The importance of the Kanchalan River, Chukotka, Russia, for the Lesser White-fronted Goose *Anser erythropus*

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Abstract

An expedition was made to two different parts of the Anadyr region, southern Chukotka in summer 2006, to make an inventory of the bird fauna of the region. The Lesser White-fronted Goose *Anser erythropus* was found for the first time in both areas. Significant numbers (~ 1% of the eastern flyway population of the species) were counted in the middle reaches of the Kanchalan River in mid-June, with smaller numbers seen on moult migration in the coastal region of Russkaya Koshka during early July. Total numbers in the Kanchalan floodplain were estimated at 150–200 birds, of which 40–50 were paired adults and the rest non-breeders. These numbers indicate that the area is of international importance for the species. Although breeding was not recorded, the birds' location and habitat structure make the breeding of the species in the area likely.

Key words: Anadyr region, Chukotka, Kanchalan River, Lesser White-fronted Goose, Russkaya Koshka.

The Lesser White-fronted Goose *Anser erythropus* is a globally threatened species, classed as vulnerable by the International Union for the Conservation of Nature (IUCN 2008). The most recent mid-winter estimates suggest that 8,000–13,000 individuals occur in the western population and 20,000 in the eastern population (Jones *et al.* 2008; Delany *et al.* 2008; Delany & Scott 2006). The breeding range of the eastern population is thought to extend from the Taymyr Peninsula eastwards into the Chukotka region, but seems to be very fragmented (Jones *et al.* 2008; Morozov & Syroechkovskiy 2002). In recent years, breeding birds were located in several parts of Yakutia, with the highest numbers in the Abyi lowlands. Small numbers are known to

breed in the Anabar River basin and in the lower valleys of the Olenka River and the Yana River (Artyukhov & Syroechkovski 1999; Morozov & Syroechkovskiy 2002). The knowledge of the easternmost part of the breeding range in the Chukotka region is very patchy and there are few observations of the geese at their nest sites (Birdlife International 2001; Morozov & Syroechkovskiy 2002; Krechmar & Kondratyev 2006).

An expedition was undertaken to make a general inventory of the bird fauna in two different parts of the Anadyr region of Chukotka, east Russia, in summer 2006, in an area not previously known to hold Lesser White-fronted Geese. This paper presents the counts and other observations made of Lesser White-fronted Geese during the survey, and considers the importance of the area for the species. The results are discussed in relation to other recently published data of Lesser White-fronted Geese reported in other parts of Chukotka.

Methods

The survey in 2006 focussed on two areas to the north and east of the city of Anadyr (Fig. 1). The first of these, the Kanchalan study area (~ 65°10'N, 176°46'E), was a river basin ~ 60 km northwest of Anadyr. This part of the expedition covered nearly the same area as an earlier expedition to the region in 1975 (described by Kistchinski *et al.* 1983). Observations were made in the Kanchalan study area from 7 May–2 July 2006, from three camps along the river basin. Camp I, in the middle reaches of the river basin (50 km north-northeast of Kanchalan village; 65°33'N, 177°14'E), was visited from 9–18 June; Camp II, in the lower part of the river basin (23 km northeast of Kanchalan village; 65°15'N, 177°11'E), was visited for a shorter period, from 22–26 June; and Camp III, also in the lower part of the river basin (5 km south of Kanchalan village; 65°07'N, 176°46'E), was visited from 29 June–2 July (Fig. 1). The Kanchalan River floodplain consisted of a mosaic of creeks, gravel/sand banks and islands with many pools and lakes, particularly around Camp I. The vegetation was mostly patches of shrubs and trees (including *Salix* sp.*, Alnus fruticosa, Betula exilis* and *Populus suaveolens*) up to 3 m high, and open mires covered by sedges (*Carex* sp.) and mosses. The western border of the floodplain was a 30–40 m high cliff. The floodplain was surrounded by *Eriophorum* tussock tundra with several lakes and open mires with sedge-moss vegetation.

The second study area, the coastal lagoon of Russkaya Koshka ~ 60 km east-southeast of Anadyr, was visited from 7–29 July, both to make a survey of the highly endangered Spoon-billed Sandpiper *Eurynorhynchus pygmeus* and to count breeding, migrating and moulting waterbirds at the site.

