Waders of the Selenga delta, Lake Baikal, eastern Siberia

IGOR FEFELOV[1] & IGOR TUPITSYN[2]

[1]*Research Institute of Biology at Irkutsk State University, PO Box 24, Irkutsk 664003, Russia. u000438@ic.isu.ru*
[2]*Irkutsk State Pedagogical University, Nizhnaya Naberezhnaya 6, Irkutsk 664011, Russia*

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We review the status of the 46 wader species that have been recorded in the Selenga delta, Lake Baikal, eastern Siberia. These include a substantial breeding population of the globally near-threatened Asiatic Dowitcher as well as important breeding concentrations of Northern Lapwings and Marsh Sandpipers. Passage migrant populations for which the delta is important include Pacific Golden Plover, Temminck's Stint and Curlew Sandpiper. Part of the delta has been designated as a Ramsar Site, but the area included in the site is insufficient to sustain all of the populations for which the delta is of major importance.

INTRODUCTION

The Selenga River is the largest flowing into Lake Baikal, the biggest natural freshwater lake in Siberia and worldwide. The delta of the Selenga is 540 km^2 in area and has a typical delta structure with many channels, oxbows, and associated water bodies (Fig. 1). It flows into the southeast of the lake and belongs administratively to the Kabansk District of the Republic of Buryatia, Russian Federation. The area has a continental climate, with a mean air temperature of 14°C in July and –19°C in January. Lake Baikal is frozen from January to April. About half the delta has an open environment with habitats favourable for large numbers of waterfowl, waders and other waterbirds. It is especially important for these birds during periods of drought in eastern Siberia and central Asia. Hundreds of thousands of migrating ducks stop there and thousands breed, as well as 14,000–30,000 gulls and terns, and species like grebes, herons, birds of prey (including White-tailed Sea-eagle *Haliaeetus albicilla* and the common Eastern Marsh Harrier *Circus spilonotus*), and waders (including the near-threatened Asiatic Dowitcher *Limnodromus semipalmatus* (BirdLife International 2000)). In total, 46 wader species have been recorded of which 14 have been proved to breed. The region is used by migrants that breed in various vegetation zones from tundra to forest-steppe across almost the whole of Siberia. These birds pass on to wintering grounds ranging from Africa to the Pacific, including S Asia and Australasia.

Several institutions have carried out ornithological research in the Selenga delta over a long period. The first was the Institute of Biology of Irkutsk State University which started studies more than 30 years ago and maintains an ornithological research station in the village of Murzino, near Shigayevo. A recent book – *Birds of the Selenga delta: Faunistic summary* – provides an overview of these long-term studies (Fefelov *et al.* 2001). Although some data on waders in the delta has been published (Shvetsov & Shvetsova 1967, Gagina 1988, Zhuravlyov *et al.* 1991), no comprehensive account has yet appeared.

In 1994, the Russian Government designated the Selenga delta as a Ramsar site, but the area included was not the whole delta, but only its central portion comprising the Nature Refuge (Zakaznik) "Kabansky", a branch of the Baikal'sky State Biosphere Nature Reserve (Zapovednik). However, an area at least three times larger is recognized as a wetland of international importance with Ramsar status. There can be no doubt that the Ramsar site needs to be expanded if it is to perform an adequate part in the "ecological network" of sites important for birds in E Asia. A more detailed description of the Selenga delta can be found in Fefelov (2003).

This paper is based on the same information that was presented in the book *Birds of the Selenga delta: Faunistic summary* (Fefelov *et al.* 2001), which has only been published in Russian. Compared with the paper by Fefelov (2003), we present a much more detailed account of the waders of the delta, including data on phenology, distribution and breeding biology.

MATERIALS AND METHODS

During 1973–2002, information about waders was collected in a wide range of ornithological studies in the Selenga delta. However, as these were primarily focussed on other bird groups, such as ducks and gulls, the data on waders are not complete. Most observations were carried out from May to October in the northwest part of the delta (around 52°20'N, 106°25'E), between two large channels, Galutay and Srednaya (Sredneustye). Many data were also collected during censuses of colonial birds covering the whole delta in late May to early June in 1988–1996, 1998, and 2002. In the mid-1970s and mid-1980s, fieldwork was also carried out in the area of Posol'ski Sor Bay, a large bay of tectonic origin beside the lake immediately to the south of the delta and almost completely separated from the lake by gravel- and sand-spits.

Summer wader counts were made in suitable wader habitat near Adunovskaya channel along a transect which varied in length from 4 to 8 km depending on water table in different years. It was repeated each week from mid-May to early July in 1986–1996. Similar autumn counts were carried out in the same area in August to October 1986–1987. The results were expressed as density of individuals or breeding pairs per km^2 according to Naumov (1965), a standard

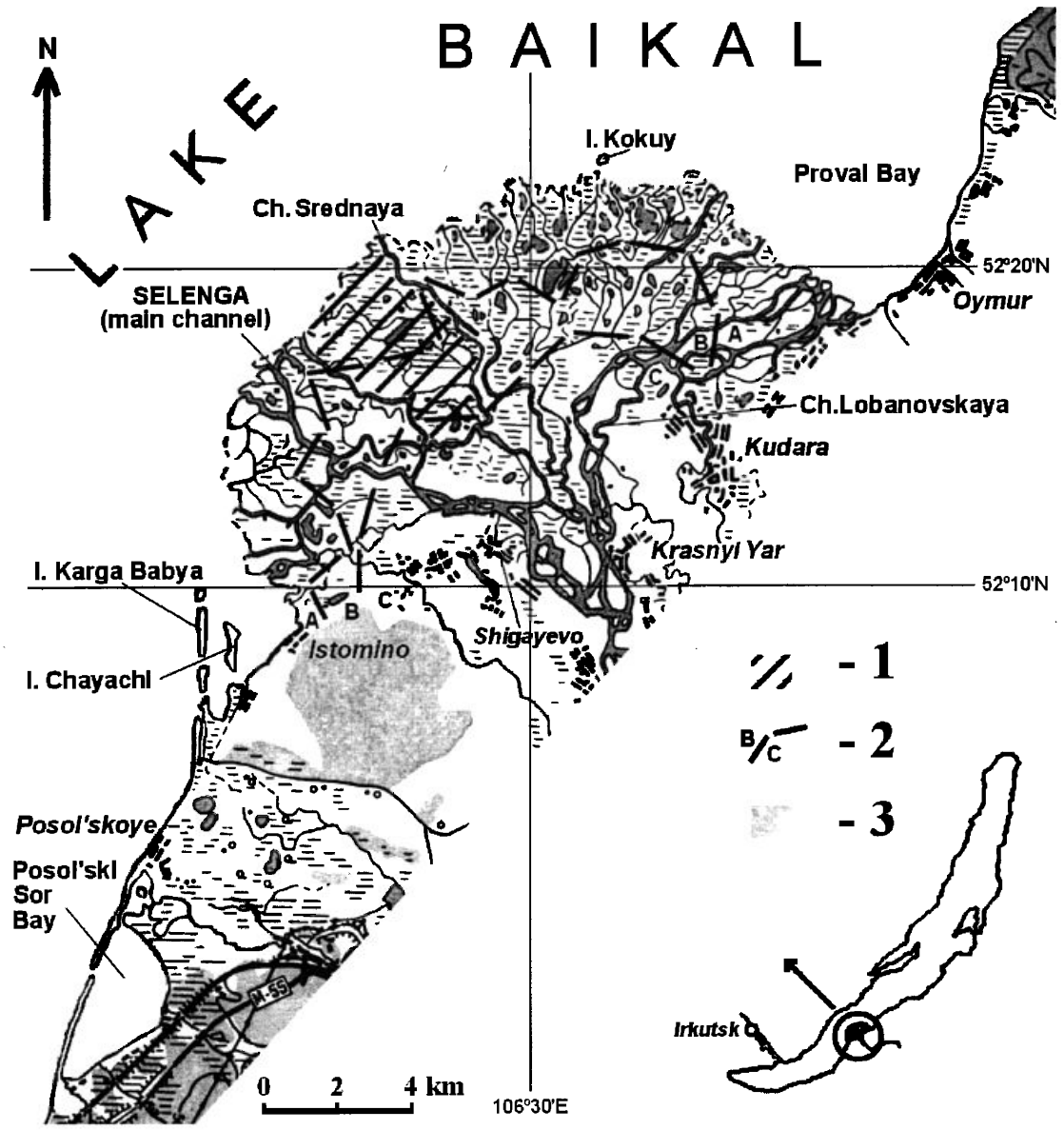

Fig. 1a. Map of the Selenga River delta and the surrounding area and its location on the south-eastern side of Lake Baikal, Eastern Siberia. 1: area of main studies; 2: borders between portions: A: lower delta, B: middle delta, C: upper delta; 3: forested area (willow forests inside the delta are not shown).

method used widely in Russia. These data are not suitable for making estimates of wader populations in the whole delta by extrapolation. However, they allow numbers to be compared between species and between years.

