* 1998);

Iriomote-jima island, one, May 1982 (McWhirter *et al.* 1996, N. Yanagisawa *in litt.* 1998).

■ **KOREA** ■ **NORTH KOREA** It is a very rare spring and autumn passage migrant (Tomek 1999), with records (by province) as follows: ■ **South Hamgyong** Dokkumi-ri reservoir, **Kumya**, 12, March 1993 (Rim Chu-yon *in litt.* 1998); unspecified locality, one collected, September 1921 (Austin 1948); ■ **South Pyongan** **Kumsong-ni** tidal land, Onchon, two, September 1995 (Rim Chu-yon *in litt.* 1998); ■ **Kangwon** unspecified localities, three collected, September 1914, March 1916 (Austin 1948); ■ **Kaesong** **Kaesong**, 1958 (Won 1958 in Tomek 1999); *province unknown* West Sea barrage (untraced), one, April (unspecified year) (Rim Chu-yon *in litt.* 1998).

■ **SOUTH KOREA** The coastal mudflats, saltpans and estuaries on the western and southern coasts of South Korea are important staging areas for this species during spring and especially autumn migration, notably the Mangyong (Mankyung) and Tongjin estuaries in North Cholla (Park Jin-young *in litt.* 1999). Records (by province) are as follows: ■ **Kyonggi and Seoul Han river**, near Seoul, two collected, October 1917 (N. Kuroda 1918), one at the confluence of the Han and Imjin rivers, September 1962 (B. F. King verbally 1998); **Kanghwa island**, up to four at Yocha-ri, September–October 1991 (Won 1991); **Namyang bay**, Hwasong-gun, at least five at Unp'yong-ri, May 1988 (Long *et al.* 1988, Scott 1989); unspecified locality,

one collected, February 1918 (Austin 1948); ■ **South Chungchong** near **Tangjin** (Tangin), 10+, September 1969 (Gore and Won 1971); **Cheonsu bay**, one at Chang ki-ri on West Amyon island, May 1988 (Long *et al.* 1988, Scott 1989), one, April 1998 (Lee Woo-shin *in litt.* 1998); ■ **South Kyongsang Nakdong estuary**, one, October 1958, one, October 1962, 200 seen from which two were collected, September 1970 (Lee Woo-shin *in litt.* 1998; also Gore and Won 1971, Long *et al.* 1988), four at Galmaegi Deung (Kalmaegi-dung), September 1984 (Piersma 1985), one at Taema-dung, 1992/1993 (Kim and Won 1997); ■ **North Cholla Mangyong estuary** (Mankyung estuary) and **Tongjin estuary**, Saemankeum area, peak count of 180 at the Mangyong estuary in September 1998, and 200–250 counted on the Mangyong and Tongjin estuaries in September 1999, smaller numbers being seen in August and in spring (Park Jin-young *in litt.* 1999, 2000; also Lethaby *et al.* 2000); **Puan** (Fuan), three collected, October 1917 (N. Kuroda 1918, female in FMNH); ■ **South Cholla** unspecified locality, four collected, March 1934 (Austin 1948).

■ **CHINA** ■ **MAINLAND CHINA** It has been recorded on spring and autumn migration along the coast of eastern China in Hebei, Jiangsu, Shanghai, Zhejiang, Fujian, Guangdong and Hainan, there are inland records from Heilongjiang and Beijing (and an unconfirmed report from Hunan), and recent reports in winter from Shandong and Jiangsu (which require confirmation). Records (by province) are as follows:

■ **Heilongjiang** Songhua Jiang (Sungari river), c.2 km downstream from **Harbin**, May 1934 (male and female in FMNH);

■ **Hebei Shijiutuo** (“Happy island”), south of Beidaihe, two, May 1996 (P. Alström, U. Olsson and D. Zetterström *in litt.* 2000);

■ **Beijing Tong Xian county** (Tungxian), undated (Cheng Tso-hsin 1987);

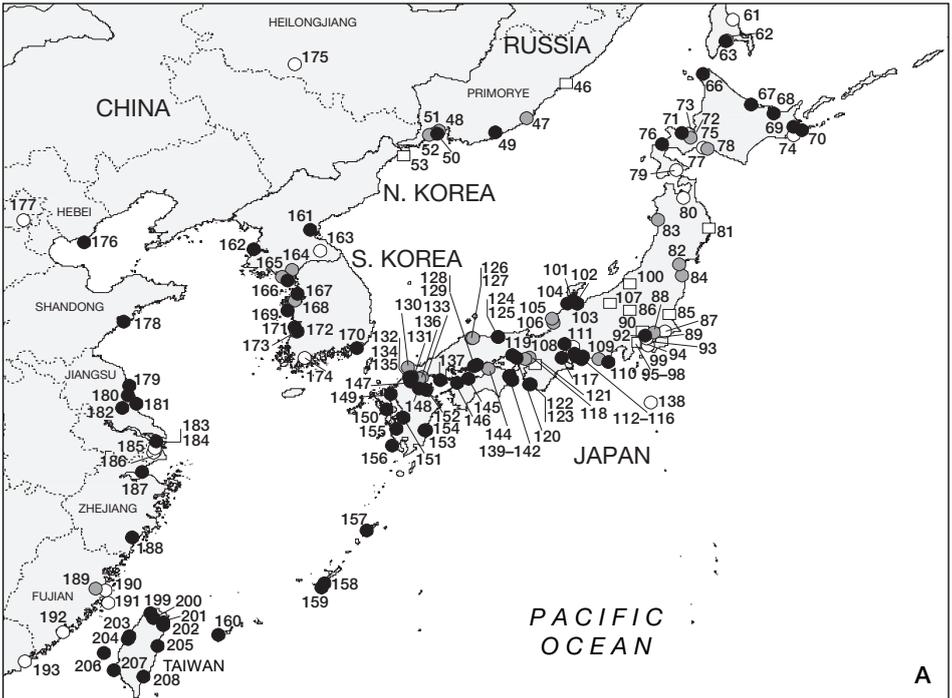
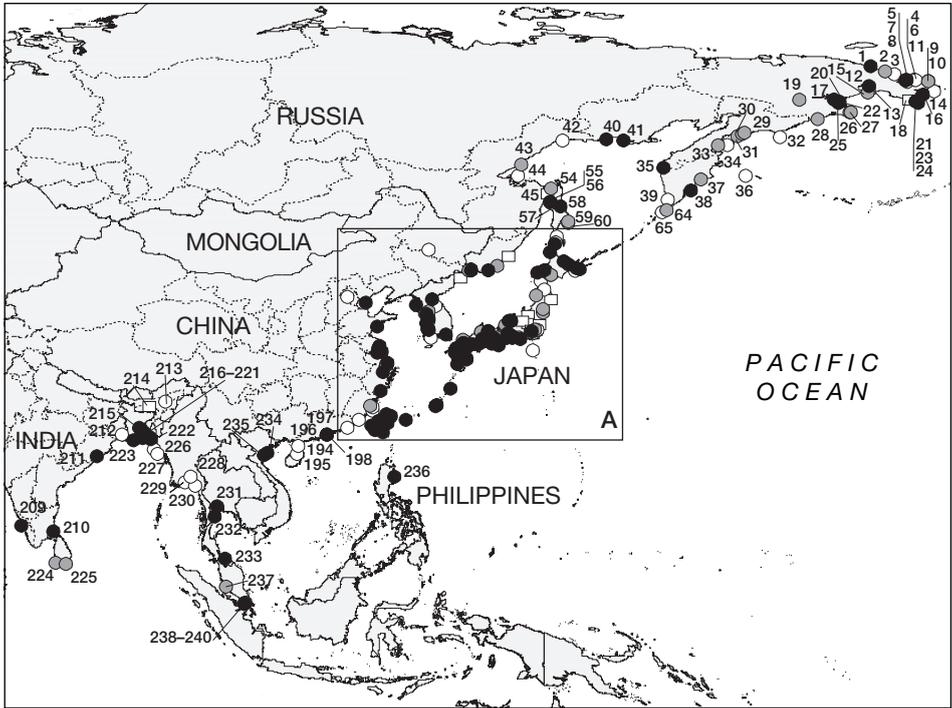
■ **Shandong Qingdao**, three, January 1990 (Waterbird Specialist Group 1994);

