

Ornithologically important wetlands of the Lake Baikal area, East Siberia

Lake Baikal lies between Irkutsk province and Buryatia in the south of the Asian part of the Russian Federation. The Baikal area is one of the most easily accessible regions in all of East Siberia. Both major cities of the region, Irkutsk (60 km west of the lake on the Angara) and Ulan-Udë (100 km east of the lake on the Selenga) can be reached by plane from Moscow or by train from Ulaanbaatar in Mongolia. While the flow of visiting tourists includes a growing number of naturalists and bird enthusiasts, information on the local nature and birdlife is still very scarce outside Russia, and hard to find even within Russia. In this article we provide some basic information on selected

wetland sites at Lake Baikal and its wider surroundings (see Figure 1).

Lake Baikal area wetlands

Lake Baikal is a 640 km long, up to 80 km wide and 1640 m deep tectonic lake, located 130 km north of the Russian–Mongolian border. The lake is situated at an elevation of 460 m a.s.l., surrounded by high mountains with peaks exceeding 2,500 m a.s.l. The lakeshores are mostly steep, often forested down to the shoreline. Wetland areas directly at the lake are therefore limited to the openings of its tributaries. The most extensive ones were formed by three large rivers

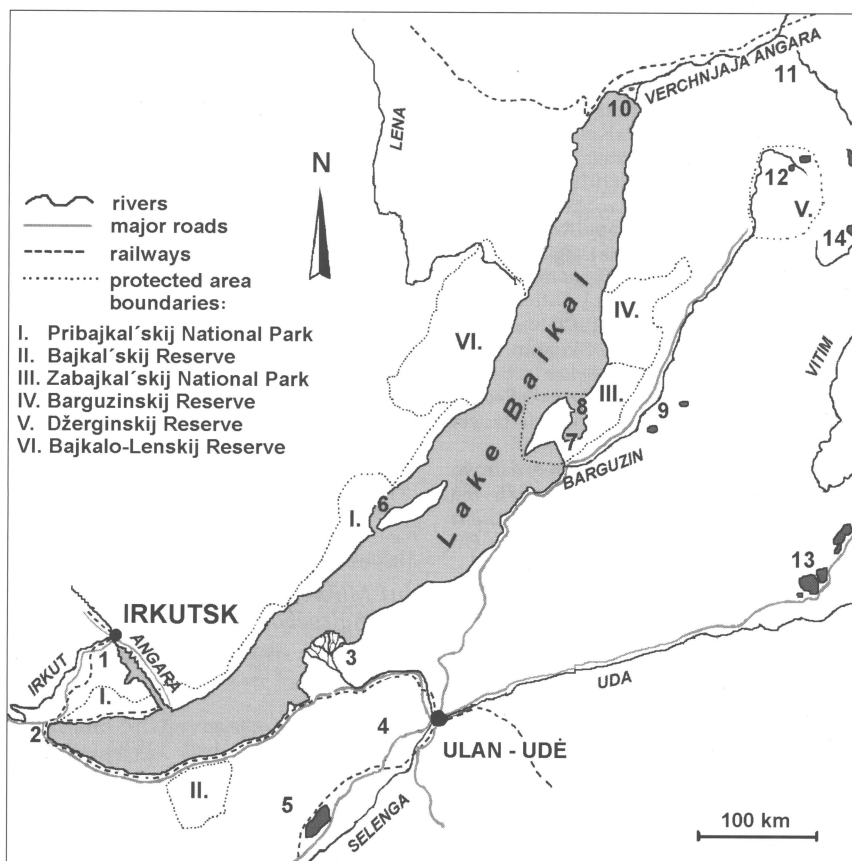


Figure 1: Wetlands of the Lake Baikal area described in the text. 1. Lower Irkut, 2. Kultuk, 3. Selenga delta, 4. Ivolginsk, 5. Gusinoe Lake, 6. Maloe More, 7. Svjatoj Nos isthmus, 8. Bol'soj ivyrkuj opening, 9. Barguzin inner delta, 10. Verchnjaja Angara delta, 11. Verchnjaja Angara inner delta, 12. Lake Amut plateau, 13. Eravnskies Lakes, 14. Bauntovskie Lakes

with muddy lower reaches – the Verchnjaja Angara (site # 10 described below), the Barguzin (# 7) and the Selenga (# 3). Before approaching Lake Baikal, the Verchnjaja Angara and Barguzin flow through broad valleys in which they form extensive 'inner deltas' (# 9, 11). These differ from other large wetlands mainly in being under higher human pressure – primarily for agricultural purposes. At many locations they are progressively drained and transformed to grazing land.