Egg measurements were taken to the nearest 0.1 mm with calipers. Mean values are presented ±1 standard error. Presence of the bursa of Fabricius gland in birds collected in summer or autumn was used as the main criterion that a bird was a young one.

SPECIES ACCOUNTS

Black-winged Stilt *Himantopus himantopus*
Vagrant

Mel'nikov (2000a) saw solitary pairs on 12 June 1973 and in mid-June 1979 in the middle delta.

Pied Avocet *Recurvirostra avosetta*
Vagrant

One record: a pair on 29 July 1979 recorded by Mel'nikov (2000a) in the middle of the delta. It is worth noting that this and the previous species were increasing in numbers in the 1990s and the breeding range of the Pied Avocet was expanding across the steppes of western Transbaikalia (Dorzhiev *et al.* 1999). Therefore more records further north at Lake Baikal are quite possible.

Oriental Pratincole *Glareola maldivarum*
Vagrant

Mel'nikov (2000a) reported two birds seen on 12 June 1975 and one on 10 June 1976 in large flocks of Pacific Golden Plovers and Grey Plovers during heavy northward passage.

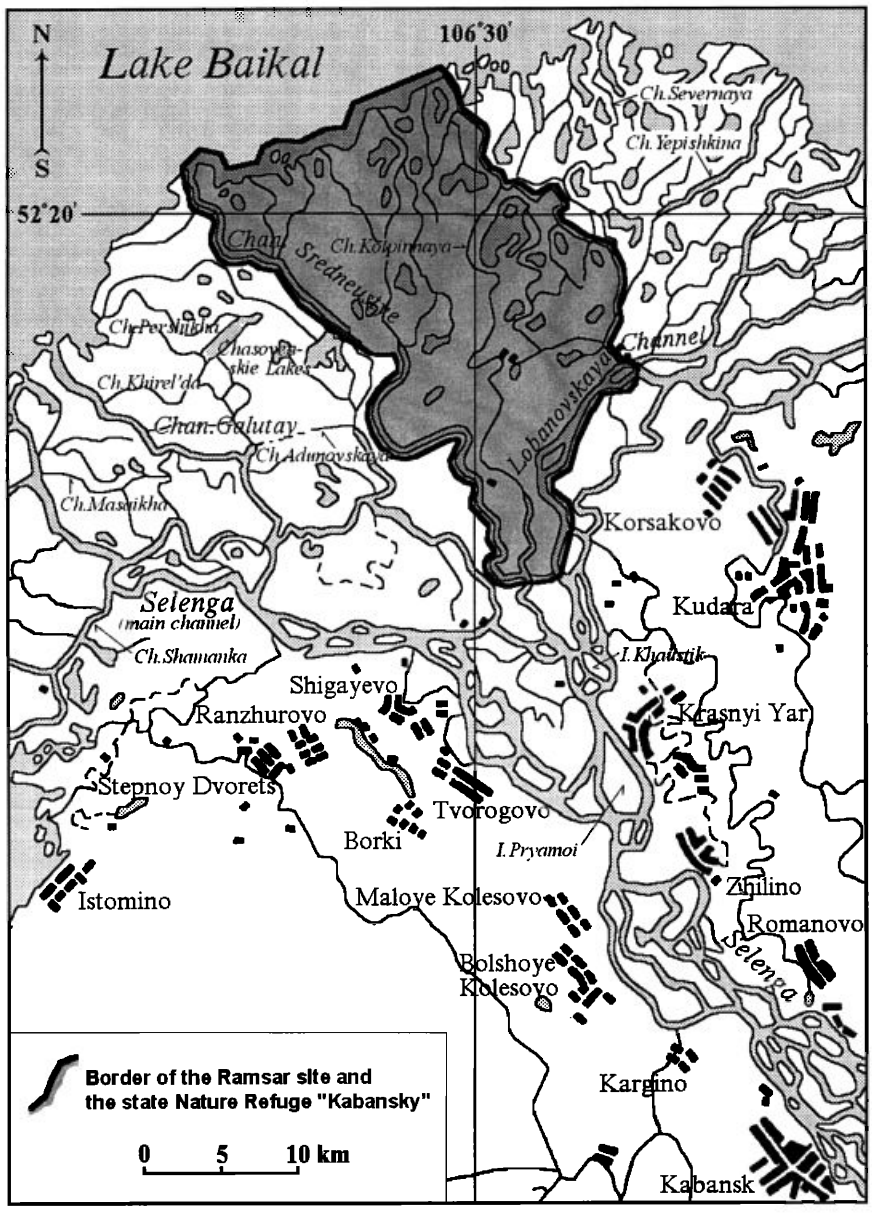

Fig. 1b. Map of the Selenga delta with channel names.
(Map provided by and reproduced with the permission of Wetlands International.)

Two more birds were observed in a flock of White-winged Terns *Chlidonias leucopterus* near Istomino on 13 June 1990 (Dorzhiev & Elaev 1995).

Northern Lapwing *Vanellus vanellus*
Numerous breeder and passage migrant

Although lapwings show a preference for nesting in the moderately wet short-grass meadows of the middle and upper delta, they are also common in the lower delta on islands and along channels.

Breeding numbers are highly variable, being dependent on water level and the incidence of nest predation by Common Gulls *Larus canus*. The highest nest density recorded during our study period was 31.3 pairs/km^2 in 1988 near the Adunovskaya channel. This was likely to have been a result of high spring flooding that year. In subsequent years, Common Gulls increased and, as a result, the density of Lapwings declined to six pairs/km^2 in 1993. Tolchin *et al.* (1977) reported a density of up to 200 pairs/km^2 at some localities in the early 1970s. The breeding population of the delta and adjacent plains in the valley was estimated to be in the range 500–2,000 pairs in 1986–1996.

Usually, the first lapwings arrive in early April, but the earliest record was 25 March 1994. The majority of birds arrive over 12–17 April. The earliest nest (destroyed one with egg shell) was found on 26 April. Lapwings often nest close to colonies of Black-headed Gulls *Larus ridibundus*, White-winged Terns or Whiskered Terns *Ch. hybrida*. One nest was only 6 m from a Common Gull's nest. Eggs (n = 146) were 41.1–50.2 mm long (mean 45.7±0.2) and 30.2–36.0 mm wide (mean 32.5±0.07). Usual hatching success was 60–65% (n = 15). The nesting period is prolonged because of replacement clutches due to predation by gulls and corvids, and clutches have been found as late as 20 July (1991). Chicks are most common in mid-June. At the end of July, when the

young fledge, lapwings gather into flocks of up to 30 birds. They depart gradually, and migrant flocks can be observed as late as mid-October. The latest record was on 23 October (1986).

Pacific Golden Plover *Pluvialis fulva*
Numerous migrant

During migration, Pacific Golden Plovers are one of the most numerous and visible waders of the Selenga delta. The main spring migration occurs between 15–20 May and 3–5 June. During this period, flocks typically consist of 20–600 birds. Mel'nikov (2000a) reported a particularly large congregation of 'many hundreds' on 12 June 1975. Birds usually stop over on grasslands (both short-grass wet and dry steppe-like meadows), or pass over 50–100 m above the ground mostly in a northerly or north-easterly direction. In the lower delta, up to five migrating flocks can be counted in an hour. In the post-breeding period, this species reappears from 13 August, and the main passage takes place from 10 to 25 September. Adult birds (four males, one female) were collected between 24 August and 11 September (1985–1989), two young birds, a male and a female, on 25 September 1985. The latest record is for 16 October (1988).