■ **Jiangsu Sheyang salt works**, Yancheng Nature Reserve, passage migrant in September–November, 14 birds seen in winter 1989–1990 (Wang Hui and Du Jinjin 1993); **Yancheng Nature Reserve**, Sheyang, Dafeng, Xiangshui, Dongtai and Binhai counties, passage migrant (Wang Hui 1991), eight near Yancheng, April/May 1990 (Wang Hui *per M. Barter in litt.* 2000), 22 birds reported on the “Yancheng coast” in January 1990 and 221 birds in January 1991 (these records are here treated as provisional given that it is unprecedented for such large numbers of this species to be recorded in winter so far north) (Waterbird Specialist Group 1994); **Dunmenkou**, Dongtai city, Yancheng Nature Reserve, six, November 1991 (Waterbird Specialist Group 1994); **Dongshatan, Dongtai city**, Yancheng Nature Reserve, 15 birds, November 1991 (Waterbird Specialist Group 1994);

■ **Shanghai Chongming Dao** island, including Chongming Dongtan Nature Reserve, April–June 1981 (Zhou Shi’e 1982), “low number” on the eastern tidal flats of Chongming Dao, spring 1982 and autumn 1995, and apparently decreasing (Cui Zhixing and Chen Longxiao 1998), nine, May 1990, three, April 1997 (Barter *et al.* 1999a); **Wusong** (Woosung, Wusung), below Shanghai, one collected, December 1890 (Styan 1894), May 1929 (specimen in FMNH), five collected, May 1932 (Sowerby 1943), spring 1936 (four specimens in ASCN); **Pudong** (Putung Chenion), April 1939 (two females in FMNH); **Shanghai**, obtained in Shanghai market, April 1873 (Swinhoe 1873b, specimen in BMNH), occasionally found in the market in spring (unspecified years) (Styan 1891), collected on the Yangtze river, presumably near Shanghai, May 1932 (four specimens in ASCN);

■ **Zhejiang Hangzhou bay**, three captured, October 1986 (Wang Tianhou and Shi Ming in Howes 1987a), with one seen at Miaogang, October 1989 (Bakewell and Young 1989); **Wenzhou city**, one collected, October 1984 (Zhuge Yang 1990);

■ **Fujian Fuzhou** (Foochow), including on “Meihua sands”, several collected in September, October and November c.1890, when it appeared to be a regular autumn migrant along the coast, but not abundant (La Touche 1892, 1925–1934, 12 specimens in BMNH), “far from



uncommon” in September, October and May (unspecified years) (Rickett 1894), May 1912 (two specimens in ZSM), one collected, undated (Sowerby 1943), September 1926, May 1931, April 1936, October 1957 (four specimens in ASCN, NEFUCN and WUCN); **Meihua**, Fuzhou, October 1886 (female in AMNH); **Haitan Dao** island, April 1931 (male in FMNH); **Xiamen** (Amoy), one collected, October 1866 (Swinhoe 1867);

■ **Guangdong Shantou** (Swatow), before 1896 (specimen in BMNH); **Zhanjiang bay** (Kouang-tchéou Wan), December 1932 and January 1933 (Jabouille 1935, three specimens in MNHN);

■ **Hainan Haikou** (Hoihow), one collected, reported to be “not very rare” on Hainan, January (unspecified year) (Hartlaub 1898; also Ogilvie-Grant 1900a), November 1890 (male in AMNH), but with no records on Hainan since before the 1930s (Zou Fasheng *et al.* 2000).

The distribution of Spoon-billed Sandpiper *Eurynorhynchus pygmeus* (maps opposite): (1) Ekviatap lagoon; (2) Ukouge-Pil'khin lagoon; (3) Vankarem lagoon; (4) Dzhenretlen cape; (5) Belyaka spit; (6) Pitlekai; (7) Yuzhnyi island; (8) Rekokaure cape; (9) Enurmino; (10) Serdtse-Kamen' cape; (11) Kolyuchin bay; (12) Egvekinot; (13) Kresta bay; (14) Lawrence bay; (15) Uel'kal' lagoon; (16) Getlyangon lagoon; (17) Anadyr; (18) Kuymenay lagoon; (19) Kivak lagoon; (20) Anadyr bay; (21) Emma inlet; (22) Geka cape; (23) Provideniya bay; (24) Plover bay; (25) Avtakuul' river mouth; (26) Beringovskiy; (27) Ugol'naya bay; (28) Khatyrka river; (29) Tilichiki; (30) Korf; (31) Geka lagoon; (32) Olyutorskiy cape; (33) Kayum lagoon; (34) Karaginskiy bay; (35) Moroshechnaya estuary; (36) Beringa island; (37) Kronotskiy Biosphere Reserve; (38) Vakhil' river mouth; (39) Kamchatka; (40) Tauy river mouth; (41) Ola lagoon; (42) Okhotsk; (43) Ayan; (44) Bol'shoy Shantar islands; (45) Amur estuary; (46) Terney bay; (47) Ol'ga bay; (48) Erdmana peninsula; (49) Lazovski State Reserve; (50) Amur bay; (51) Vladivostok; (52) Mongugay river; (53) Tumen estuary; (54) Rybnoye; (55) Lakh river mouth; (56) Tyk river mouth; (57) Viakhtu bay; (58) Lun'skiy bay; (59) Vladimirovka river mouth; (60) Kotikovo; (61) Sakaehama; (62) Aniva bay; (63) Lososey bay; (64) Shumshu island; (65) Paramushir island; (66) Koetoi; (67) Komuke-ko; (68) Tofutsu-ko; (69) Bekkai-cho; (70) Shunkunita; (71) Otaru-shi; (72) Otarunai-gawa; (73) Zenibako; (74) Hamanaka; (75) Ishikari; (76) Suttu bay; (77) Yufutsu-gun; (78) Mukawa river mouth; (79) Hakodate; (80) Aomori; (81) Tsugaruishi-gawa river mouth; (82) Sendai-shi; (83) Hachirogata; (84) Matsukawa-ura; (85) Mito-shi; (86) Gunma; (87) Shimosa; (88) Gyotoku; (89) Yatsu tidal flat; (90) Tokyo; (91) unallocated; (92) Kawasaki-shi; (93) Tama-gawa river mouth; (94) Yokohama; (95) Fujisawashi; (96) Hiratsuka-shi; (97) Miura; (98) Yokosuka; (99) Uraga; (100) Niigata; (101) Himi-shi; (102) Horioka; (103) Shimminato-shi; (104) Takamatsu; (105) Mikuni-cho; (106) Fukui-shi; (107) Shinano; (108) Hirata-cho; (109) Ota-gawa river mouth; (110) Omaezaki; (111) Nagoya; (112) Hekinan-shi; (113) Nishio-shi; (114) Mito-cho; (115) Isshiki-cho; (116) Tahara-cho; (117) Ano-gawa river mouth; (118) Osaka; (119) Himeji-shi; (120) Kakogawa-shi; (121) Nishinomiya-shi; (122) Minabe-cho; (123) Tanabe-shi; (124) Karo-ko; (125) Koyama-ike; (126) Nakano-umi; (127) Inashi-gawa; (128) Fukuyama-shi; (129) Yanaizu-cho; (130) Tsuno-jima; (131) Chidori-hama; (132) Shimonoseki-shi; (133) Ajisu reclamation; (134) Ayaragi-gawa river mouth; (135) Chofu tidal flat; (136) Ube-shi; (137) Ozu; (138) Hachijo-jima; (139) Yoshino-gawa river mouth; (140) Tokushima-shi; (141) Komatsushima-shi; (142) Anan-shi; (143) unallocated; (144) Utazu-cho; (145) Toyo-shi; (146) Shigenobu-gawa river mouth; (147) Sone tidal flat; (148) Imazu; (149) Saga-gun; (150) Isahaya; (151) Kumamoto; (152) Bungotakada-shi; (153) Hitotsuse-gawa river mouth; (154) Sadowara-cho; (155) Izumi-shi; (156) Manose-gawa river mouth; (157) Amami-ooshima; (158) Ginowan-shi; (159) Itoman-shi; (160) Iriomote-jima; (161) Kumya; (162) Kumsong-ni; (163) Kangwon; (164) Kaesong; (165) Han river; (166) Kanghwa island; (167) Namyang bay; (168) Tangjin; (169) Cheonsu bay; (170) Nakdong estuary; (171) Mangyong estuary; (172) Tongjin estuary; (173) Puan; (174) South Cholla; (175) Harbin; (176) Shijiutuo; (177) Tong Xian county; (178) Qingdao; (179) Sheyang salt works; (180) Yancheng Nature Reserve; (181) Dunmenkou; (182) Dongtai city; (183) Chongming Dao; (184) Wusong; (185) Pudong; (186) Shanghai; (187) Hangzhou bay; (188) Wenzhou city; (189) Fuzhou; (190) Meihua; (191) Haitan Dao; (192) Xiamen; (193) Shantou; (194) Zhanjiang bay; (195) Haikou; (196) Mai Po; (197) San Tin; (198) Tsim Bei Tsui; (199) Watzuwei; (200) Tingpu; (201) Chu-an; (202) Lanyang estuary; (203) Kaomei; (204) Tatu estuary; (205) Hualien estuary; (206) Chitou; (207) Tsengwen estuary; (208) Lichia; (209) Kadalundi estuary; (210) Point Calimere; (211) Chilka lake; (212) Calcutta; (213) Sibsagar district; (214) Deepor beel; (215) Padma-Meghna delta; (216) Char Uriya; (217) Char Piya; (218) Moulevir Char; (219) Sonar Char; (220) Patenga; (221) Nijhum Dweep; (222) Chittagong district; (223) Kochi Khal; (224) Bentota; (225) Bundala; (226) Naf River; (227) Sittwe; (228) Sittang estuary; (229) Elephant point; (230) Kyaikkami; (231) Samut Sakhon; (232) Khao Sam Roi Yot National Park; (233) Pattani bay; (234) Xuan Thuy Nature Reserve; (235) Cua Day estuary; (236) Bicobian bay; (237) Kuala Selangor; (238) Jurong; (239) West Coast road; (240) Tanah Merah.