Over 300 lesser streams and brooks flow into Lake Baikal (e.g. # 6, 8). They are usually short, having clear water even at their lower reaches. Rather than forming deltas they have only small patches of wetlands at their openings, sometimes with a small lake separated from Lake Baikal. Sedge beds and willow thickets are typical habitats.

Larger taiga lakes are scarce in the region, an exception being the Bauntovskie lake system in the valley of the Cipa and its tributaries (# 14). However, the permafrost underlying lowland taiga holds large amounts of water year-round, forming shadowed pools in ground depressions. In the steppe belt at southern Lake Baikal, waterbirds can be found mainly at shallow, often saline lakes locally fringed by sedge and reed beds (e.g. # 4, 5). Frequently within tens of metres from these wetlands the habitat turns into dry steppe. Isolated patches of steppe with lakes more or less fringed by a vegetation belt can be found even north of the main steppe belt, particularly at Eravninskie Lakes (# 13) and in the Barguzin Valley (# 9).

In the mountain ranges surrounding Lake Baikal (e.g. Barguzin Range, Chamar-Daban Range, Lake Amut plateau) oligotrophic lakes with very little vegetation are locally common. As an exception, there is a eutrophic lake on the Lake Amut plateau (# 12) with an avifauna resembling that of the lowland river deltas.¹

Bird seasons in Baikal area wetlands

The Lake Baikal region has an extremely continental climate. Winter temperatures drop below -30°C and all lakes and rivers are covered with ice. Only a few duck species (including thousands of Common Goldeneyes *Bucephala clangula*²) remain wintering on an ice-free patch of the Angara at Irkutsk. The rather thin snow cover usually starts to melt in late March. Snowmelt and rainfall gradually produce a surplus of water that cannot drain off because of permafrost below the ground, turning all lowland areas into vast wetlands. Migrant waterbirds start

to arrive in the first half of April, when ice-free areas appear at southern Lake Baikal and at openings of rapid streams flowing into the lake. Waterfowl start laying eggs mostly in the second half of May in the southern wetlands. The breeding season at northern Baikal is delayed by 3–4 weeks. The rapid approach of a hot summer soon dries up most of the ground, considerably limiting the extent of wet areas to proper wetlands with their characteristic vegetation and fauna. Summer temperatures exceed 30°C at northern Lake Baikal and 50°C in the steppes at southern Baikal. Autumn migration starts with waders (*Scolopacidae*) arriving in the end of July and beginning of August. Terns disappear in late August, ducks in September and October, gulls in October. Geese are the last migrants to pass through the region – in October.

Wetland birdlife

The general birdlife of the Lake Baikal area is particularly attractive due to the mixing of different faunas. A number of European species reach the eastern limit of their distribution in this region, while a number of East Asian species reach their western limit here. Similarly, northern taiga species overlap here with southern steppe species.

The species composition of the avifauna varies considerably among the sites listed below, due to geographical and habitat differences. Species common in most wetlands throughout the Lake Baikal area include Mallard *Anas platyrhynchos*, Tufted Duck *Aythya fuligula*, Black Kite *Milvus migrans*, Northern Lapwing *Vanellus vanellus*, Common Snipe *Gallinago gallinago*, Eurasian Curlew *Numenius arquata*, Marsh Sandpiper *Tringa stagnatilis*, Wood Sandpiper *Tringa glareola*, Common Sandpiper *Actitis hypoleucos*, Yellow-legged Gull *Larus cachinnans*, Common Tern *Sterna hirundo*, White Wagtail *Motacilla alba*, Yellow-breasted Bunting *Emberiza aureola* and Carrion Crow *Corvus corone*. In the following site descriptions we do not mention these species.

Due to space restrictions we list only a selection of species occurring in the wetlands, based on available published records as well as personal observations of the authors and colleagues from 1991–2001 (Svjatoj Nos isthmus, Barguzin inner delta, Bol'soj ivyrkuj opening, Lake Amut plateau, Ivolginsk, Gusinoe Lake region). We note here that for some of the wetlands (e.g., Bauntovskie Lakes, Verchnjaja Angara inner delta, Eravninskie Lakes, even Kultuk) very few observations have been published up to now (see Table 1). In addition, the avifauna of Lake Baikal wetlands is quite

dynamic, with changes ranging from year-to-year variations to decade-long processes, such as the disappearance of Great Cormorant *Phalacrocorax carbo* in the 1940s–1960s or the ongoing expansion of Whiskered Tern *Chlidonias hybridus* since the 1970s. For most sites the species mentioned below are not to be considered as a snapshot of the local birdlife, as these data are based on a collection of reports from different periods, mostly from the 1970s onwards.

Survey of main wetlands

In the text below we describe 14 wetland sites, including all major sites and a selection of smaller sites characteristic of other wetland types.