Grey Plover *Pluvialis squatarola*
Uncommon migrant

In spring, Grey Plovers occur seldom and irregularly. When they do, they are often in flocks of Pacific Golden Plovers. We saw two birds on 29 May 1984, one on 30 May 1991, and two on 31 May 1992. Mel'nikov (2000a) reports 'big flocks' on 12 June 1975 and 10 June 1976 but says nothing precise about numbers. Other authors (e.g. Tolchin *et al.* 1977) do not record this species at Lake Baikal in spring. In autumn, Grey Plovers occur regularly from 28 August to 30 September in flocks of two to eight birds. Solitary birds can stay into late autumn and there are records for 21 October (1986, 1991). Tolchin *et al.* (1977) even saw one on 12 December probably on the shore of Lake Baikal which does not freeze until January.

Great Ringed Plover *Charadrius hiaticula*
Vagrant

Many authors (Shvetsov & Shvetsova 1967, Zhuravlyov *et al.* 1991, Zhuravlyov 1995) did not include this species into their bird lists for the delta. However, Mel'nikov (2000a) mentions two records, each of two individuals in the central part of the delta on 30 July 1976 and 16 June 1982. A juvenile female was shot by A. Shinkarenko on 21 September 1976 (Irkutsk State University collection).

Little Ringed Plover *Charadrius dubius*
Common breeder and migrant in variable numbers, depending on amount of suitable habitat

Little Ringed Plovers breed across the whole delta and show a clear preference for gravel, sand or mud banks. They are very common on the spits of the Posol'ski Sor Bay. Mel'nikov (1998a) estimated the population at 30–250 breeding pairs with relatively higher numbers in years with a low water table.

In the 1970s, the arrival of the first birds occurred on 6–9 May (Tolchin *et al.* 1977). Later, the same dates were typical for first records, but occasionally earlier migrants were noted, such as 4 May 1985 in the delta and 26 April 1987 in the Posol'ski Sor Bay. When favourable habitats are flooded, Little Ringed Plovers may form dense concentrations in certain localities. Thus, on Kokuy Island in an area of 400 × 200 m, we found 5 pairs on 6 June 1988 which were constantly involved in territorial conflicts. In the sandy coastal dunes along the shore of Posol'ski Sor Bay, linear densities sometimes reach 17 pairs per km. In comparison, linear density is only 1.5 pairs per km in similar habitat in the mouth of the Verkhnaya Angara River, N Baikal (Tolchin *et al.* 1977). Egg-laying starts in late May or early June. Two complete clutches were found in the delta on 16 June 1980 and one more near Posol'skoye on 17 June 1988. Post-breeding movements start in mid-July when birds can be found as singles or in groups of two or three. The latest record is for 19 September 1986.

Kentish Plover *Charadrius alexandrinus*
Vagrant

Mel'nikov (2000a) observed one bird near Shigayevo on 8 June 1991.

Greater Sand Plover *Charadrius leschenaultii* and Lesser Sand Plover *Ch. mongolus*
Both are very rare with the former being a vagrant, and the latter perhaps slightly more common (Tolchin *et al.* 1977, Belyaev 1984, Dorzhiev & Elaev 1995).

There are records of one Greater Sand Plover on 22 May 1982 and one Lesser Sand Plover on 18 June 1982 at the edges of the delta (Mel'nikov 2000a, b). However, to us these records appear doubtful because exact field identification of these species, which are very rarely seen, is difficult. For example, a pair of sand plovers, collected on 28 May 1976 in the Muya Hollow, NE Transbaikalia, were first identified in the hand as Greater Sand Plovers (Tolchin 1983a, also mentioned in Mel'nikov 2000b), but were eventually identified in the Zoological Museum of Moscow University as Lesser Sand Plovers (Tomkovich 2001). On 2 June 2002, we saw one sand plover in the north-central part of the delta, which we were unable to identify precisely even having the book *Shorebirds: an identification guide* (Hayman *et al.* 1986) in our hands. We were only sure that the bird was an adult female of either of the two species (Fefelov *et al.* 2003). Thus, more evidence is required to establish occurrence patterns of sand plover species in the Selenga delta.

Oriental Plover *Charadrius veredus*
Vagrant

Recorded twice at the edges of the delta: Mel'nikov (2000a) reported a solitary bird shot on 22 September 1982 and another was seen on 28 May 1989.

Eurasian Dotterel *Eudromias morinellus*
Vagrant

Shvetsov & Shvetsova (1967) report the species as a migrant without any comment as to its abundance. It is likely they

saw birds rarely and irregularly. Since that time, there have been no further observations, though the species can easily be identified in the field.

Black-tailed Godwit *Limosa limosa*
Common to numerous breeder and migrant

Black-tailed Godwits breed in meadows with short grass over almost the whole delta. Nests have been found on islands in the upper delta and in adjacent areas outside the delta, on islands of the outer delta near Baikal (Chayachi, Karga Babya), and in most sites of the middle delta and also on dryer places in the lower delta.

Shvetsov & Shvetsova (1967) described the Black-tailed Godwit as a common breeder in the delta, but Gagina (1988) considered it only as a migrant there. Breeding was documented for the first time in 1973 when 17 nests were found (Tolchin & Mel'nikov 1974). On 24 May 1976, 126 pairs were counted in an area of 100 ha of meadows near Shigayevo, and the next year there were 40 pairs nesting on 30 ha in the Nature Refuge "Kabansky" in the central delta (52°16'N, 106°31'E) (Vasil'chenko 1987). In our transect counts near the Adunovskaya channel in 1988–1996, the maximum nest density, 43.8 pairs/km^2, was found in 1990, the year with the lowest water table during the nesting period. In seasons with a high water table, 1992 and 1995, the nest density was lower, 4.0 and 7.6 pairs/km^2, respectively. Unusually low numbers were recorded in 2001 when Black-tailed Godwits were only seen once during a month of observations from mid-June to mid-July (two flocks of six and four birds). Possibly numbers had declined as a result of low breeding success. In the very dry season of 2002, however, the species was more common and densities of up to five pairs/ha were recorded in some areas and the delta population was probably close to 100 pairs.

The first birds usually arrive during 3–6 May and the earliest arrival date on record is 2 May (1978) (Zhuravlyov *et al.* 1991). During migration, flock-size can reach 50 birds. Some days after arrival, display flights begin and are most intensive in the second half of May. The earliest fresh (incomplete) clutch of two eggs was found on 20 May 1993. Nests are built in meadows and steppe-like pastures, being placed on the driest flat sites or on low tussocks. They are often near gull (usually Common Gull) or Common Tern *Sterna hirundo* colonies. Viewed from the side, nests are hidden by dry leaves of gramminoids or sedges, but are open viewed from above. Complete clutches do not always contain the usual set of four eggs, sometimes one to three are incubated. In such cases, we speculate that eggs were lost to predators or they were replacement clutches. Very rarely clutches contain five eggs, such as in a nest found on 30 May 1992. Mean clutch size was 3.3±0.3 (n = 19). Once, on 8 June 2002, N. Groen and R. Mes found a nest that was being incubated by a Black-tailed Godwit containing a clutch of four godwit eggs that were slightly incubated and three Ruff eggs that were less incubated. Possibly this is a case of nest parasitism by Ruff (Fefelov *et al.* 2003). Mean egg length (n = 63) was 51.0±0.3 mm (range 45.5–56.9) and mean width 34.8±0.2 mm (range 30.8–39.1). Chicks hatch mostly in the second half of June with an earliest hatching date of 11 June (1993). The earliest brood of four fledged young was seen on 11 July 1994 near Shigayevo. Common Gulls are the main predators of eggs and chicks of Black-tailed Godwits. After 20 June, flocks up to 50–80 godwits appear and these were likely to be non- and/or failed breeders. Flocking of young birds starts from mid-July. Adults depart from the delta before the young. Seven godwits were collected on 25 August 1987 and all were found to be juveniles: six females and one male. Migration ends by early–mid-September, and the latest record is for 13 September (Zhuravlyov *et al.* 1991).

Bar-tailed Godwit *Limosa lapponica*
Recorded in error

This species has been incorrectly listed for the Selenga delta in some publications (e.g. Lipin *et al.* 1973, Gagina 1988). The observers later realized that the birds they had seen were Asiatic Dowitchers (S. Lipin, pers. comm.).