○ Historical (pre-1950) ● Fairly recent (1950–1979) ● Recent (1980–present) □ Undated

Unconfirmed reports include: Dong Dongting Hu Nature Reserve, Hunan province, 19 reported in January 1990, and seven in February 1991 (Waterbird Specialist Group 1994); these records are here treated provisionally given that inland records of this species are very rare.

■ **HONG KONG** It occurs annually in low numbers in Inner Deep Bay marshes, mostly in mid-April, with records as follows: Inner Deep Bay marshes, including **Mai Po**, **San Tin** and **Tsim Bei Tsui**, 1–5 birds recorded in most the years since 1965, with annual records since 1986 because of increased birdwatching activities and better access to the mudflats of Inner Deep Bay. The birds are mostly recorded on spring migration in April and May (with the peak of migration in mid-April), and are relatively rare on autumn migration, and on a few occasions single birds have been recorded in winter (January 1992, November 1992, January 1993, October–December 1993 and January 1995) (HKBWS database). The site at San Tin was totally reclaimed in the mid-1980s, leaving Mai Po (east end of Inner Deep Bay) and Tsim Bei Tsui (south end of Inner Deep Bay) as the only sites for this species in Hong Kong (HKBWS database).

■ **TAIWAN** It is a rare passage migrant, mainly found on the east coast of Taiwan during spring migration (Sha Chien-chung *in litt.* 1998), with records as follows: **Watzuwei** (Watsuwei), Taipei, seven, April 1988 (Sha Chien-chung *in litt.* 1998); **Tingpu**, Ilan county, two, 1993, one, 1996 (CWBF database); **Chu-an**, Ilan county, two, 1995, one, 1996 (CWBF database); **Lanyang estuary**, Ilan county, 12 records (maximum of two birds) between 1985 and 1996, mainly in April (Sha Chien-chung *in litt.* 1998); **Kaomei wetland**, Taichung, two, 1998 (CWBF database); **Tatu estuary**, Changhwa county, April 1985 (Taichung Bird Society 1985); **Hualien estuary**, Hualien county, six records between 1985 and 1996, all in spring (Sha Chien-chung *in litt.* 1998); **Chitou**, Penghu county, one, 1996 (CWBF database); **Tsengwen estuary**, Tainan county, one, 1995 (CWBF database); **Lichia**, Taitung county, one, 1996 (CWBF database).

■ **INDIA** It is an uncommon winter visitor recorded mainly on the east coast, with records (by state) as follows:

■ **Kerala Kadalundi estuary**, c.1990 (Uthaman and Namassivayam 1991; also Neelakantan *et al.* 1993);

■ **Tamil Nadu Point Calimere**, two, February–March 1981 (Sugathan 1983), seven, November 1982 (Sugathan 1985), three, February 1994 (*Oriental Bird Club Bull.* 19 [1994]: 65–67), single birds, February and December 1995, January 1997 (*Oriental Bird Club Bull.* 23 [1996]: 49–53);

■ **Orissa Chilka lake**, one, March 1981 (Hussain *et al.* 1984a, Mohapatra and Hussain 1988), one, 1984 (Hussain 1991a), on Nalband island, 1992–1996 (Acharya and Karr 1996);

■ **West Bengal Calcutta**, one purchased in the market, c.1841 (Blyth 1844), with a second bird there, undated (at this time all birds for sale in the market were thought to come from within 40 km of the city) (Hume 1879; also Baker 1922–1930);

■ **Assam Sibsagar district**, three, undated (Baker 1922–1930); **Deepor beel** (Deepar beel), winter (unspecified years) (Saikia and Bhattacharjee 1989c, 1990b).

Unconfirmed records include Rajaji National Park, Uttar Pradesh, listed as an intermittent winter visitor (unspecified years) (Pandey *et al.* 1994).

■ **BANGLADESH** Rashid (1967) listed this species as a winter visitor to coastal regions, possibly also occurring inland, although there is apparently no evidence for this apart from the existence of Assamese records (see Remarks 2 under Manipur Bush-quail *Perdica manipurensis*). The largest known non-breeding concentrations have been recorded along the Bangladesh coast, suggesting that this may be the main wintering area of the species. Records are as follows: **Padma-Meghna delta** (Megna Sunderbans), undated (Baker 1922–1930), and regularly recorded in winter, 1990s (Thompson *et al.* 1993, Thompson and Johnson 1996); **Char Uriya** (Urir Char) island, Noakhali district, January 1992 (Perennou and

Mundkur 1992); **Char Piya** island (55 birds) and **Moulevir Char** (Hatiya) island (202 birds), Noakhali district, January 1989 (Bakewell and Howes 1989, *Asian Wetland News* 2, 1 [1989]: 9), two at Char Piya (Char Pia), January 1991 (M. Barter *in litt.* 2000); **Sonar Char** island, one, January 1991 (M. Barter *in litt.* 2000); **Patenga** mudflats, up to three regular in winter, August–May, 1987 onwards (Thompson *et al.* 1993, Thompson and Johnson 1996); **Nijhum Dweep** (Nijum Dweep) island, two, January 1991 (M. Barter *in litt.* 2000); **Chittagong district**, three collected, mid-nineteenth century (Blyth 1857), 2–3 on South Haliashahar beach (untraced), October–November 1987 (N. P. van Zalinge *in litt.* 1989); Egg island, south-west of **Kochi Khal**, Sundarbans, four, February 1992 (Thompson *et al.* 1993); Machara (untraced), three, January 1988 (Rashid 1989); Dhar Char (untraced), 40 birds, January 1991 (M. Barter *in litt.* 2000), January 1992 (Perennou and Mundkur 1992).

■ **SRI LANKA** It is a very rare winter visitor, with records as follows: **Bentota**, one, November 1978 (*Ceylon Bird Club News* 1978: 66); **Bundala**, one, March 1978 (*Ceylon Bird Club News* 1978: 7, 20, B. F. King verbally 1998), one, December 1979 (*Ceylon Bird Club News* 1979: 46).