1. Lower Irkut^{3,4}

Small patches of wetlands in a densely populated area at the lower Irkut and its opening into the Angara, located at the western outskirts of Irkutsk. This site is suitable for day-trips and can be easily reached by trolley bus or bus from the city centre (about 2 km).

Interesting published records of breeding species include Black-necked Grebe *Podiceps nigricollis*, Spot-billed Duck *Anas poecilorhyncha*, Asian Dowitcher *Limnodromus semipalmatus*, Black-tailed Godwit *Limosa limosa* and Black Tern *Chlidonias niger*. Little Curlew *Numenius minutus* has been reported here on autumn migration several times.

2. Kultuk⁵

This is the first place where birds were regularly observed at Lake Baikal, thanks to Benedykt Dybowski, who was exiled to Kultuk village in the 1860s–1870s.⁶ Today the remaining wetland strip, about 7 km long, fringes the southern shore of Baikal between Sljudjanka and Kultuk villages.

Table 1. State of knowledge of local avifaunas. • data deficient; •• moderate (occasional data from different periods); ••• fairly good knowledge (long-term research). Sites are numbered according to the text and Fig. 1.

Nr.	Site	Knowledge
1.	Lower Irkut	••
2.	Kultuk	•
3.	Selenga delta	•••
4.	Ivolginsk	••
5.	Gusinoe Lake	•
6.	Maloe More	••
7.	Svjatoj Nos isthmus	•••
8.	Bol'soj ivyrkuj opening	••
9.	Barguzin inner delta	••
10.	Verchnjaja Angara delta	•
11.	Verchnjaja Angara inner delta	•
12.	Lake Amut plateau	•
13.	Eravnińskie Lakes	•
14.	Bauntovskie Lakes	•

It is accessible on foot from both villages, which are situated on the main Irkutsk – Ulan-Udë railway and road (M55).

The Kultuk wetlands primarily play an important role as a stopover site for migrating birds. The 19th century observations include Swan Goose *Anser cygnoides*, Lesser White-fronted Goose *Anser erythropus*, Harlequin Duck *Histrionicus histrionicus* and Siberian Crane *Grus leucogeranus*.

3. Selenga delta^{7–14}

Extensive wetlands covering an area of more than 1,100 km² at the opening of the Selenga into Lake Baikal. The wetlands are characterised by a mosaic of wet meadows locally with isolated shrubs or trees, sedge and reed beds, willow thickets, pools and river arms. The configuration of these wetlands is strongly influenced by annual floods and the meandering of numerous river branches.

The Selenga delta is best reached from Bol'ðaja Reka or Selenginsk, villages on the Irkutsk – Ulan-Udë railway and road M55 (320 and 360 km, respectively), from Irkutsk. From either village proceed by bus to Ranurovo, or directly from Selenginsk by boat.

Birds of the Selenga delta have been studied by Irkutsk ornithologists since the mid-20th century, and the local avifauna is probably the best known in the whole region. The Selenga delta is undoubtedly one of the key sites for waterbirds at Lake Baikal, with breeding populations of Grey Heron *Ardea cinerea*, dabbling ducks *Anas spp.*, Common Coot *Fulica atra*, Ruff *Philomachus pugnax*, Asian Dowitcher *Limnodromus semipalmatus*, Black-tailed Godwit *Limosa limosa*, Little Gull *Larus minutus*, Black-headed Gull *Larus ridibundus*, Mew Gull *Larus canus*, Caspian Tern *Sterna caspia*, White-winged Tern *Chlidonias leucopterus*, Whiskered Tern *Chlidonias hybridus* and summer records of Pied Harrier *Circus melanoleucos*. The delta is an important stopover site for migrating Greylag Goose *Anser anser*, Bean Goose *Anser fabalis* and for many waders including Pacific Golden Plover *Pluvialis fulva*, Red-necked Stint *Calidris ruficollis*, Curlew Sandpiper *Calidris ferruginea* and Red-necked Phalarope *Phalaropus lobatus*.

4. Ivolginsk^{15,16}

The rolling steppe in the region of the Ivolginsk dacan (Buddhist monastery) is waterlogged in the spring and early summer, forming habitats suitable for many migrating and some breeding wetland birds. Similar habitats can be found throughout the steppe belt south of Lake Baikal.

Some deeper depressions (e.g., near Orongoj village³⁸) support permanent, usually saline lakes, at places surrounded by sedge and reed beds. The Ivolginsk dacan is best reached from Ulan-Udë by car or by bus, 40 km in the direction of Gusinoozersk.