Little Curlew *Numenius minutus*
Rare migrant

Although there is a single spring record of a Little Curlew for the Verkhnaya Angara River mouth, northern Baikal (Pyzhjanov *et al.* 1997), in other parts of the region it is only known on autumn passage. In the Selenga delta, there are several records for 29 July to 24 August in 1986–1993. Most often, birds are found on the short-grass meadows and pastures of the upper delta, but there have been several exceptions as mentioned below. A flock of six birds was observed near the Masaikha channel at the border between the lower and the middle delta on 12 August 1975 (Mel'nikov 2001a). One Little Curlew was seen on a wet meadow in the lower delta on 1 August 1986. A young male was collected from a flock of eight birds on 21 August 1987 by the shore of the Adunovskaya channel, its body mass was 130.7 g (Zhuravlyov *et al.* 1991). Three birds were observed in the same area on 3 July 1993. Flock size is usually in the range three to nine, but up to 14 have been recorded.

Whimbrel *Numenius phaeopus*
Rare migrant

Izmailov & Borovitskaya (1973) reported the very first record for the delta, a specimen taken on 13 September 1956. The next record was of a flock of five birds observed in the lower delta on 31 August 1981 followed by one bird in the mouth of the Pershikha channel on 28 August 1986 (Zhuravlyov *et al.* 1991). Mel'nikov (2000a) reported that a bird was shot on 15 September 1988 but knew of no records for the spring. However, we have spring observations: two calling birds passed north along the Lake Baikal shore near Posol'skoye on 22 May 1988, one was seen flying along the Khirel'da channel on 31 May 1991, and one landed on grassy shore of the Galutay channel on 10 June 2002 (both the latter records relate to the middle delta). There are also several records for August, when one or two birds are sometimes seen on meadows and pastures, and when they are also identified by voice passing over at night. It is likely that more Whimbrels migrate across the area at night than are seen by day. For this reason, they are probably under-recorded.

Only a few Whimbrels have been closely observed from a short distance. Two on 25 August 1990 had white upper-tail coverts but dark lower backs, while one seen on 10 June 2002 had white in both areas (Fefelov *et al.* 2003). Birds of the subspecies *phaeopus* breeding west of the River Yenissei have white in both areas, while in *variegatus* that breeds east

of the Yenissei a dark spotted pattern is usually characteristic for both upper tail coverts and lower back (Hayman *et al.* 1987, Stepanyan 1990). Hence, more data are needed before it will be possible to decide which subspecies occurs in the Selenga delta.

Eurasian Curlew *Numenius arquata*
Common breeder and migrant

During migration, Eurasian Curlews can be found staging throughout the delta and passing flocks are frequently recorded over the outer delta. For breeding, they prefer steppe-like, dry meadows in the upper and the middle delta, but do not avoid wet meadows on floodplains where they choose the driest sites for their nests. Often they nest close to Common or Black-headed Gull colonies.

In the 1950s and 1960s, the Eurasian Curlew was a rare breeding species in the delta (Shvetsov & Shvetsova 1967). According to Mel'nikov (1998a) it was still uncommon in the 1970s (10–20 pairs for the whole delta), but in the 1980s numbers increased to 70 pairs. Vasil'chenko (1987) suggested a different estimate for the same period: not more than 120 breeding pairs in the delta in 1970s after some decline. A reason for the discrepancy could be a difference in spatial distribution of birds within the delta because the researchers carried out their studies in different parts of the delta. Our annual counts covering the whole delta and the adjacent steppe-like plains in the valley show that the breeding population was 140–160 pairs in the mid-1990s. The species is also rather common on meadows around Posol'skoye (10–20 pairs).

Eurasian Curlews arrive in late April and the earliest known record is for 19 April (1979) (Zhuravlyov *et al.* 1991). The main passage occurs in early May. Curlews form pairs very quickly after arrival and continue their display flights until mid-June. Normally pairs are spread widely, but in some years they can be found at relatively high density. Thus, on the 2.5 km^2 Pryamoi Island seven breeding pairs were counted in 1989 and our transect counts along the Adunovskaya channel show a mean density of 1.7 pairs/km^2 in 1990. Near the Adunovskaya channel in the central delta a negative correlation was found between water table in spring and breeding density: when the water table is low, density increases; when the water table is high, birds do not breed there at all, as it happened in 1989 and 1995. Egg-laying starts in the second week of May. For example, a nest with one fresh egg and an egg shell from another egg destroyed by a Common Gull was found on Khaustik Island on 10 May 1990. Another nest found on 1 June 1994 contained four eggs that were in the latter stages of incubation. Typically, nests comprise a scrape in dry ground among short grass, lightly lined with stems of *Equisetum* and grasses, sometimes with some cow dung. The length of nine eggs was in the range 63.6–79.3 mm (mean 69.0±1.4); width 46.1–49.7 mm (mean 47.6±0.4).

In the post-breeding period, the first flocks appear from 25 June. Once they have fledged, young curlews can often be seen in the meadows and in other open places, especially on islands. Flocks usually consist of 10–15 birds, but in 2000 a flock of 30 stayed for several days on an island near Zhilino in the upper delta. Departure of the breeding population is slow, but comes to an end by late August. There is also some passage of birds that have bred further north but it is not very heavy. The latest record of a migrating flock is for 15 September (1977).

Eastern Curlew *Numenius madagascariensis*
Rare migrant

Eastern Curlews have been recorded around the southern end of Lake Baikal Lake for many years (Taczanowski 1877, Gagina 1988) and there are several records for the Maloye More Strait. A specimen of young male, for example, was taken in that area on 22 August 1976 for the collection of the Irkutsk University. However, the species was not reported for the Selenga delta until recently. It was observed there for the first time on 16 August 1980 (Zhuravlyov *et al.* 1991). Subsequently, we saw solitary birds in flocks of Eurasian Curlews many times in late August and early September and two birds were seen separately by the Adunovskaya channel on 26 August 1986. There have also been several records for July: near Shigayevo on 7 July 1989, at Khirel'da channel on 17 July 1992 and 30 July 2001. There has been a tendency for a gradual increase in the number of observations of this species over the last 15–20 years.

Spotted Redshank *Tringa erythropus*
Common or, in some seasons, numerous migrant

The earliest spring record is for 5 May (1984), but more often the first arrivals appear between 15 and 20 May. The main passage occurs in late May to early June. Solitary birds or flocks of up to 50 can be found on the ground, but migrating flocks can sometimes amount to 100–300 birds. The flocks move in a wide front and thus can be seen everywhere in the delta at altitudes less than 150 m above the ground. Later in June, the species becomes quite scarce. Observations were made at the delta edge by Mel'nikov (1998a) during 15–23 June 1982, and by us during the whole of June 1990 when several definite non-breeding birds were seen, sometimes even in display flight.

Spotted Redshanks usually reappear on 8–12 July. Post-breeding migration is prolonged, and flocks contain mostly six to ten birds. The main passage is from 23 August to 25 September when flocks of up to 30 birds can be seen. On 25 August 1979, abnormally heavy passage was recorded by A. Shinkarenko (pers. comm.) who saw over 1,000 birds pass in flocks of up to 100–250 near the Kharauz channel. The last birds are recorded almost as late as the first formation of ice on the channels inside the delta and the latest record is for 21 October (1976).

Common Redshank *Tringa totanus*
Vagrant

Shvetsov & Shvetsova (1967) describe the Redshank as a rare species that possibly breeds in the delta. However, it is more likely that only non-breeding individuals occur in summer. A male and a female were taken on 3 October 1972 in the Posol'ski Sor Bay (Tolchin *et al.* 1977). During 22–25 July 1985, two birds were seen in the area of the Chasovenskie Lakes in the central part of the delta (Mel'nikov 1998a). We saw one bird on 14 June 1996 on a sandy channel shore, also in the central delta.

Marsh Sandpiper *Tringa stagnatilis*
Numerous breeder and passage migrant

In spring, Marsh Sandpipers can be found everywhere in the delta on channel shores, muddy banks and in wet meadows.

During the breeding season they often form concentrations, most commonly on islands in the middle and lower delta. Nests are built in dense grass in dry meadows and sometimes on floating islands comprising the roots and rhizomes of *Menyanthes trifoliata* and *Polygonum amphibium*.