■ **MYANMAR** The species is probably a regular winter visitor in very small numbers (Smythies 1986), with records as follows: **Naf river** (Naaf river), near Bangladesh border, January 1881 (specimen in BMNH); **Sittwe** (Akyab), two shot, November 1880 (Oates 1883, female in BMNH), these being the Arakan coast records subsequently mentioned (Oates 1882; also Smythies 1986); **Sittang estuary**, Thaton district, one shot on the Theinchaung mudflats in October 1939 (Smith 1942, Smythies 1986, male in BMNH); c.5 km west of **Elephant point**, south of the Rangoon river, December 1875 (female in BMNH); **Kyaikkami** (Amherst), probably at Bilugyun island (see Distribution: Myanmar under Spotted Greenshank *Tringa guttifer*), January 1876 (male in BMNH), and another shot at around the same time (Hume and Davison 1878).

■ **THAILAND** The species is a rare passage migrant and winter visitor (Lekagul and Round 1991), with records as follows: Khok Kham, **Samut Sakhon**, four or five on saltpans, March 1995 (*Bird Conserv. Soc. Thailand Bull.* 12, 5 [1995]: 9, P. D. Round *in litt.* 1998), one, February 1999 (*Oriental Bird Club Bull.* 29 [1999]: 51–56, *Bird Conserv. Soc. Thailand Bull.* 16, 4 [1999]: 15), two, December 1999 (*Bird Conserv. Soc. Thailand Bull.* 17, 2 [2000]: 14), one, November 1999 to February 2000 (*Oriental Bird Club Bull.* 31 [2000]: 49–57, 32 [2000]: 66–76); **Khao Sam Roi Yot National Park**, fewer than five records before 1988 (P.D. Round *in litt.* 1998), one on Khao Daeng beach, December 1997 (*Oriental Bird Club Bull.* 28 [1998]: 44–48, *Bird Conserv. Soc. Thailand Bull.* 15, 2 [1998]: 14–15); **Pattani bay**, mudflats off Pattani campus, Prince of Songkla University, 13 birds in a flock of Red-necked Stints *Calidris ruficollis*, October 1984 (Swennen and Martejn 1988).

■ **VIETNAM** It is a passage and winter visitor known from two sites in the Red River delta, with records as follows: **Xuan Thuy Nature Reserve**, Nam Dinh, recorded annually since 1990 with 1–2 at the mudflat of Con Lu island (Le Dien Duc 1995), up to two, March–April 1994 (Nielsen *et al.* 1995, Pedersen *et al.* 1998), also present, April–May 1995, 13, November 1995, up to 15, January 1996, 1–4 birds, March–April 1996 (J. C. Eames *in litt.* 1997, Pedersen and Nguyen Huy Thang 1996), two, October 1996 (J. C. Eames *in litt.* 1997), 27, February 1997 (J. C. Eames and Nguyen Cu *in litt.* 1997), 19, April 1997 (T. Palliser *in litt.* 1997), two, March 1999 (B. Wright *in litt.* 1999); **Cua Day estuary**, Nghia Hung district, Nam Dinh, up to seven, April 1994 (Nielsen *et al.* 1995, J. C. Eames *in litt.* 1997, Pedersen *et al.* 1998).

■ **PHILIPPINES** It is known by a single record:

Luzon **Bicobian bay**, midway between Maconacon and Palanan, east coast of Luzon, two, May 1996 (R. N. Altamirano, D. S. Balete and F. Danielsen *in litt.* 1998).

■ **MALAYSIA** It is a non-breeding visitor, so far only recorded at one site: **Kuala Selangor**, first-winter male collected at the “salt field”, November 1976 (Wells 1983, 1999; also Scott 1989).

■ **SINGAPORE** It is a very rare non-breeding visitor (Lim 1994a), known by the following three records: **Jurong** prawn-ponds, one, October 1963 (Medway and Wells 1964, 1976); **West Coast road**, singles (presumably the same bird) seen regularly and photographed, November 1978 to March 1979 (Wells 1984, 1990a, 1999); **Tanah Merah**, up to two, December 1999 (Lim Kim Seng *in litt.* 2000, *Oriental Bird Club Bull.* 32 [2000]: 66–76).

POPULATION The global population of this species was recently estimated at between 4,000 and 6,000 individuals (Rose and Scott 1997), presumably originally based on an estimate of c.2,000–2,800 breeding pairs in Russia (Flint and Kondrat'ev 1977; also Johnsgard 1981, Tomkovich 1991, Collar *et al.* 1994), but this was probably an overestimate (Tomkovich and Soloviev 2000). It appears to be rare on migration and in winter throughout its range (see Distribution and below), indicating that it may actually total well below 4,000 individuals (J. R. Howes *in litt.* 2000). There is evidence for a rapid recent decline in its breeding population (see below).

Russia This species nests in solitary pairs or in aggregations of up to 10–15 pairs (Portenko 1972) within a narrow and fragmented band of suitable coastal habitats, which limits the extent of its range and hence its population size (AVA). Within its breeding range there are almost 200 separate nesting localities, the most important being Belyaka spit and Anadyr' lagoon (see Distribution). The breeding density has been estimated at 6–8 pairs per km² on the Belyaka spit, where 45–53 territorial males were counted in 1986–1988 (Tomkovich 1991, 1992b, 1995, Tomkovich and Soloviev 2000). Totals of 50 and 95 males were counted on Yuzhnyi island and on Belyaka spit in 1973 and 1974 respectively (Krechmar *et al.* 1978, Kishchinskiy 1988), but in 1986–1988 only 45, 51 and 45 males were counted in the same area using the same methodology, indicating that the population there had possibly declined (Tomkovich and Soloviev 2000). About 6–10 pairs have been found nesting at Ukouge lagoon (Kishchinskiy 1988) and four pairs at Kivak lagoon (Tomkovich and Sorokin 1983). A breeding population of 8–10 pairs has been estimated at Cape Rekokaure (Kishchinskiy 1988).

On the basis of its breeding densities and the mapped extent of suitable habitat, the total population was estimated at c.2,000–2,800 pairs by Flint and Kondrat'ev (1977), but this was probably an overestimate (Tomkovich and Soloviev 2000). Its population was believed to be relatively stable, but highly vulnerable (Kondrat'ev 1989, Tomkovich 1991, 1995). However, there is evidence that the breeding population has declined recently in the Egvekinot area (Dorogoy 1997), and surveys in summer 2000 found that it had declined at all of the sites where previous population estimates were available; given the high breeding-site fidelity of this species (see Ecology: Breeding), this indicates that the breeding population of this species has declined sharply in recent decades (E. E. Syroechkovski, Jr. and P. S. Tomkovich *in litt.* 2000). Information on numbers of migrant Spoon-billed Sandpipers in eastern Russia is discussed by Tomkovich (1992a).

North-East Asia In Japan, there have been very few records during national spring water counts, but during national autumn counts its numbers have ranged from 15 to a maximum of 94 in 1981 (Brazil 1991). Its numbers appear to have declined in Japan since the 1970s (N. Yanagisawa *in litt.* 1998). It is believed to be a scarce passage migrant in North Korea, with a total of less than 20 birds estimated to occur annually (Rim Chu-yon *in litt.* 1998), but in South Korea some of the largest recorded concentrations of migratory birds have been found in recent years, including 180 birds on the Mangyong estuary in September 1998 and 200–250 birds on the Mangyong and Tongjin estuaries (Saemankeum area) in September 1999 (Park

Jin-young *in litt.* 1999). It is a scarce passage migrant in mainland China and Taiwan, and there have also been some recent reports in winter from Shandong, Jiangsu and Hunan (which need to be confirmed) (see Distribution). In Hong Kong, 1–5 birds are regularly present on passage (C. Ma *in litt.* 1998), and (based on plumage characteristics of birds observed) totals were estimated of 16 birds during spring 1990 and 12 in spring 1998 (Carey *et al.* in prep.).

South-East Asia Armstrong (1876) remarked that the species was “of rare occurrence” at Elephant Point in Myanmar, “for although several days were spent by me in careful and systematic search for it, yet I was never able to see or to obtain more than a single specimen”. It was, however, “recorded from Arakan several times” (Oates 1883). The individual shot by Smythies (1986) at the Sittang estuary “was the only one seen out of thousands of waders inspected”, again suggesting that the local population of the species is small. There are no recent records from Myanmar, but it is plausible that an important wintering population survives in the extensive coastal wetlands of the Irrawaddy delta region. In Thailand, it is possible that a small number of Spoon-billed Sandpipers winters at Khok Kham or elsewhere, although it is equally plausible that the few records simply relate to migrating individuals (P. D. Round *in litt.* 1999). The total wintering population in Vietnam appears to be fewer than 50 individuals, although it is possible that some sites remain to be discovered (Nguyen Cu *in litt.* 1997).