Species recorded in the Ivolginsk region during the breeding season include Grey Heron *Ardea cinerea*, Ruddy Shelduck *Tadorna ferruginea*, Garganey *Anas querquedula*, Demoiselle Crane *Grus virgo* and Citrine Wagtail *Motacilla citreola*. Dusky Warbler *Phylloscopus fuscatus*, Pine Bunting *Emberiza leucocephalos* and Long-tailed Rosefinch *Uragus sibiricus* can be found in adjacent willow thickets. Whooper Swan *Cygnus cygnus* occurs on migration.

5. Gusinoe Lake region¹⁷

This is a large lake (40 km²) in the steppe south of Gusinoozersk. The northern side of the lake is best approached from Gusinoozersk (115 km from Ulan-Udë by bus), the southern side from Gusinoe Ozero (140 km from Ulan-Udë by train).

Next to widespread Eurasian wetland species such as Grey Heron *Ardea cinerea*, Black Stork *Ciconia nigra*, White-tailed Eagle *Haliaeetus albicilla* and Eurasian Marsh Harrier *Circus aeruginosus*, many southern and eastern, predominantly steppe species, have been recorded in the Gusinoe Lake area. These include Ruddy Shelduck *Tadorna ferruginea*, Pied Harrier *Circus melanoleucos*, Amur Falcon *Falco amurensis* and Demoiselle Crane *Grus virgo*.

6. Maloe More^{18,19}

Maloe More (the 'Little Sea') is a 76 km long and 17 km wide strait between Ol'chon Island and the northwestern shore of Lake Baikal. Waterbirds are found mainly in small wetland patches at openings of small rivers, such as Kuulga or Sarma. This site is included in Pribajkal'skij National Park. Maloe More can be reached from Irkutsk by boat (180 km) or by bus (350 km) to Chuir on Ol'chon Island. Ernorud village on the same bus route (300 km) is a suitable starting point for accessing the mainland river openings. It is possible to hike along the full length of the shores of the strait.

Breeding of Ruddy Shelduck *Tadorna ferruginea*, Red-breasted Merganser *Mergus serrator*, White-tailed Eagle *Haliaeetus albicilla*, Ruff *Philomachus pugnax* and Swinhoe's Snipe *Gallinago megala* has been reported from here. Recorded migrant waders include Sharp-tailed Sandpiper *Calidris acuminata*, Pintail Snipe *Gallinago stenura*, Little Curlew *Numenius minutus*, Whimbrel *Numenius phaeopus*, Eastern Curlew *Numenius*

madagascariensis, Terek Sandpiper *Xenus cinereus* and Grey-tailed Tattler *Heteroscelus brevipes*.

7. Svjatoj Nos isthmus^{12,20-27}

A wetland area (350 km²) located on the Svjatoj Nos peninsula isthmus at the eastern shore of Lake Baikal, north of the muddy Barguzin opening. Lake Arangatuj, connected to Lake Baikal by a narrow outlet, lies at the centre of the wetlands. Many waterbirds breed on the floating mats of vegetation inside the wetlands. The margins of the wetlands are interspersed with pine forests growing on sand dunes where the ground rises above the water level. Of the seven rocky islets in ivyrkujskij Bay north of the Svjatoj Nos isthmus, only Goljy harbours a large breeding colony of Yellow-legged Gulls *Larus cachinnans*.

Svjatoj Nos wetlands are situated in Zabajkal'skij National Park, with headquarters in Ust'-Barguzin. This village can be reached by bus from Ulan-Udë (280 km). The wetlands starting 5 km north of Ust'-Barguzin are accessed by a dirt road along Barguzinskij Bay.

Although smaller in extent, the Svjatoj Nos wetlands rival the Selenga delta in the number of occurring species. In the 1990s breeding was recorded, among others, for Red-throated Loon *Gavia stellata*, Black-throated Loon *Gavia arctica*, Great Crested Grebe *Podiceps cristatus*, Red-necked Grebe *Podiceps grisegena*, Horned Grebe *Podiceps auritus*, Grey Heron *Ardea cinerea*, Whooper Swan *Cygnus cygnus*, Ruddy Shelduck *Tadorna ferruginea*, Common Goldeneye *Bucephala clangula*, Smew *Mergus albellus*, White-tailed Eagle *Haliaeetus albicilla*, Baillon's Crake *Porzana pusilla*, Common Crane *Grus grus*, Long-toed Stint *Calidris subminuta*, Ruff *Philomachus pugnax*, Asian Dowitcher *Limnodromus semipalmatus*, the same gull species as in the Selenga delta, Whiskered Tern *Chlidonias hybridus*, White-winged Tern *Chlidonias leucopterus* and Rusty-rumped Warbler *Locustella certhiola*. Other species recorded regularly in the breeding season include Red-breasted Merganser *Mergus serrator*, Eurasian Marsh Harrier *Circus aeruginosus*, Osprey *Pandion haliaetus* and Lanceolated Warbler *Locustella lanceolata*. Several sightings of Pallas's Fish Eagle *Haliaeetus leucorhynchus* in the 1990s are of particular interest. The wetlands as well as Lake Baikal shores attract an impressive variety of migrating waders, ranging from a number of *Calidris* and *Tringa* sandpipers to Terek Sandpiper *Xenus cinereus*, Grey-tailed Tattler *Heteroscelus brevipes*, Ruddy Turnstone *Arenaria interpres*, Swinhoe's Snipe *Gallinago megala*, Little Curlew *Numenius minutus* and Eastern Curlew *Numenius madagascariensis*.