In the mid-20th century the Marsh Sandpiper was reported as a numerous breeding species in the Selenga delta (Bakutin 1950, Shvetsov & Shvetsova 1967). In the early 1970s, the numbers were still high, and even grew by 30–40% in 1978–1979 (Tolchin 1976, Mel'nikov 1998a). In our monitoring area in the central delta, which is particularly favourable for this species, the nesting density in 1988–1995 ranged between 26 and 78 pairs per km^2. The variation was related to water table and changes in distribution across the delta. Total numbers in the delta are estimated at 1,000–3,000 breeding pairs.

In spring, the main arrival takes place during 5–17 May and the earliest recorded bird was seen on 30 April. Egg-laying starts during the last third of May. Thus, a nest with one fresh egg was found on 20 May 1983, and the first complete clutches have been recorded during 24–29 May. As the nest is well hidden in the grass, it can usually only be found when the incubating bird leaves the nest. A complete clutch normally consists of four eggs. However, once a clutch of five eggs was found, but it was impossible to tell neither from sizes of eggs nor their coloration whether the fifth egg belonged to the same female or a different one. Egg length (n = 262) was in the range 35.0–43.0 mm (mean 38.5±0.08), width 24.7–29.0 mm (mean 27.0±0.04). Hatching success was 60–65% in 1979–1995 (n = 15). Main losses (up to 32% of eggs) were due to clutch predation by Common Gulls and Herring Gulls *Larus argentatus mongolicus*. Nevertheless, Marsh Sandpiper chicks sometimes hatched successfully from nests placed within gull colonies. Hatching begins in mid-June, and the earliest fledged young were recorded on 8 July (1988). After breeding, numbers of Marsh Sandpipers remain high until late August; they leave the delta during early September. At this time flocks of 10–15 birds move upwards along the Selenga River. The latest birds were recorded on 17 September (1986) in the delta and on 26 September (1987) in Posol'skoye.

Common Greenshank *Tringa nebularia*
Regular but not a numerous migrant, has bred once

First arrivals in the delta are usually around 8–9 May, and the earliest was on 6 May 1987 near Posol'skoye. Solitary birds or small groups stop over along the banks of the channels. Only rarely have they been recorded during the breeding season, in late June and early July. However, Mel'nikov (1998a) reports that Greenshanks have bred in some dryer years when more favourable nesting habitat has become available. Thus, he caught unfledged chicks between the Srednaya and Kolpinnaya channels in the middle of the delta in 1981. After the breeding season, solitary birds start appearing in the delta on 6–9 July. Peak passage takes place in late August and early September, a few birds remaining until 25–27 September.

Green Sandpiper *Tringa ochropus*
Common migrant; possibly also an uncommon or rare breeder

The earliest spring records are for 26–27 April, but first arrivals are more usually in early May. Peak passage is in mid-May, when Green Sandpipers are recorded as singles or in groups up to eight along the shores of the delta channels. During 1955–1962, it was reported to be a common breeder in the delta (Shvetsov & Shvetsova 1967). However, we know of no record of nests or small chicks in that period. In the early 1970s, the population density along transects during the breeding season was estimated at 0.2–1.7 pairs per 10 km, and pairs showing nesting behaviour were seen in the middle of the delta along channels with willow shrubs on the banks. In the 1980s and 1990s, the species was only recorded rarely during the breeding season. Post-breeding movements, mostly of single birds become noticeable from mid-July until 9–11 September. The latest record is for 25 September (1987).

Wood Sandpiper *Tringa glareola*
Numerous migrant, occasionally breeds

Wood Sandpipers prefer muddy shores and wet meadows in open landscapes. They were very numerous on migration in the 1960s and 1970s and also bred in the delta (Shvetsov & Shvetsova 1967, Tolchin *et al.* 1977), but in the 1980s and 1990s, they were recorded only on migration. Similar trends have been reported for northern parts of Lake Baikal (N. Safronov, pers. comm.). During the post-breeding period, the Wood Sandpiper becomes the most numerous wader species in the delta. For example, some transect counts show its abundance exceeding 1,618 birds/km^2 near the Adunovskaya channel (on 1 August 1986). Thousands migrate through the delta, and the proportion of Wood Sandpipers among all migrant waders stopping in the delta is normally 21–27% (1987 and 1986, respectively).

In spring, the first birds arrive from 29 April, and the main passage takes place between 10 and 30 May. During this time, Wood Sandpipers stop mostly in the lower delta usually in groups of up to 8, but sometimes in flocks of up to 40–90 (e.g. on 28 May 1994). According to Tolchin *et al.* (1977) nesting in southern Baikal starts on 24–28 May. The only nest known to us was found on 4 June 1985 on Chayachi Island in the outer delta. It contained three slightly incubated eggs. From early July, Wood Sandpipers occur in flocks up to 150 in which males predominate: for example, only one female was found among 14 adult Wood Sandpipers collected on 9 July (Tolchin *et al.* 1977). The main southward migration takes place between 16 July and 26–28 August. Birds move on mainly during the night. Only solitary birds remain in the delta after early September and the latest record is for 24 September (1977).

Terek Sandpiper *Xenus cinereus*
Scarce migrant, mainly in autumn

Unlike the northern end of Lake Baikal where significant spring migration was observed between 28 May and 2 June 1973 (Tolchin *et al.* 1977), there are only two spring records of Terek Sandpipers in the Selenga delta: singles on 10 June 1989 and 4 June 1992. There are also records of solitary non-breeders for 7 July 1988 and 14 July 1990 when their occurrence could be related to high summer floods in those years. In the post-breeding period, Terek Sandpipers have been seen from 19 July to 5 September (1994) in the delta and until 8 September (1987) in Posol'skoye. Solitary birds or flocks up to ten feed on muddy shores and wet meadows, more rarely on sandy shores.

Common Sandpiper *Actitis hypoleucos*
Regular migrant in small numbers, scarce to common breeder

During spring and autumn passage, Common Sandpipers are widely and regularly distributed along the shores of channels across the whole delta except for the outermost part close to the lake. In the late 1950s and early 1960s, it was reported as a common breeder (Shvetsov & Shvetsova 1967), but in the 1970s and 1980s it was considered to be only a rarely nesting species (Zhuravlyov et al. 1991). In the early 1990s, it occurred during the breeding season at 1.6–1.7 pairs per 10 km along the central Selenga stream and the Galutay channel.

The first birds arrive from 6 May (1985), and peak passage takes place in mid-May when singles or groups up to five individuals can be found widely distributed across the delta. The first paired birds were recorded on 21 May, and a nest with an incomplete clutch of three eggs was found on 4 June 1991. Clutches examined on 24 and 25 June 1988 in the delta and on the coast of Posol'ski Sor Bay contained eggs in the latter stages of incubation. Eight eggs ranged in length 32.1–36.1 mm (mean 34.5±0.5), and in width 25.3–26.6 mm (mean 25.9±0.1). After the breeding season, records are spread from mid-July to mid-September without any clear peak passage.

Grey-tailed Tattler *Heteroscelus brevipes*
Scarce migrant

During spring and autumn migration, Grey-tailed Tattlers only occur regularly in small numbers on islands and banks of channels in the outer delta near Lake Baikal.

Mel'nikov (2000a) reported that spring migration occurs from early May to 25–28 May. Our observations indicate that birds can be observed even later, with records for the delta up to 6 June and near Posol'skoye between 30 May and 10 June (1987–1988). A flock of 22 birds was recorded on 1 June 1994, however, Grey-tailed Tattlers normally occur singly or in small groups with other waders, especially Ruddy Turnstones (possibly because both species prefer gravely shores). In the post-breeding period, tattlers occur from late July to 23 September (1990).

Ruddy Turnstone *Arenaria interpres*
Uncommon but regular migrant

The main spring passage occurs between 30 May and 6 June when both small (3–15 birds) and large flocks (up to 140 birds) can be seen. The majority of turnstones prefer the low lying islands of the outer delta, such as Chayachi and Kokuy Islands, close to Lake Baikal. Sometimes birds can be found on gravel shores in the upper delta, and very rarely on its grasslands where they feed by turning over dry cattle dung. During the post-breeding period, the species is common in the second half of August, again mainly in the outer delta. The earliest southbound migrant occurred on 12 July 1986 in a flock of other waders. In the delta, autumn numbers were monitored for a month in 1987 and 90 birds were counted in total. However, Tolchin *et al.* (1977) counted 106 birds during 3–11 September in the Posol'ski Sor Bay; and similar numbers have been seen by us at the delta margin. Solitary birds are recorded as late as 15–17 September.