Both study areas were explored on foot, using a combination of transect counts and counts made at particular sites (for instance lakes, islands and lagoons) to record the number of birds in the vicinity. Line transects were also taken when moving by boat from Kanchalan village to the different camps along the river. In the Kanchalan area about 4,000 ha were covered around Camp I, both to the east and west of the river, with an additional 500 ha monitored at one of the

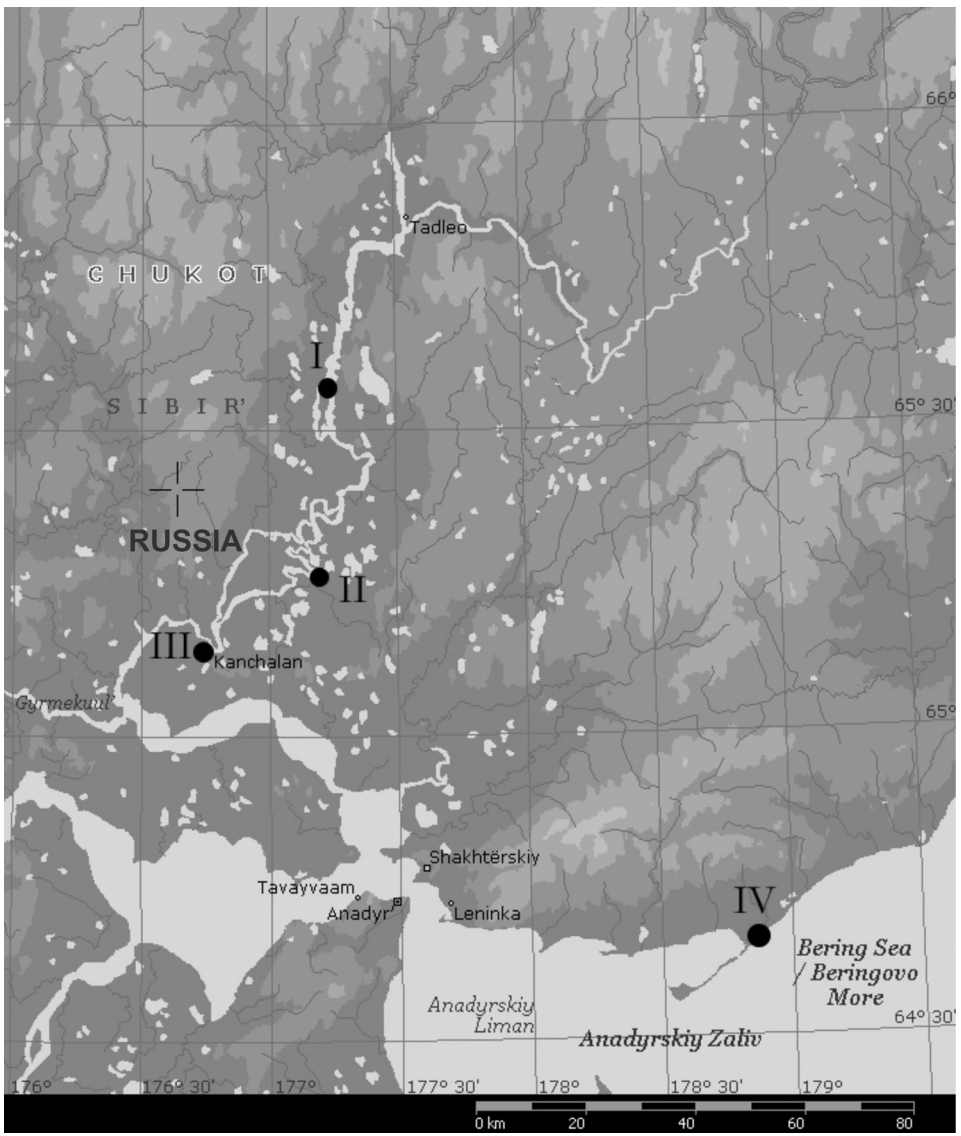

Figure 1. Location of the different study areas: I-III = Kanchalan area, Chukotka (I = Camp I, II = Camp II, III = Camp III), IV = Russkaya Koshka, Chukotka, Russia.

islands in the floodplain. Line transects along the cliff west of the Kanchalan River covered 7 km to the north and 13 km to the south of Camp I. The surrounding tundra was explored up to 4 km to the west and 8.5 km to the east of Camp I. About 3,000 ha east of the river at Camp II, and ~ 4,000 ha east and southeast of the river near Camp

III, were also explored. The total length of the line transect along the Kanchalan River between Camp I and Kanchalan village was ~ 100 km, divided into three main sections: 33, 45 and 20 km stretches of the river from north to south. Daily excursions usually covered different parts of the study area and only places close to the campsites were counted regularly. Excursions normally started around noon and ended in the late evening. Satellite images of the study area were used for orientation and observations, including goose counts, were assigned to different landmarks such as islands and lakes.