8. Bol'shoj ivyrkuj opening¹⁷

A wetland patch with a central lake and hot springs, extending from the opening of Bol'shoj ivyrkuj into ivyrkujskij Bay 5 km to the south along the sandy shore. This is an example of small wetlands formed at the openings of many small rivers and brooks flowing into Lake Baikal. They generally support only a few breeding species, but many others can be presumably encountered on migration. Reliable data are available for very few of these wetland patches. This site, situated in Zabajkal'skij National Park (see Svjatoj Nos isthmus), is accessed by car from Ust'-Barguzin to Kurbulik village (50 km on a dirt road), from there by hired boat north-east across ivyrkujskij Bay to the river opening.

Breeding birds at this site include White-tailed Eagle *Haliaeetus albicilla* and Whooper Swan *Cygnus cygnus*.

9. Barguzin inner delta²⁸⁻³¹

Wetlands spread over 2,000 km² of the Barguzin Valley, along the middle reaches of the Barguzin. A variety of wetland habitats can be found here, ranging from eutrophic lakes without fringe vegetation and saline lakes in dry short-grass steppe in the south-east of the valley to extensive reed beds at its centre. The area can be accessed by a network of bus connections from the town of Barguzin at the southern end of the delta. Barguzin can be reached by bus from Ust'-Barguzin (60 km) or Ulan-Udë (340 km), as well as by plane from Ulan-Udë.

The avifauna of the inner delta is influenced by Barguzin Valley's role as a northern refuge for a number of southern steppe species. Breeding of Great Bittern *Botaurus stellaris*, Grey Heron *Ardea cinerea*, Swan Goose *Anser cygnoides*, Ruddy Shelduck *Tadorna ferruginea* (dominant at salt lakes), Common Merganser *Mergus merganser*, Demoiselle Crane *Grus virgo*, Swinhoe's Snipe *Gallinago megala*, Black-headed Gull *Larus ridibundus*, Thick-billed Warbler *Acrocephalus aedon* and Azure Tit *Parus cyanus* has been recorded here. Summer records also include Black Stork *Ciconia nigra*, White-tailed Eagle *Haliaeetus albicilla*, Pied Harrier *Circus melanoleucos* and Short-eared Owl *Asio flammeus*. Corn Crake *Crex crex* and Hooded Crane *Grus monacha* were observed in the breeding season as well.

10. Verchnjaja Angara delta^{12,32,33}

A wetland area (560 km²) at the opening of the Verchnjaja Angara into the northern end of Lake Baikal. Its habitats resemble the Selenga delta. The town of Nineangarsk is the main entry point, reached by plane (from Irkutsk or Ulan-Udë) or by boat (700 km from Irkutsk). The bus route from Nineangarsk to Kiera skirts the western side of

the delta. The rest of the delta is accessible only by rented boat.

Reported breeders include Great Crested Grebe *Podiceps cristatus*, Red-necked Grebe *Podiceps grisegena*, Horned Grebe *Podiceps auritus*, Whooper Swan *Cygnus cygnus*, Falcated Teal *Anas falcata*, Long-toed Stint *Calidris subminuta*, the same gull species as in the Selenga delta and White-winged Tern *Chlidonias leucopterus*. Glaucous Gull *Larus hyperboreus* and Pied Avocet *Recurvirostra avosetta* have been reported several times from here.

11. Verchnjaja Angara inner delta^{33,34}

Wetlands covering 2,500 km² in the valley of the Verchnjaja Angara along its middle reaches. Novyj Uojan village, the main settlement in the area, can be reached by train or bus from Nineangarsk (see Verchnjaja Angara delta).

We found only a few reports in the available literature, including breeding Common Crane *Grus grus* and White-tailed Eagle *Haliaeetus albicilla*, Hooded Crane *Grus monacha* collected on migration and Little Curlew *Numenius minutus* reportedly common on autumn migration.