Red-necked Phalarope *Phalaropus lobatus*
Scarce autumn migrant

No spring records exist for the delta, and only one is known for the whole of Lake Baikal: Barguzinski Nature Reserve, NE Baikal, on 26 May 1969 (Belyaev 1984). During post-breeding migration, solitary birds or groups of two or three have been recorded between 25 August and 19 September. Two juveniles have been collected, one on 28 August 1987 and one 19 September 1986. Elsewhere, a flock of 11 Red-necked Phalaropes was observed in the Posol'ski Sor Bay in early September 1971 (Tolchin *et al.* 1977).

Grey Phalarope *Phalaropus fulicarius*
Vagrant

There is a record from in the Bol'shaya River mouth in the Posol'ski Sor Bay, where one bird was collected on 3 October 1972 (Tolchin *et al.* 1977).

Eurasian Woodcock *Scolopax rusticola*
Rare but possibly breeds

Woodcocks are reported to breed commonly in woodlands in the country surrounding Lake Baikal and the Khamar-Daban and Ulan-Burgasy mountain ranges (Vasil'chenko 1987). Data for the delta are sparse. Based on studies in the 1950–1960s, Eurasian Woodcock was included in the bird list for the delta as a rare breeder (Shvetsov & Shvetsova 1967). One woodcock in display flight was seen on 13 May 1980 (Zhuravlyov *et al.* 1991). However, this observation falls into the migration period. Mel'nikov (2000a) reported several summer records and it would seem possible that it breeds in small numbers on forested islands in the upper delta.

Pintail Snipe *Gallinago stenura*
Migrant, scarce in spring, very common in autumn

The earliest record is for 30 April 1984 near Shigayevo in the upper delta. In the lower delta two birds were found on 13 May 1982, and a displaying bird on 21 May 1990. Spring migration lasts until late May, sometimes early June (Mel'nikov, 2000a). During the breeding season, Pintail Snipes are never recorded in the delta because they avoid the lowlands of the Lake Baikal area, preferring mountains for breeding. However, it was formerly reported, erroneously, as a common breeder in the Selenga delta (Shvetsov & Shvetsova 1967). This opinion was possibly based on records of displaying non-breeding males. Post-breeding migration starts on 22–26 July (Mel'nikov 2000a), and our data show a strong passage between 20 August and 6 September. Pintail Snipes stop over on grasslands together with Common Snipes, and it is often difficult to distinguish them in the field. In a study of hunting bags in early September (1986–1988), however, it was found that out of 16 snipes, five were Pintail and 11 Common. On this basis, transect counts in 1986–1987 would suggest that Pintail Snipe numbers could reach 800 birds/km^2. Mean body mass in this period was 113.8±4.9 g (range 74–138 g, n = 13). Interestingly, one of four birds observed flying upstream along the Selenga River near Shigayevo on 17 August 1990 displayed in the air. Migration lasts until mid-September, and the latest record is for 15 September (1980).

Swinhoe's Snipe *Gallinago megala*
Common breeder in the upper delta and migrant

The first birds arrive on 3–8 May (Mel'nikov, 2000a) and at the beginning they can be found in the lower delta (e.g. a record on 11 May 1980), but later in the summer they are absent from that area. For breeding, Swinhoe's Snipes prefer islands of the upper delta, overgrown with willows and other shrubs. For example, displaying birds were recorded near Posol'skoye, Shigayevo, Krasnyi Yar, and along the Lobanovskaya channel from 28 May to 7 July. According to both our data and that of Shvetsov & Shvetsova (1967), Swinhoe's Snipe is a common breeder in the upper delta, but neither nests nor chicks have ever been found. This is because our work has been conducted mainly in the middle and lower areas of the delta rather than in the upper region. Birds start to leave the delta in late July, immediately after the young fledge, and the passage is mainly over by 18 August (Mel'nikov 2000a). Some solitary birds can be found later, for example, one was found in a hunter's bag on 8 September 1977 (Zhuravlyov *et al.* 1991).

Common Snipe *Gallinago gallinago*
Common breeder and numerous migrant across the whole delta

On migration and during the breeding season, Common Snipes occur on wet meadows in the middle and lower delta, as well as in other wet places where there is short grassy vegetation.

In the early 1960s, the Common Snipe was considered as only a rare breeder in the delta (Shvetsov & Shvetsova 1967) and later it was thought to occur there as only a migrant with only small numbers breeding further inland along the Selenga river valley (Gagina 1988). In contrast, according to our data, Common Snipe breeds commonly in the delta. During the 1988–1996 breeding seasons, our transect counts near the Adunovskaya channel show that numbers varied considerably. In 1993, the most favourable year, 7.6 pairs/km^2 were counted, while in other years densities were in the range 0.8–3.8 pairs/km^2. In years with a high summer water table (1992 and 1995), Common Snipes left the delta completely.

In spring, birds usually arrive in late April and the earliest was recorded on 21 April (1971). Display flights can be heard as early as 6 May and continue until late May, with some birds displaying until 6 July. Nesting starts in late May and the earliest clutch, already slightly incubated, was found on 3 June 1982. Another nests with eggs that were starting to hatch were found two weeks later, on 17 June 1982, and 3 July 1987. Nests are usually placed on tussocks with mosses and sedges *Carex* and are well hidden. Mean length of eggs (n = 16) is 39.8±0.2 mm (range 37.9–41.1) and mean width 28.6±0.2 mm (range 27.8–29.9). The first fledglings were recorded on 12 July (1993). Post-breeding migration becomes noticeable in mid-August and is most pronounced between 25 August and 25 September when flocks up to 5–15 birds are observed. In the most favourable feeding sites, several tens of snipes and sometimes even up to 1,000 may congregate. According to our transect counts along the Adunovskaya channel, the abundance of Common Snipes during peak migration can reach 1,800 birds/km^2 and comprise 17–20% of all migratory waders in the delta. During this time mean body mass is 113.2±6.6 g (range 59–166, n = 26) for adults and 116.4±3.9 g (range 79–138, n = 22) for young birds. By early October, almost all Common Snipes have left the delta and only occasional solitary birds remain until 22 October (Zhuravlyov *et al.* 1991).

Jack Snipe *Lymnocryptes minimus*
Very rare autumn migrant

The Jack Snipe has been described as a rare passage migrant that only occurs in autumn around Lake Baikal and along the Selenga valley (Gagina 1988). A young male, with body mass 99.9 g, was collected on 2 October 1977 and another bird was shot by a hunter on 29 September 1979 (Zhuravlyov *et al.* 1991). The latest record is one on 16 October 1980 (Mel'nikov, 2000a).

Asiatic Dowitcher *Limnodromus semipalmatus*
Common breeding species with narrow habitat requirements and with fluctuating numbers and a patchy distribution

Asiatic Dowitchers concentrate around extensive shallow water that is sparsely vegetated with *Carex*, *Equisetum* or *Hippuris* and with areas of exposed mud. They avoid large areas of vegetation, especially where vegetation is dense. The main areas in which suitable habitats are available are in the middle and lower delta. Several sites have been occupied by breeding Asiatic Dowitchers for many years. However, variations in the water table often force birds to move to other sites where the habitat is more favourable at the time of breeding. From time to time, Asiatic Dowitchers have nested outside the delta, on a lake near Shigayevo on the southwest side of the Selenga River.

The species was reported as possibly breeding for the first time on the delta by Shvetsov & Shvetsova (1967) who surveyed the area in the late 1950s and early 1960s. The first nests were found in 1973 (Tolchin & Mel'nikov 1977) when it is likely that the numbers of Asiatic Dowitchers in the delta started to increase, and when the total breeding population was estimated at 300 pairs (Mel'nikov 1985). By 1977–1978, numbers had risen to 4,500 birds, supposedly as a result of immigration from drought-affected steppe areas in southern parts of the species' range (Mel'nikov 1988, 1998b). During 1988–1996 and subsequently, numbers again declined to around 100–300 birds.