South Asia In India, this species is known mainly by regular records of small numbers at Chilka lake in Orissa and Point Calimere in Tamil Nadu (see Distribution), but it is probably more numerous than the records suggest because of the difficulty of finding it amongst large mixed flocks of small waders. In Bangladesh, it was considered to be a “rare” winter visitor (Khan 1982), but the highest-ever single count (257 individuals) was made in the Padma-Meghna Delta in 1989, and this remains the largest known wintering concentration (Thompson and Johnson 1996). It is not known whether similar numbers of this species winter annually in the country, as further surveys have failed to locate large flocks in the same area. During the midwinter waterbird counts in January 1991, 45 birds of this species were counted in the whole country (Perennou and Mundkur 1991), but in some years only a few individuals are reported. The area of mudflats, sandflats and coastline involved is enormous, however, and the likelihood is that all counts considerably underestimate the number of individuals present.

ECOLOGY Habitat The Spoon-billed Sandpiper inhabits a very specific breeding habitat, mainly sea coasts where there are sandy ridges sparsely vegetated by mosses, dwarf willows and grasses, and lakes and marshes in nearby depressions (Tomkovich 1991). The broods remain on the nesting territory for the first few days after hatching, and then move to lakeshores and wet meadows near the nest sites (Tomkovich 1995). There are two slightly different types of nesting habitat: (1) patches of moss-heath vegetation on the pebble spits that separate lagoons from the sea or form ancient ridges further inshore, and (2) lowland tundra alongside stream mouths; typical habitat is patchily vegetated with grasses *Elymus* sp., *Dupontia fischeri*, crowberry *Empetrum nigrum*, dwarf willows, sedges and mosses, and interspersed with shallow ponds, and on spring arrival the birds display where the ice is melting on sand-gravel spits and on the drier areas of lagoon shores near estuaries (Portenko 1972, Kishchinskiy 1988, Tomkovich 1995). This type of habitat is apparently a long-lasting successional stage of shoreline development, where the vegetation cover is thin and permafrost structures and thermoclast processes are poorly developed, and in winter such sites are wind-affected and snow-carved, which favours earlier snow-melt (AVA). The distribution of this typical “beringian” habitat is uneven, and follows the “keyboard” pattern of West Pacific shoreline geology, and hence the species’s range is naturally fragmented (AVA).

Outside the breeding season, it occurs on sandy beaches, estuaries and mudflats, where it follows the tide edge (Brazil 1991). Although it can be found on mudflats, it appears to

prefer sandy shores in Japan (N. Yanagisawa *in litt.* 1998). In the Inner Deep Bay area of Hong Kong, birds feed on the intertidal mudflats and roost inland at high tide, and in spring they generally associate with Red-necked Stints, whereas the very few winter records have involved single birds with flocks of wintering Dunlin *Calidris alpina* and Kentish Plover *Charadrius alexandrinus* (Carey *et al.* in prep.). In India it has been recorded from coastal wetlands, including dry mudflats and intertidal zones and at lagoons, and it is often found mixed with flocks of Little Stint *Calidris minuta* and Sanderling *C. alba* when feeding and roosting (Sugathan 1983, 1985). Spoon-billed Sandpipers observed since 1987 (Rashid 1993) in the Padma-Meghna estuary of Bangladesh appear to frequent areas with a mix of sand and mud; islands in the estuary are a dynamic system, with suitable foraging areas changing year by year as the favoured feeding substrate of this species appears and disappears according to variable flow regimes (Thompson *et al.* 1993). Armstrong (1876) found it (once) feeding along with shorebirds on the sandbanks fringing the Irrawaddy delta. Swennen and Marteijn (1988) suggested that birds watched in Pattani bay in Thailand preferred to feed on drier mud in more elevated portions of mudflat. It is reported to favour sandy intertidal flats with shallow water in the Red River delta, Vietnam (Pedersen *et al.* 1998).

Food In the breeding range in Koryakia, it feeds on chironomids and other small invertebrates, which it gathers from dry areas with low, bushy vegetation, in wet grassy meadows near lakes and on lakeshores, sometimes wading in water (AVA). It also feeds on seashores and on the waterfront on mudflats, probing the silt and searching the water surface or shallows (to depths of only 1–2 cm) (Kishchinskiy 1980), or shuttling behind waves gathering small crustaceans that remain on the wet sand (Banin 1989). The diet of the chicks has been found to include flies Diptera (c.60%), Trichoptera, Hymenoptera and Carabidae beetles (35%), and plant seeds (c.5%) (Andreyeva and Tomkovich 1992). A variety of feeding methods have been noted on its wintering grounds, indicating that the species can adapt feeding behaviour to local circumstances (*Interwader Annual Report* 1985). In Hong Kong, polychaete worms of the family Capitellidae and shell fragments of microgastropods were found in the dropping of a captured bird (Cha and Young 1990), and these invertebrates are found on the mudflats and are believed to be an important food source for this species (C. Ma *in litt.* 1998). In Thailand birds fed in a loose flock, showing no signs of interference with one another, with heads lowered while the slightly opened bill touched the mud, and the head vibrated regularly, with a drill-like action, but the bill never seemed to go down into the mud deeper than the spatula; drilling movements were usually made to the front, but sometimes also sideways (Swennen and Marteijn 1988). Swallowing movements were never conspicuous, and food items were small and unidentifiable; small crabs and flies visible on the mud were ignored and feeding was generally concentrated in the drier mud, with intensive hunting in certain small areas, where sampling found the most numerous species was a polychaete worm *Dendronereis* (Swennen and Marteijn 1988). The food items recorded at Point Calimere, India, included insect larvae, dipteran flies, aquatic and land beetles, and chironomid larvae (Sugathan 1985); one Indian specimen contained a red crab (Ali and Ripley 1968–1998). A bird shot by Baker (1922–1930) in the Megna delta had been eating “nothing but the most minute red crabs”. On Okinawa, a migrant bird used three distinct methods of foraging: it most commonly fed by jabbing into the substrate with the head held low and forward while the bird moved about; a second method was a side-to-side motion of the bill as the bird moved forward, with the head held up and the bill nearly perpendicular to the surface; the third method involved the bird shuffling its feet about and trampling up and down as it did so, and then stepping back quickly and jabbing its bill several times into the riled area with its bill held roughly perpendicular to the water surface, an action similar to (but not the same as) the “puddling” of wet mud used by Little Ringed Plover *Charadrius dubius* and Black-headed Gull *Larus ridibundus* (McWhirter 1987). At Point Calimere, the species has been observed feeding by (a) pecking for prey on dry mudflats and intertidal

zones, (b) feeding by scooping continuously by sweeping its beak in a zigzag manner and then raising its head from the substrate to swallow the food particles at intervals ranging from 45 seconds to three minutes, and (c) capturing insects on the ground and in the air (Sugathan 1985). In Vietnam, it has been noted to forage by walking slowly forwards, sweeping the bill from side to side in shallow water (Pedersen *et al.* 1998), in a manner somewhat like an Avocet *Avosetta recurvirostra* (Hornbuckle 1998b). Medway and Wells (1964) observed a bird in Singapore feeding principally in wet oozy mud, never probing, sifting in algae frequently but once seen to pick an insect off the mud.