12. Lake Amut plateau¹

A plateau in the mountains at the source of the Barguzin with eight oligotrophic and one eutrophic lake. The latter lake (near Balan Tumur) is fringed with a belt of sedge and reed beds, while the oligotrophic lakes generally lack any wetland vegetation, being surrounded by taiga or alpine tundra. Similar mountain lakes are scattered in the wider vicinity of Lake Baikal. They are generally unexplored ornithologically, but presumably support an avifauna similar to this site.

The plateau is situated in a very remote area in Derginskij Reserve. Reached by bus 200 km from Ust'-Barguzin (480 km from Ulan-Udë) to Kurumkan village in the Barguzin Valley, then by

Captions for plate on opposite page

- 1 Wood Sandpiper *Tringa glareola*. Svjatoj Nos isthmus, August 1991, Petr Styblo
- 2 Little Stint *Calidris minuta*. Svjatoj Nos isthmus, August 1991, Petr Styblo
- 3-4 Asian Dowitcher *Limnodromus semipalmatus* Selenga Delta, June 1992, Brian Little
- 5 Asian Dowitcher *Limnodromus semipalmatus* Chick. Svjatoj Nos isthmus, July 1993, Miroslav Šálek
- 6 Terek Sandpiper *Xenus cinereus*. Svjatoj Nos isthmus, September 1994, Petr Styblo
- 7 Marsh Sandpiper *Tringa stagnatilis*. Svjatoj Nos isthmus, August 1994, Petr Styblo



car 80 km to Umchej Island. If the Barguzin can be forded, one can proceed by a four-wheel drive vehicle on a dirt road a further 70 km to 'Kordon 81' and from there on foot 30 km up the stream of the Barguzin.

Black-throated Loon *Gavia arctica*, Whooper Swan *Cygnus cygnus*, Common Teal *Anas crecca*, Common Goldeneye *Bucephala clangula* and Mew Gull *Larus canus* nest on the lakes. Common Merganser *Mergus merganser*, Harlequin Duck *Histrionicus histrionicus* and White-throated Dipper *Cinclus cinclus* occur along the Barguzin river. Common Greenshank *Tringa nebularia* nests in the surrounding alpine tundra and Citrine Wagtail *Motacilla citreola* is ubiquitous.

13. Eravninskíe Lakes³⁵⁻³⁷

Lake basin in the steppe within a broad valley (100 km by 35 km). Sosnovo-Ozerskoe on the shore of Lake Sosnovoe can be reached from Ulan-Udë by plane or by bus (350 km along road P 436).

Breeding of Whooper Swan *Cygnus cygnus*, White-tailed Eagle *Haliaeetus albicilla*, Asian Dowitcher *Limnodromus semipalmatus* and summer observations of Velvet Scoter *Melanitta fusca* and Short-eared Owl *Asio flammeus* are some of the few available reports.

14. Bauntovskíe Lakes³⁸

Lakes and lake basins scattered along 200 km of the upper reaches of the Cipa and Cipikan rivers. This remote area can be reached by plane from Ulan-Udë to Kurort-Baunt. Very few data are available from this lake system although the summer occurrence of Whooper Swan *Cygnus cygnus* has been reported from here.

Concluding remarks

Only two of the listed sites, the Selenga delta and the Svjatoj Nos wetlands, are ornithologically reasonably known (see Table 1). Data from most other sites in the region are either scarce, from occasional short-term visits, or altogether lacking. Lake Baikal wetlands with their rich bird life promise excellent birding, which can provide substantial new data for the regional avifauna. The authors would be grateful if anyone who has visited the region sends their ornithological records to one of the addresses below.