The first Asiatic Dowitchers arrive during 3–21 May, most often before 10 May. Flocks consist of 20–40, sometimes up to 300 birds. The earliest egg was found on 24 May (1978), but some newly laid clutches have been found as late as 19 June (1985). Clutch size is normally two eggs, but complete clutches of one, three, and very rarely four eggs have also been found (Mel'nikov 1985). Nests are often surrounded by water, being placed between sparse stems of *Equisetum fluviatile*, *Carex* spp., or *Calamagrostis purpurea*. Water around the nest can be as deep as 25 cm. The shortest distance between nests in a breeding congregation, as measured in 1988, ranged from 2.5 to 13 m (mean 6.7±1.8, n = 5). Many aggregations of breeding dowitchers (n = 40) were close to gull or tern colonies, most often Black-headed Gulls (60%), less often Common Terns (15%), and rarely White-winged or Whiskered Terns or Common or Little *Larus minutus* Gulls. Egg length (n = 45, our data) is in the range 42.5–54.7 mm (mean 50.3±0.3) and width 32.2–35.8 mm (mean 33.7±0.1). According to Mel'nikov (2003a) length varies from 45.0 to 57.0 mm (mean 49.9) and width from 30.5 to 35.7 mm (mean 33.3)

(n = 336). Disturbance of incubating birds by humans often results in the predation of eggs by Common Gulls. Another important cause of nest loss in some years has been a rapid rise in water level. Hatching success has varied from 19 to 91% between years (1979–1995, n = 12); according to Mel'nikov (2003b), mean hatching success in the Selenga delta in 1973–1980 was 31.3±0.4%. The first eggs with signs that they were about to hatch were found on 9 June 1979. The survival rate of young birds between hatching and fledging was estimated at 55–70% (Mel'nikov 1985). Large flocks of sometimes up to 100 or more birds can be seen in the delta in late June. According to Mel'nikov (1985, 2003a), these flocks are formed by non-breeders, failed-breeders and females that have abandoned their broods. Departures, leading to reduced numbers, begin between mid-July and mid-August. The last birds leave the delta as late as 10 September (Mel'nikov 1985).

Red Knot *Calidris canutus*
Vagrant

Recorded only once in the delta: a young bird collected on 17 September 1972 (Tolchin *et al.* 1977). Elsewhere along the shores of Lake Baikal, it has been recorded more often but irregularly (Taczanowski 1877, Pyzhjanov *et al.* 1997).

Sanderling *Calidris alba*
Scarce autumn migrant

As in other areas of Lake Baikal, Sanderlings only occur in the delta on southward migration, where their distribution is limited to the sandy or gravel shores of the outer delta, close to the lake. Most pass from late August to late September, and the latest record was on 3 October (1972). Heavy migration was observed in 1971 when flocks up to 50 were present on a sandy beach in Posol'ski Sor Bay (Tolchin *et al.* 1977). In 1987, Sanderlings were regularly seen there throughout the whole of September, but in smaller numbers, solitary birds or groups of 3–4; only or predominantly young birds were seen. Within the delta itself there have only been two records: one seen in a flock of other sandpipers on 30 August 1991 and an adult male was collected near the Adunovskaya channel on 20 September 1985.

Red-necked Stint *Calidris ruficollis*
Common migrant, sometimes numerous

This species is not mentioned in early bird lists for the region (Shvetsov & Shvetsova 1967, Gagina 1988) possibly because it used to be considered conspecific with Little Stint. Red-necked Stints are rarely recorded in spring with just solitary birds found near the Khirel'da channel of the delta between 20 May and 1 June. In the northern part of Lake Baikal, it was collected on 2 June 1968 by N. Skryabin and reported as a rare bird for the period 29 May to 8 June by N. Safronov (pers. comm.).

On southward migration, the first observations of Red-necked Stints fall between 30 July and 15 August. The main passage takes place from 28 August to 11 September when flocks of 5–8, sometimes up to 35 birds can be seen. According to transect counts near the Adunovskaya channel, local abundance reached 970 birds/km^2 in some days in 1987. In that season, Red-necked Stints formed about 11% of the total number of migratory waders. Migration finishes by 25 September.

Little Stint *Calidris minuta*
Migrant commonly seen, but not numerous

In general the Little Stint is a very rare species in spring in the Baikal region. Thus, it has been recorded only "several times" in the Barguzinski Nature Reserve between 18 and 28 May (Belyaev 1984), and in northern Baikal between 24 May and 2 June (N. Safronov, pers. comm.). In the Selenga delta, there is only one spring record: on 2 June 1993 one bird was seen in a flock of six Temminck's Stints on Kokuy Island. It is more usually seen around Posol'skoye as solitary birds and in small groups of up to 10 individuals from 22 May to 10 June. As monospecific groups of two or three birds or among other stints, Little Stints are regularly seen in the delta from 19 August to 1 September (Zhuravlyov *et al.* 1991) with only one later record for 23 September 1987. Near Posol'skoye, the species is observed regularly until 17 September (1988). Counts along transects in the central delta show that local density can sometimes reach 28 birds/km^2.

Temminck's Stint *Calidris temminckii*
Common migrant, sometimes numerous

During northward migration Temminck's Stints are not numerous in the delta, and this is very different from the situation around the northern end of Lake Baikal where several thousand occur on migration (Tolchin *et al.* 1977). First birds can be recorded as early as 16 May (1990). When staging, Temminick's Stints feed in groups of two to six, sometimes up to 10 birds on islands in the outermost delta and on muddy banks in the middle and lower delta. Spring migration ends around 3–6 June. On autumn migration, Temminck's Stints can be found from late July until 27 September with only one later record known: on 5 October 1970 in the Posol'ski Sor Bay (Tolchin *et al.* 1977). The main passage is from 20 August to 12 September when this species is among the most numerous waders in the delta. During this time the birds form flocks of up to 10, sometimes 30 individuals, which feed along the muddy shores of channels and low-water-level lakes. Counts along transects carried out during 1988–1996 near the Adunovskaya channel show that local abundance of this species can reach 920 birds/km^2. Only small numbers occur after mid-September.

Long-toed Stint *Calidris subminuta*
Scarce migrant, occasionally breeds

In the early 1960s, the Long-toed Stint was considered to be a common migrant in the delta (Shvetsov & Shvetsova 1967). More recently it has occurred regularly, but only in small numbers. Spring observations of solitary Long-toed Stints or groups of two to four are known for 15 May to 6 June, sometimes in the first half of July (Mel'nikov 2000a, our data). One adult male was shot by the Khirel'da channel on 21 May 1990.

Breeding has been confirmed for several sites around Lake Baikal: the mouth of the Verkhnaya Angara River in northern Baikal and the Maloye More Strait, between Olkhon Island and the mainland, west-central Baikal (Tolchin *et al.* 1977, Pyzhjanov *et al.* 1979). Pronin (1988) mentions observations by V.N. Prokop'ev of displaying birds and several pairs breeding in the Selenga delta, however, the details are now missing. According to Mel'nikov (2000a), Long-toed Stints breed in the delta in years following those with high

summer floods when some areas are covered with mosses (Bryophyta), thus creating suitable habitat for this species of narrow habitat tolerance, which prefers moss vegetation with dwarf willows or birch. Our only evidence of the species breeding in the delta is indirect: a juvenile female was collected on 10 August 1992 near the Adunovskaya channel, the bird was blind or semi-blind having both her eyes dull. It was obviously unable to fly but able to feed successfully, being quite fat. It is likely to have hatched in the delta close to the site where it was shot.

Post-breeding migration takes place between 18 August and 8 September (Mel'nikov 2000a). In 1991–1992, we recorded solitary birds between 5 and 30 August, mostly on a meadow near the Adunovskaya channel, but once near the Khirel'da channel in the lower delta.

Sharp-tailed Sandpiper *Calidris acuminata*
Scarce autumn migrant

Sharp-tailed Sandpipers have only been observed in the Lake Baikal area during autumn migration and only adult birds have been recorded. In the Selenga delta, they have been reported from 29 July to 26 August, most commonly as solitary birds in flocks of other sandpipers, but sometimes in conspecific flocks. Thus, a flock of eight birds was seen on 1 August 1990, three flocks of 20–30 birds each were observed from 29 July to 3 August 2001; two in the middle delta and one on a sandflat at southern edge of the delta.