Breeding The commencement of breeding may vary widely within a three-week period (Kishchinskiy 1980). This species is monogamous and highly territorial and, on average, up to 66% of birds return to the same breeding ground the following year, demonstrating a high level of site-fidelity; on arrival, the males occupy display territories of c.6 ha, which later contract by a third owing to additional males setting up territories, and pair formation then occurs (Tomkovich 1998). The incubation period is highly synchronised (from 13–20 June), and replacement clutches may occur until 1 July; incubation lasts for 19–23 days, and hatching proceeds from 7–14 July (first clutches) to 1 August (replacement clutches) (Kondrat'ev 1982, Tomkovich 1995). After hatching, the broods move to local lacustrine depressions vegetated by grasses and sedges, and spend 15–18 days there until the chicks are able to fly by 27 July to 17 August (Tomkovich 1995). After hatching, both parents tend the chicks, but later mainly the males look after the broods (Kishchinskiy 1980, Tomkovich 1998). Pairs which lose their clutch leave the breeding grounds after a 2–3 day period (Tomkovich 1995). Successfully breeding pairs start migrating in July or August; at Belyaka spit, females from successful pairs left the breeding areas on 11–31 July and males on 19 July–14 August, and juveniles left their natal territories between c.5 and 17 August (P. S. Tomkovich *in litt.* 2000). Overall breeding success (fledglings per egg laid) at the Belyaka spit varied from 7 to 23% (mean 14.4%), the majority of losses being caused by predators (47.9%), chiefly by arctic foxes *Alopex lagopus*; c.73% of broods and 55% of chicks survived to fledging (Tomkovich 1995). Presumably, birds breeding further south alongside the Bering Sea coasts do not suffer such massive losses through predation (AVA), or perhaps these studies were conducted during years of relatively poor breeding success, when lemming *Dicrostonyx groenlandicus* populations were low (see Threats).

Migration Details of the migratory movements of the species are discussed by Tomkovich (1992a). In spring, it occurs on the Primorye sea coast from late May to early June (N. M. Litvinenko *in litt.* 1997), and on Sakhalin from the first half of May to the first ten days of June (Nechaev 1991). On the west coast of Kamchatka migrants arrive from late May (c.29th) through to the second week of June (c.7th) (Gerasimov *et al.* 1992). It arrives on the breeding grounds by the second week of June, from 3–9 June on the Belyaka spit (Kondrat'ev 1982, Tomkovich 1995) and from 11–13 June at the Kivak lagoon (Tomkovich and Sorokin 1983). In autumn, adults and juveniles migrate independently, with adults leaving the Belyaka spit by early August and the juveniles 2–3 weeks later (Tomkovich 1995). They leave the Koryakian lagoons between late July (31st) and mid-August (13th), with the juveniles gathering on seashores by 6–25 August and the majority leaving by 13 August (Kishchinskiy 1980). On Sakhalin, migrants occur from July to the first half of October, in flocks of 3–30 birds (Nechaev 1991), and in Primorye they appears in groups of 2–25 birds with flocks of other sandpipers from mid-August to mid-October (N. M. Litvinenko *in litt.* 1997). The species appears to pass through the Red River delta area from late March to late April, when small numbers consort with groups of Sanderlings and Red-necked Stints (Pedersen *et al.* 1998). In 1986–1988, 128 adults and 217 young birds were ringed and marked with colour rings at the breeding concentration on Belyaka spit, and two of these flagged birds were seen in Bangladesh in January 1989 and one bird was recovered in Hangzhou bay in mainland China in May 1990 (Tomkovich 1991). Harvey (1990) gave the extreme dates for the species in Bangladesh as 21 September to 18 May.

THREATS *Habitat loss* The species is vulnerable to habitat loss because of its specific requirements, high level of site fidelity, and small population. *Russia* Its breeding habitat is threatened by degradation from oil pollution of the continental shelf (e.g. in the Anadyr' bay and Khatyrka areas), accompanied by the impacts of various and increasing human activities in the area (A. V. Kondrat'ev *in litt.* 1997). However, the human population in its breeding range has fallen sharply in the late 1990s because of the economic crisis (and the consequent absence of transport and fuel) (P. S. Tomkovich *in litt.* 2000). *Japan* The reclamation of tidal flats has been widespread along the coast of Japan, and there are several ongoing and proposed reclamation projects that will continue to reduce the area and quality of habitat available to this species and other shorebirds; for example, a sea wall was built at Isahaya in 1997, the largest tidal flat in the country, which has now dried up and is no longer suitable as shorebird habitat (WBSJ staff verbally). *Korea* A North Korean government plan for 1980 to 1993 indicated an intention to reclaim 3,000 km² of coastal wetlands, and in the 1980s South Korea adopted a plan to reclaim 85% of all remaining tidal flats (*Oriental Bird Club Bull.* 29 [1999]: 19–21). The threat from reclamation is affecting many wetlands on both the west and south coasts of South Korea, and mudflats are also being degraded by sewage contamination in rivers near to large cities (Lee Woo-shin *in litt.* 1998). Saemankeum, including the Mangyong and Tongjin estuaries, is the most important staging site for this species in the country (and one of the most important in the world), but this area (which is designated as a foreign investment zone) is subject to the largest ongoing reclamation project in the world (at 401 km²), which aims to landfill both estuaries following the construction of a 33 km dyke (56% of which had been completed by November 1998); in addition to its impact on threatened bird species, this project is predicted to deplete fish stocks in the Yellow Sea severely (Kim and Yoo 1997, Park Jin-young and N. Moores *in litt.* 1999, *Oriental Bird Club Bull.* 29 [1999]: 19–21). *Mainland China* In the mid-1990s, the Chinese government announced that it intended to reclaim almost 100% of its tidal flats by 2018 (*Oriental Bird Club Bull.* 29 [1999]: 19–21), although it is not known whether this remains the government's policy. However, many tidal flats in the coastal provinces of mainland China are rapidly being converted into farmland, aquaculture ponds or housing and industrial estates (see Threats under Spotted Greenshank). *Hong Kong* Suitable habitat for this species is being lost from the Inner Deep Bay area because of development in the surrounding areas, the Shenzhen River Regulation Project has also caused habitat loss and disturbance to birds, and various "flood control" programmes have destroyed some tidal flats and roost sites (SC). *India* The Chilka lake ecosystem is threatened by expanding aquaculture, the invasion of weeds (e.g. *Potamogeton*), a decrease in salinity due to the closure of the lake's mouth, and tourism (Acharya and Karr 1996, Bandyopadhyay and Gopal 1990). Furthermore, around 13 tonnes of silt are deposited into the lake annually and its margins are disappearing under prawn-ponds (*Oriental Bird Club Bull.* 23 [1996]: 13). These factors affect the lake's avifauna but the recent submergence of islands is a more immediate threat to roosting and feeding waders: the exclusion of the sea has caused water-levels to increase, the Nalaban island mudflats have been submerged, and local shorebird populations have declined (*Oriental Bird Club Bull.* 23 [1996]: 13). At Point Calimere, the total number of wintering waders has declined gradually because of increased salinity in the industrial condensers (presumably salt pans) and encroachment from villagers developing small-scale salt works (Hussain 1995; also Sugathan *et al.* 1985, Hussain 1991a). *Bangladesh* The proposed Sandwip Cross-dam was considered likely to cause considerable alteration to coastal habitats, but it was not known what these effects were likely to be, nor their impact on bird populations (Rashid 1989). Destruction of coastal wetlands and an increased use of mudflats by people are presumably threatening the species in the country (P. M. Thompson *in litt.* 1997). *Myanmar* Small numbers of this species wintering along the Arakan coast and in the delta of the Irrawaddy have presumably been largely displaced by massive conversion of wetland habitats to agriculture and disturbance of riverine and coastal

areas (Scott 1989). *Thailand* The construction of saltpans and shrimp-ponds is greatly reducing the available area for foraging by shorebirds (see Threats under Spotted Greenshank). At Khao Sam Roi Yot National Park, the coastal flats immediately behind the park headquarters were being parceled up and sold to property developers in 1997; if this activity were to go ahead, it would destroy the shorebird habitat in the national park (*Bird Conserv. Soc. Thailand Bull.* 14, 1 [1997]: 15). *Vietnam* Reclamation of intertidal areas for aquacultural development is one of the three main threats to the Red River Delta area and to many estuarine or coastal sites in Indochina (Pedersen *et al.* 1998, which see for fuller discussion, summarised in Threats under Black-faced Spoonbill *Platalea minor*).