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References

1. Unpublished observations by J. Mlíkovský and P. Lumpe (1994).
2. Skrjabin N. G. & Tupicyn, I. I. (1992) Raspredelenie okolovodnyh ptic vdol' pobere'ja Bajkala [Distribution of wetland birds along Baikal shores]. In Koova, O. M. (Ed.) *Ėkologičeskie issledovanija Bajkala i bajkal'skogo regiona* 2: 29–34. Irkutsk: Irkutskij Universitet. (In Russian.)
3. Bezborodov, Ju. V. (1979) O redkich pticah Irkutskoj oblasti [On rare birds of the Irkutsk Province]. *Ornitologija* 14: 186–187. (In Russian.)
4. Bogorodskij, Ju. V. (1989) *Pticy junogo Predbajkal'ja* [Birds of southern Predbajkal'e]. Irkutsk. (In Russian.)
5. Taczanowski, W. K. (1893) Faune ornithologique de la Sibérie Orientale. *Mémoires de l'Académie Impériale des Sciences de St.-Petersbourg* (7) 39: 1–684, 685–1278.
6. Mlíkovský, J. (2002) Ornithology at Lake Baikal: a brief history of research. *OBC Bulletin* 35: 53–55.
7. Bakutin, M. G. (1957) Vodoplavajušie pticy del'ty reki Selengi (Guseobraznye – Anseriformes) [Waterfowl of the Selenga delta (Anseriformes)]. *Ulenye Zapiski Burjat-Mongol'skogo Pedagogičeskogo Instituta* 12: 19–61. (In Russian.)
8. Fefelov I. V., Podkovyrov V. A. & Šinkarenko A. V. (1995) Dinamika populacij utok v del'te reki Selengi v poslednee dvadcatilietie [Dynamics of duck populations in the Selenga delta in the past twenty years]. In Koova, O. M. (Ed.) *Problemy Ėkologii* 1: 215–220. Novosibirsk: Nauka. (In Russian.)
9. Fefelov, I. V., Tupicyn, I. I., Podkovyrov, V. A. & uravlev, V. E. (2001) *Pticy del'ty Selengi* [Birds of the Selenga delta]. Irkutsk: Vostočno-Sibirskoe kninoe izdatel'stvo. (In Russian.)
10. Mel'nikova, N. I. & Klimenko, N. M. (1979) Nekotorye erty Ėkologii vodoplavajuščih del'ty reki Selengi [Some features of the ecology of waterfowl of the Selenga delta]. In Skrjabin, N. G. (Ed.) *Ėkologija ptic bassejna oz. Bajkal*: 4–30. Irkutsk. (In Russian.)
11. Šinkarenko, A. V. (1979) Vesennij prolet plastinatókljvych v del'te r. Selengi [Spring migration of Anseriformes in the Selenga delta].