Dunlin *Calidris alpina*
Scarce spring and autumn migrant

Spring migration takes place over a short period from 12–15 to 20–25 May with only a few days year to year variation. The briefness of the migration is probably the main reason why there are relatively few records (Mel'nikov, 2000a). One specimen was collected in the delta on 21 May 1940 (Izmailov & Borovitskaya 1973). We saw one bird on mud near the Khirel'da channel on 26 May 1994, a flock of 15 birds was observed on 3 June 1990 on Chayachi Island at the southern margin of the delta. An adult Dunlin was seen in the middle delta on 13 July 1991 (L. Sheina, pers. comm.).

Post-breeding migration starts in late July or early August. Dunlins usually are not numerous; however, Mel'nikov (2000a) occasionally recorded flocks of up to 300. The latest record near Posol'skoye is for 17 September (1988), while in other parts of Lake Baikal, e.g. at Maloye More Strait, some young Dunlins remain until 23 September (Pyzhjanov *et al.* 1979).

Curlew Sandpiper *Calidris ferruginea*
Common autumn migrant, rare in spring

Only one Curlew Sandpiper has ever been recorded in spring: on 19 May 1990 by the Khirel'da channel.

In autumn, both formerly (Shvetsov & Shvetsova 1967) and currently, it is a common migrant and in some years it is numerous. Small flocks start to appear from 6–8 July (Zhuravlyov *et al.* 1991), and the earliest record is of one bird on 4 July (2001). Two birds collected on 13 July 1989 were adult males. The first regular migration, of solitary birds or small flocks of up to ten, starts around 1–5 August. Peak passage is from 25 August to 10 September when most birds are juveniles. During this period, counts along transects near the Adunovskaya channel showed local abundance reaching 144 birds/km^2 in 1986 and 25 birds/km^2 in 1987 and Curlew Sandpipers comprised respectively 0.9% and 0.3% of all migrant waders. Birds feed in large areas of shallow water. The latest records are for 26 September (1982) in the delta and 3 October (1988) near Posol'skoye.

Broad-billed Sandpiper *Limicola falcinellus*
Rare spring and autumn migrant

There are about ten Broad-billed Sandpiper records for the delta, but it may be overlooked because of its secretive behaviour. In spring, it passes in late May: for example, two birds were seen on muddy shores of the Khirel'da channel on 21 May and one on 28 May 1990. There is only one record for June–July: a bird collected on 17 July 1972 (Zhuravlyov *et al.* 1991). During autumn migration, Broad-billed Sandpipers have been found from 30 July in only ones and twos, sometimes in flocks of other waders, such as stints or Wood Sandpipers. The latest record was a young female collected on 7 September 1996 near the Adunovskaya channel in the middle delta.

Ruff *Philomachus pugnax*
Common migrant and breeder with highly variable numbers

The Ruff was first recorded as breeding in the Selenga delta in the early 1970s; before then it was known only on passage (Tolchin 1983b). During migration, it can be found all over the delta, but the majority of birds stop over in open areas, especially in meadows on islands and along channel shores in the central delta. In summer, Ruffs form leks in the same habitats (which to some extent resemble tundra) and the females also nest there.

In the early 1970s, the average density of breeding Ruff was 1.7 individuals/km^2 (Tolchin *et al.* 1977). However, by the end of the 1970s, this had dropped to only 0.3 individuals/km^2 as a result of generally lower water tables. It is possible that higher water tables from 1983 onwards were the reason for a gradual growth in the Ruff population. For example, in favourable habitats near the Adunovskaya channel, densities reached 20 females/km^2 in 1990. In the first half of the 1990s, numbers remained steady, but then declined again. This time the reason was probably related to a growth in the breeding population of Common Gulls, which are responsible for destroying many wader nests. In the early 2000s, breeding Ruffs were even scarcer than in the late 1990s.

The earliest spring record is for 2 May (1978). Most birds arrive around 20 May. The largest lek, with over 100 males, was seen between the Galutay and Adunovskaya channels on 20 May 1979 (V. Podkovyrov, pers. comm.). Some males continue to display until mid-June.

Egg-laying, which starts in late May (Tolchin 1983b), lasts until mid-June and the latest clutch of fresh eggs was found on 21 June 1979. Usually, nests are placed in dry localities or on hillocks or tussocks among shallow pools. Mean egg-length (n = 11) is 45.2±0.6 mm (range 42.1–47.9), mean width is 31.1±0.3 mm (range 29.3–32.4). In the post-breeding period, numbers of Ruffs begin to increase around the end of July when the young birds fledge. The main passage takes place between mid-August and 10 September when flocks up to 15 birds are regularly reported. The latest records are for 20–25 September.

Table 1. Waders of the Selenga delta, Lake Baikal, that are officially listed as rare, threatened or near threatened.

Species	BirdLife International (2000)	IUCN Red List (Hilton-Taylor 2001)	Red Data Book for the Russian Federation (Pavlov 2001)	List of birds requiring special attention in the Russian Federation (Pavlov 2001)	Red Data Book for the Buryat Republic (Pronin 1988)
Black-winged Stilt (vagrant)			+		
Avocet (vagrant)			+		
Oriental Pratincole (vagrant)				+	
Kentish Plover(vagrant)				+	
Greater Sand Plover (vagrant (?) presence needs confirmation)				(+)	
Oriental Plover (vagrant)				+	
Black-tailed Godwit (breeds)				+	
Little Curlew (migrant)				+	+
Eastern Curlew (migrant)	+		+		
Marsh Sandpiper (breeds)				+	
Asiatic Dowitcher (breeds)	+	+	+		+
Long-toed Stint (migrant, breeds?)					+
Total	2	1	4	6 (7?)	3

THE CONSERVATION IMPORTANCE OF THE SELENGA DELTA

In the current list of 46 wader species recorded in the Selenga River delta, 11 or 12 are officially recognized as rare, threatened or near threatened, being listed in Red Data books and other lists of species of conservation concern (Table 1).

Asiatic Dowitcher (current delta breeding population 100–300 birds) is probably the species for which the Selenga delta is most important. This species is globally "near threatened" and has highly fluctuating numbers which can sometimes reach 23,000 individuals (Wetlands International 2002). However, it has very restricted habitat requirements and this is presumably the reason for its variable and patchy distribution across Central Asia. Moreover its habitats are highly unstable (Mel'nikov 1998). Undoubtedly, this species needs the same monitoring and conservation measures as other species of the Asian Red Data book.

According to our estimates, the Selenga delta supports large numbers of waders both on migration and during the breeding season. On the basis of the latest global population estimates (Wetlands International 2002), the numbers of some populations that use the delta far exceed the 1% threshold criterion for designating a site as of global importance. In particular, the populations of the following species that stop over in the delta clearly fit this criterion: Pacific Golden Plover (3,000–10,000 individuals), Temminck's Stint (500–3,000) and Curlew Sandpiper (300–3,000).

During the breeding season, the most important populations are Northern Lapwing (500–2,000 pairs), Marsh Sandpiper (1,000–3,000 pairs) and Asiatic Dowitcher (varies between 150 and 300 adults, but can increase to several thousand (up to 25% of the estimated world population).

Some other species (e.g. Wood Sandpiper, Grey-tailed Tattler, Ruddy Turnstone and Red-necked Stint) could be added to the list of those for which the Selenga delta is important based on some counts in some seasons. However, we do not have yet sufficient data on their total numbers across the delta, because such data are difficult to obtain for migrants without special field studies.

The data set out in this paper show that the Selenga delta is an important bird area of global significance and a key site on the East Asian-Australasian Flyway. As such, it certainly deserves to be officially recognized as a Site within the East Asian-Australasian Shorebird Site Network.

It should be noted that our assessment is based on the numbers occurring across the whole delta, not just the officially-recognized Ramsar site within the delta, where the number of waders is much smaller. It should also be remembered that the main breeding and staging concentrations of waders are very variable both within and between seasons. This is usually in response to changes in water levels and often means that substantial numbers are found outside the protected area. Moreover some of the most regular sites where Asiatic Dowitchers breed are also outside the protected area. Therefore it is very desirable that the existing Ramsar site be extended to include all important wader habitat in the delta.

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