Disturbance *Russia* Nests of this species are sometimes destroyed by reindeer herds and herders' dogs (A. V. Kondrat'ev *in litt.* 1997). The construction of many summer cottages close to the (former) breeding grounds of the species near Beringovskiy settlement in Chukotka could be a reason for its apparent disappearance from this site (P. S. Tomkovich *in litt.* 2000). *Mainland China* Human activities such as fishing and collecting shellfish are widespread along most of the east coast, and disturbance to the roosting and feeding grounds of shorebirds is very high (see Threats under Spotted Greenshank). *Taiwan* At the Lanyang estuary human disturbance (by people using the estuary for recreation) is the biggest threat (Sha Chien-chung *in litt.* 1998). *India* Disturbance at Chilka lake by around 9,000 fishing vessels occurs throughout the day and night, especially around Nalban island, with detrimental effects on waterbird populations (Hussain *et al.* 1984). At Point Calimere intensive fishing is causing much disturbance and unless this is controlled it is believed that the sanctuary has "very little chance of survival" (Sugathan *et al.* 1985). *Thailand* The disturbance of shorebird feeding areas by fishermen and collectors of bivalves, anemones, sea cucumbers and crabs is a major threat to continued usage of the area by shorebirds (see Threats under Spotted Greenshank). *Vietnam* Disturbance by collectors of marine products is one of the three main threats to the Red River delta area, and to many other estuarine or coastal sites in Indochina (Pedersen *et al.* 1998, which see for fuller discussion, summarised in Threats under Black-faced Spoonbill).

Hunting *Russia* Hunting of Spoon-billed Sandpipers is prohibited, but during the autumn hunting (wildfowl) season hunters shoot at flocks of (small) waders without discrimination and this species may be killed accidentally; in Primorye, all major localities used by passage waders for feeding and resting are visited by large numbers of hunters in September and October (N. M. Litvinenko *in litt.* 1997). *Mainland China* In some places, such as Chongming Dao island in Shanghai, shorebird hunters still catch birds for the market (see Threats under Spotted Greenshank). The only ringing recovery of the species was of a bird obtained in the marked in Shanghai, which had been shot by a hunter while on spring migration (Tomkovich 1992b). *Hong Kong* Illegal netting, trapping and shooting of birds takes place in the Inner Deep Bay area during the spring and autumn migrations and throughout the winter, mostly by people from mainland China (F. Lock *in litt.* 1998, SC). *India* At the Nalaban island roosts at Chilka lake, which are 15 km from the mainland and accessible only by boat, hunting is a regular phenomenon and c.15,000–20,000 birds are killed each season, although local hunters currently target larger game species (Bandyopadhyay and Gopal 1990); protected area staff are too few, and too poorly trained and equipped, to prevent such activities (Hussain *et al.* 1984). *Thailand* In some part of the Peninsular, hunting and snaring of shorebirds has been found to be very intensive (see Threats under Spotted Greenshank). *Vietnam* Shorebirds are also trapped for local consumption in the Red River delta area (J. C. Eames and Nguyen Cu *in litt.* 1997, Pedersen *et al.* 1998): along the 12 km of Nghia Hung district coastline, 19.9 km of mist-nets were recorded with a catching area of 79,440m², and there were believed to be 37 hunters operating in the area (Pedersen and Nguyen Huy Thang 1996). The impact of these activities is presumably considerable on the local avifauna in general (resident species are almost entirely absent), but whether mist-netting affects Spoon-billed Sandpiper populations is unknown; according to forms filled in by local hunters near Xuan Thuy Nature

Reserve, 35 Spoon-billed Sandpipers were trapped during 1992 and 1993 (Le Dien Duc 1993b), but there is some doubt about this figure because many were claimed to be caught in midwinter when the species is thought to be absent from the area (Pedersen *et al.* 1998).

Predation Russia This species suffers badly from predation, especially from arctic foxes, which destroy most nests in years when lemming populations are very low; only in years with moderate and high lemming numbers, when most predators prey on these rodents, do Spoon-billed Sandpipers breed productively (Tomkovich 1995).

Pollution Russia Dorogoy (in press) suggested that the number of breeding Spoon-billed Sandpipers near to Egvekinot settlement in Chukotsk has declined because of pollution. **Mainland China** Water pollution is severe in many of the coastal provinces (see Threats under Spotted Greenshank). **Hong Kong** Coastal waters are heavily polluted, especially in the Deep Bay area, where there is severe eutrophication caused by human sewage and industrial wastes from both Hong Kong and mainland China (C. Ma *in litt.* 1998). **Taiwan** At the Hualien estuary, the water is polluted by effluent from paper mills (Sha Chien-chung *in litt.* 1998). **Thailand** In the Peninsular, intertidal areas are polluted by heavy metals and chlorinated hydrocarbons, mostly from industrial activities, and by agricultural chemicals and indiscriminately dumped waste around villages, and this threat carries perhaps the most important long-term implications for shorebird populations in the area (see Threats under Spotted Greenshank).

MEASURES TAKEN Legislation This species is included in the Russian Red Data Book (Kolosov 1983). It is on the Red List of Japan, which means that its conservation importance is recognised and it can be used as a reference species in environmental impact assessment for development projects (Environment Agency of Japan *in litt.* 1999). It is a protected species (category II-1) in North Korea (SC), and it was designated as an endangered species by the South Korean Ministry of the Environment in 1998 (Lee Woo-shin *in litt.* 1998).

Protected areas and habitat management Russia The species has occurred in significant numbers a bird sanctuary on the Moroshechnaya river in western Kamchatka (1,500 km²: Gerasimov and Gerasimov 1999), and in several local wildlife refuges on the breeding grounds on the Chukotsk peninsula (A. V. Kondrat'ev *in litt.* 1997). Migrant birds are protected in the Lazovskiy State Reserve and the Khasansky Nature Park (at the Tumen estuary) (N. M. Litvinenko *in litt.* 1997). **Japan** It has occurred in or near to several protected areas on migration, including: Tofutsu-ko and Furen-ko on Hokkaido, Sendai Kaihin in Miyagi prefecture, Yatsu in Chiba prefecture, Hama Koshien in Hyogo prefecture, and Yagachi and Manko in Okinawa prefecture, which are established National Wildlife Protection Areas; it is also recorded from Shio-kawa in Aichi prefecture, Hakata bay in Fukuoka prefecture and Ariake-kai in Fukuoka and Saga prefectures, which are in the process of being designated as National Wildlife Protection Areas (Environment Agency of Japan *in litt.* 1999). **Korea** There has been opposition to many of the ongoing and planned reclamation projects in South Korea, including campaigns coordinated by the Korean Wetlands Alliance, and several of them have been shelved (at least in the short term); some government ministries and agencies have recently voiced opposition to reclamation projects in general, and a shift in policy away from this type of project was shown by a decision in 1998 to cancel a 550 km² reclamation proposed for the Yongsan river region (*Oriental Bird Club Bull.* 29 [1999]: 19–21). **Mainland China** It has occurred in several protected areas on migration, including Yancheng Nature Reserve in Jiangsu and Chongming Dongtan Nature Reserve in Shanghai (see Distribution). **Hong Kong** F. Lock *in litt.* (1998) described the protected area status of Mai Po marshes in Inner Deep Bay, and is the source of all of the information in this section. In addition to the Spoon-billed Sandpiper, Mai Po is an important passage and/or wintering site for several threatened species, including Oriental Stork *Ciconia boyciana*, Black-faced Spoonbill, Spotted Greenshank and Saunders's Gull *Larus saundersi*. Mai Po marshes were declared a "No

Hunting Area" in 1973, and restriction on access, scheduled under the Wild Animals Protection Ordinance, Cap. 170, was strictly enforced to prevent disturbance to wild animals. In 1976, an area of the marshes (of 3.93 km²) was designated a Site of Special Scientific Interest, under the Wild Animals Protection Ordinance, which did not confer any legal protection but meant that its values would be considered in government planning. In 1983, WWF Hong Kong initiated its Mai Po Marshes Project, and in 1984 it began active management of Mai Po Marshes Nature Reserve for education and the conservation of wildlife. In 1986, all of Inner Deep Bay (total area 22.35 km²) was designated a Site of Special Scientific Interest. In 1995, the Mai Po marshes and Inner Deep Bay wetland (15 km²) was formally designated as a Ramsar site, and Inner Deep Bay was declared a restricted area in 1996. A comprehensive conservation strategy and a management plan was completed for Mai Po marshes in 1997, and the Hong Kong government is considering the proposed management structure and the implementation of over 200 small projects included in the plan. *Taiwan* Lanyang estuary has been established as a nature reserve (2.06 km²) (Sha Chien-chung *in litt.* 1998). *India* All of Chilka lake is under the jurisdiction of the Wildlife Department, and an officer of district forest officer rank is permanently posted there; a no-fishing zone of 1 km radius has been declared around Nalban island, and the areas of water habitat around the island have been fenced (Hussain 1995). Point Calimere is also an established wildlife sanctuary. *Bangladesh* The islands in Noakhali district were apparently being planted with mangroves to stabilise them with a view to perpetuating wintering habitat for the Spoon-billed Sandpiper (*Asian Wetland News* 2, 1 [1989]: 9). Mangrove planting has the apparent added advantage of improving the quality of mudflats associated with it (*Asian Wetland News* 2, 1 [1989]: 9). *Vietnam* Xuan Thuy Nature Reserve (see equivalent section under Black-faced Spoonbill) has been established as a Ramsar site and a nationally recognised protected area (Nguyen Cu *in litt.* 1997, Pedersen *et al.* 1998).