- In Skrijabin, N. G. (Ed.) *Ėkologija ptic bassejna oz. Bajkal*: 49–64. Irkutsk. (In Russian.)
12. Skrijabin, N. G. (1975) *Vodoplavajusie pticy Bajkala* [Waterfowl of Baikal]. Irkutsk: Vostono-Sibirskoe kninoe izdatel'stvo.
 13. Švecov, Ju. G. & Švecova, I. N. (1967) *Pticy del'ty Selengi* [Birds of the Selenga delta]. *Izvestija Irkutskogo Sel'sko-Chozjajstvennogo Instituta* 25: 224–231. (In Russian.)
 14. Uravlev, V. E., Podkovyrov, V. A., Skrijabin, N. G., Tupicyn, I. I. & Sinkarenko, A. N. (1991) *Kratkij oerk fauny kulikov del'ty Selengi* [Brief survey of waders of the Selenga delta]. In Cyrenov, B. (Ed.) *Ėkologija i fauna ptic Vostonoj Sibiri*: 93–100. Ulan-Udë. (In Russian.)
 15. Claerebout, S. (1993) A low-budget birdtrip to South-East Siberia: Buryatia. Unpublished report.
 16. Unpublished observations by D. Heyrovský (1991).
 17. Unpublished observations by P. Stýblo and J. Mlíkovský (2001).
 18. Litvinov, N. I. & Gagina, T. N. (1977) *Pticy ostrova Ol'chon* [Birds of Ol'chon Island]. In Skrijabin, N. G. (Ed.) *Ėkologija ptic Vostonoj Sibiri*: 176–188. Irkutsk. (In Russian.)
 19. Skrijabin, N. G. & Py'janov, S. V. (1987) *Naselenie ptic* [Avifauna]. In Skrijabin, N. G. (Ed.) *Biocenozy ostrovov proliva Maloe More na Bajkale*: 133–166. Irkutsk. (In Russian.)
 20. Egorov, V. G. (1980) *O sostojanii vodnyh i okolovodnyh ptic ivyrkuskogo zaliva (Bajkal)* [On the state of water and wetland birds of ivyrkuskij Bay]. In Šargaev, M. A. (Ed.) *Ėkologija i ochrana ptic i mlekopitajudich Zabajkal'ja*: 31–37. Ulan-Udë. (In Russian.)
 21. Gusev, O. K. (1960) *O gnezdovanii ptic na ostrovach ivyrkuskogo zaliva Bajkala i oz. Rangotuja* [On the breeding of birds on the islands of ivyrkuskij Bay of Baikal and at Lake Rangotuj]. *Trudy Vostono-Sibirskogo Filiala Sibirskogo Otdelenija AN SSSR* 23: 69–88. (In Russian.)
 22. Heyrovský, D., Mlíkovský, J., Stýblo, P. & Koutný, T. (1992) *Birds of the Svjatoj Nos wetlands, Lake Baikal*. In Mlíkovský, J. & Stýblo, P. (Eds.) *Ecology of the Svjatoj Nos wetlands, Lake Baikal*, 33–75. Praha: Ninox Press.
 23. Jumov, B. O., Kalinina, L. N., Badmaev, B. B., Ešeev, B. E. & Nichileeva, T. P. (1989) *Nazemnye pozvononnye Zabajkal'skogo nacional'nogo parka* [Terrestrial vertebrates of Zabajkal'skij National Park]. Ulan-Udë. (In Russian.)
 24. Mlíkovský, J. & Stýblo, P. (Eds.) (1992) *Ecology of the Svjatoj Nos wetlands, Lake Baikal*. Praha: Ninox Press.
 25. Molonikov, V. N. (1974) *Poluostrov Svjatoj Nos i ivyrkuskoe semiostr'oe (sostojanie ekosistem i voprosy ochrany ichivotnyh komponentov)* [The Svjatoj Nos peninsula and ivyrkuskoe archipelago (state of ecosystems and questions of the conservation of their animal components)]. In Votincev, G. N. (Ed.) *Priroda Bajkala*: 254–267. Leningrad. (In Russian.)
 26. Skrijabin, N. G. & Filonov, K. P. (1962) *Materialy k faune ptic severo-vostonogo pobere'ja Bajkala* [Materials on the avifauna of the north-eastern shores of Baikal]. *Trudy Barguzinskogo Gosudarstvennogo Zapovednika* 4: 119–189. (In Russian.)
 27. Unpublished observations by P. Stýblo (1993, 1994, 1995, 1997, 1999, 2001), J. Mlíkovský (1993, 1994, 2001) and M. Šálek (1993).
 28. Gagina, T. N. (1960) *Pticy bassejna reki Barguzina* [Birds of the Barguzin basin]. *Trudy Barguzinskogo Gosudarstvennogo Zapovednika* 2: 115–126. (In Russian.)
 29. Ljamkin, V. F. (1977) *Zoogeografija mlekopitajuschih i ptic Barguzinskoj kotloviny* [Zoogeography of mammals and birds of the Barguzin Valley]. In Belov, A. V. (Ed.) *Regional'nye biogeografieskie issledovanija v Sibiri*: 111–177. Irkutsk. (In Russian.)
 30. Mlíkovský, J. & Stýblo, P. (1995) Comments on the birds of southern Barguzinskaja valley, East Siberia. *Siberian Naturalist* 1: 31–39.
 31. Skrijabin, N. G. (1960) *Ornitologieskie nachodki na severo-vostonom pobere'e Bajkala i v doline r. Barguzina* [Ornithological records at north-eastern Baikal shores and in the Barguzin Valley]. *Trudy Barguzinskogo Gosudarstvennogo Zapovednika* 2: 109–114. (In Russian.)
 32. Gagina, T. N. (1954) *K faune ptic Severnogo Bajkala* [On the avifauna of northern Baikal]. *Izvestija Vostono-Sibirskogo Otdela Geografieskogo Obvestva SSSR* 64: 33–40. (In Russian.)
 33. Tolin, V. A., Sadkov, V. S. & Popov, V. D. (1979) *K faune ptic megornych kotlovín severo-vostonogo Zabajkal'ja* [On the avifauna of intermontane valleys of north-eastern Zabajkal'e]. In Skrijabin, N. G. (Ed.) *Ėkologija ptic bassejna oz. Bajkal*: 130–143. Irkutsk. (In Russian.)
 34. Tolin, V. A. & Py'janov, S. V. (1979) *Fauna ptic Verchneangarskoj kotloviny i ee zoogeografieskij analiz* [Avifauna of Verchneangarskaja basin and its zoogeographical analysis]. In *Voprosy biogeografii Sibiri*: 3–33. Irkutsk. (In Russian.)
 35. Bakutin, M. G. (1940). *Materialy po ornitofaune Eravninskich ozer* [Data on the avifauna of Eravninskies Lakes]. *Trudy Burjat-Mongol'skogo Pedagogieskogo Instituta* 1: 39–51. (In Russian.)
 36. Izmajlov, I. V. & Borovickaja, G. K. (1973) *Pticy Juzgo-Zapadnogo Zabajkal'ja* [Birds of south-western Zabajkal'e]. Vladimir: Izdatel'stvo Vladimirskego pedagogieskogo instituta. (In Russian.)
 37. Izmajlov, I. V. & Starkov, I. A. (1960) *Nabljudenija za proletoem ptic v ozernoj doline Eravny (Burjatskaja ASSR)* [Observations of avian migration in the lake valley of the Eravna (Buryat ASSR)]. *Ornitologija* 3: 405–409. (In Russian.)
 38. Popov, V. V. (1987) *Novye svedenija po ornitofaune Bauntovskoj kotloviny* [New data on the avifauna of Bauntovskaja Valley]. *Ornitologija* 22: 191–193. (In Russian.)

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