International cooperation The East Asian-Australian Shorebird Reserve Network was launched in 1996, with the aim of promoting the conservation of shorebirds at key sites; by December 1999 there were 25 shorebird sites in eight countries in the network, including the following reserves that are known to be important to this species: Moroshechnaya estuary (Russia), Yoshino-gawa (Japan), Yancheng and Chongming Dongtan (Mainland China) and Mai Po–Inner Deep Bay (Hong Kong) (SC).

MEASURES PROPOSED Legislation P. S. Tomkovich (*in litt.* 2000) suggested that "Spoon-billed Sandpiper conservation plans" should be developed at the national and flyway levels, and that an international agreement on the conservation of the species should be considered. Yu. N. Gerasimov and N. M. Litvinenko *in litt.* (1997) have proposed that the hunting of all species of shorebird should be prohibited in eastern Russia. The Spoon-billed Sandpiper should be designated as a nationally protected species in China.

Protected areas and habitat management The effective protection and management of coastal wetlands in both the breeding and non-breeding ranges is vital for the conservation of this species. Unfortunately, given its low population and the current lack of information about its most important sites, at present it is only possible to urge stronger conservation at a few known important sites and in very general terms for the many areas in which small numbers have been recorded. Some specific recommendations are given below by country. *Russia* Locally designated protected areas should be established at the most important breeding sites of this species, e.g. Ukuge lagoon, Belyaka spit, Anadyr' lagoon, Cape Rekokaure, Khatyrka estuary, Russkiy Koshka (A. V. Kondrat'ev *in litt.* 1997, P. S. Tomkovich *in litt.* 2000, AVA). The creation of a new nature reserve on the Chukotsk peninsula has been discussed, probably as a joint Russian-American "Beringian" nature reserve which would protect some of its breeding grounds (Tomkovich 1991), but this initiative has unfortunately failed (P. S. Tomkovich *in litt.* 2000). *Korea* There is an urgent need to

address the many pressures on coastal wetlands in South Korea, principally from reclamation and other development. In particular, the critically important site for this species at Saemankeum merits immediate preservation; the ongoing reclamation project there should be halted and a management plan developed for the area that aims to balance economic development with the needs of this species and the many other forms of wildlife that depend on the intertidal mudflats. *Mainland China* Many of the important coastal wetlands are under pressure, and guidelines on the sustainable use of tidal flats need to be drafted and enforced (see Measures Proposed under Spotted Greenshank). The long-term security of Yancheng Nature Reserve is clearly of crucial importance. *Taiwan* Tidal flats need to be better protected (see equivalent section under Black-faced Spoonbill for details). *India* At the Point Calimere Sanctuary, industrial impacts on habitat quality need to be minimised, particularly by advising saltworks to maintain appropriate water levels in evaporation reservoirs during non-operational periods to help ensure that suitable habitat for shorebirds is constantly available, and fishing, hunting and disturbance controlled; further encroachment of coastal areas by industries should be minimised and previously affected areas should be restored if possible (Sugathan *et al.* 1985). At Chilka lake, studies are required to investigate how the natural tidal hydrology can be restored, and Nalaban island should be maintained as a core area of the reserve where fishing, grazing and other non-research activities are banned (Hussain *et al.* 1984); the Indian government has already provided funds for habitat improvement there and the state government has drawn up a comprehensive plan which includes desiltation, fisheries development, tourism development, multi-disciplinary research, etc. (Trisal 1993). *Bangladesh* Appropriate protection of this species from hunting, disturbance and habitat alteration should be focused on the Padma-Meghna delta islands, where the largest-ever winter counts were made in the late 1980s. *Myanmar* Three areas in the outer Irrawaddy delta have been proposed for designation as wildlife sanctuaries: Meinmahla Kyun, Kadonlay Kyun and the Letkakkon islands (Scott 1989). This proposal should be addressed and the areas surveyed to determine their potential importance for the Spoon-billed Sandpiper which has, as yet, not been recorded there (Scott 1989). *Thailand* Given the rapid pace of development in the Thai Peninsula, effective legislative protection is urgently required for as many areas as possible, not only to help protect the waders of the area but also the nursery grounds for fish and prawn species which are so commercially valuable to the country as a whole (Parish 1984). Specific proposals relating to Khao Sam Roi Yot National Park and Pattani bay are in Measures Proposed under Spotted Greenshank. *Vietnam*. At Xuan Thuy Nature Reserve, there is an urgent requirement to develop and implement a realistic management plan, establish reserve infrastructure, train staff and increase local awareness, perhaps through an intensive education campaign (Nguyen Cu *in litt.* 1997, Pedersen *et al.* 1998).

Research In Russia, further surveys should be conducted on the Chukotka coast to improve understanding of the species's population, and its numbers should be regularly monitored at several of the most important breeding sites (P. S. Tomkovich *in litt.* 2000). There is a need to monitor the effects on this species of oil-development in sensitive areas such as Khatyrka (AVA). Its range in eastern mainland China is not fully understood, and special surveys should be conducted to identify the most important sites for its conservation. Further survey work should also be conducted in India to assess the status of the species at other potentially suitable coastal sites, such as the Great Vedaranyam Swamp (SS), and in Myanmar surveys of waterbirds should be undertaken in coastal wetlands, particularly in the Irrawaddy and Sittang delta regions, to assess current wintering populations of this species and Spotted Greenshank. Despite the fact that the vast estuary of the Sittang contains one of the largest intertidal mudflats in South-East Asia, and as such might well be an important area for threatened shorebirds, almost no information is available on its fauna and flora (Scott 1989). Continued surveillance of the wintering population of this species in coastal districts of Bangladesh is necessary (Scott 1989).

Most information on its breeding biology and some demographic parameters is based on studies conducted near the northern edge of its breeding range, and similar studies are therefore required further south (where there could be some significant differences), preferably by individual colour-marking of birds (P. S. Tomkovich *in litt.* 2000). The ecology of the species outside the breeding season is poorly known, and studies are required in passage and wintering areas (e.g. in Korea and Bangladesh) of its precise habitat requirements, site fidelity, feeding ecology, moult, fat accumulation, mortality rate and causes of mortality, etc.; the overall aim should be to improve understanding of the causes of its recent population decline (P. S. Tomkovich *in litt.* 2000).

Conservation education Environmental education campaigns are required throughout the Asian region, and particularly around key wetland sites, to inform the public of the importance of coastal wetlands for wildlife and the protection of the wider environment. A campaign of this type has been proposed around Pattani bay in Thailand to publicise the importance of the natural environment and promote ecologically sustainable practices in the area (Ruttanadukul 1993). To reduce hunting of shorebirds in southern Thailand, alternative practices would be encouraged most successfully among coastal villagers through education programmes and the alleviation of poverty at key sites such as Pattani bay (Ruttanadukul and Ardseungnern 1987).

REMARKS (1) The spatulate bill of this species is unique among limicoline shorebirds, and is only otherwise found in the spoonbills Plataleinae (genera *Platalea* and *Ajaia*) (see, e.g., under Black-faced Spoonbill *Platalea minor*). For this reason, it is customarily placed in its own genus *Eurynorhynchus*. Some authorities, however, regard the development of such a bill as a relatively recent adaptation, and rather unpoetically include the species in the genus *Calidris*, which in all other characters it closely matches. Nevertheless the bill is so unusual a feature that the interests of biological diversity are better served by the retention of the monotypic genus. (2) The species was reported in the Maldives in 1964, on Gamu and on Haa Alifu and Haa Dhaalu Atolls, but these records lacked further details and thus remain unsubstantiated (Ash and Shafeeg 1994).