At the Russkaya Koshka coastal lagoon, 6,500 ha including 1,100 ha around Camp IV were covered. The 1,100 ha were divided into three study plots where birds were counted regularly, every third day.

Hunting pressure on different goose species in the Kanchalan area was assessed from the remains of plucked birds collected in Kanchalan village and from the camp sites of reindeer herders. Remains of sixteen different birds (usually wings only) were found around individual houses and at a communal rubbish heap at Kanchalan village. Another three wing remains and a freshly shot bird were detected at a reindeer herders' camp site near Camp I. All of the geese found in Kanchalan area were collected during spring (late April and May) 2006, whereas the fresh remains near Camp I were found in June. Species was determined from the length of the wing and from the colour of the plumage.

Results

Lesser White-fronted Geese were observed on 15 of 19 days in the Kanchalan area and on three of 23 days in the Russkaya Koshka area.

Within the Kanchalan area, Lesser White-fronted Geese were found mainly near Camp I, particularly on the islands and gravel banks of the river floodplain. They also used the neighbouring tundra, but almost entirely < 1–2 km from the flood plain. Counts of 71 individuals south of the camp and a further 23 individuals north of the camp were recorded along a 20 km transect along the top of the cliff on 12–13 June. These 94 birds (4.7 individuals/km of river basin) consisted of 38 pairs, four single birds and small flocks of up to six birds. Only six individuals (6.4%) were identified as being second-year birds, indicating a low percentage of returning juveniles or low productivity the previous summer. Another 33 km transect on 18 June, when birds were counted from a boat travelling along the Kanchalan River, recorded 124 individuals most of which were in pairs or very small flocks, but included one flock of 24 birds. This covered part but not all of the area surveyed on 12–13 June; the area south of the camp was covered on both occasions, but almost all areas north of the camp were missed on 18 June. On combining the different counts, the numbers of Lesser White-fronted Geese in the middle reaches of Kanchalan River were estimated to be 150–200 birds and the minimum number of adult pairs to be 40–50 (Table 1). Assuming that the 7,000 ha of the floodplain with vegetation cover provided suitable habitat, this indicates a density of 0.57–0.71 adult pairs/km^2.

The Lesser White-fronted Goose was the most commonly observed goose species in

Table 1. Numbers counted and additional observations made for geese in the Kanchalan area, Russia, in July 2006. LWFG = Lesser White-fronted Goose, GWFG = Greater White-fronted Goose, BG=Tundra Bean Geese.

Date	Site	LWFG	GWFG	BG	Site coverage	LWFG details	Remarks
9.6.06	Kanchalan River	2	105	45	River between Kanchalan village and Camp I	1 pair	Boat trip; most geese flying at the southern (20 km) and central (45 km) boat transect
10.6.06	Camp I	4	26	4	Camp and river island	4 adults	
11.6.06	Camp I	4	19	10	Tundra west of camp	2 pairs	Most GWFG + BG on tundra
12.6.06	Camp I	71	2	10	13 km transect on top of cliff south of camp	Minimum of 27 pairs, 6 second-year birds, 2 single adult males	
13.6.06	Camp I	25	4	1	7 km transect on top of cliff north of camp	12 pairs, 1 single bird	
14.6.06	Camp I	4	2	0	Camp site	2 pairs	
15.6.06	Camp I	13	2	0	Camp and river island	3 pairs, 7 birds in one flock	
16.6.06	Camp I	12	9	7	Tundra southwest of camp	6 pairs	Most GWFG + BG on tundra
17.6.06	Camp I	17	10	47	Tundra E of camp	8 pairs, 1 single adult male	Most GWFG + BG on tundra
18.6.06	Kanchalan River	124	23	23	River between Camp I and Kanchalan village	6 pairs + several flocks: 10+1+5+4+11+13+12+9+ 8+3+3+24+1+4+3+1	Boat trip; all geese at the northern (33 km) boat transect
22.6.06	Camp II	2	0	4	Tundra around camp		
23.6.06	Camp II	3	24	7	Tundra east of camp		GWFG + BG mostly migrating
24.6.06	Camp II	2	0	4	Tundra south of camp		
25.6.06	Camp II	2	5	0	Camp site		
29.6.06	Camp III	2	0	2	Camp site		

the middle reaches of the Kanchalan River floodplain, where it outnumbered both the Tundra Bean Goose *Anser serrirostris* and the Greater White-fronted Goose *Anser albifrons* during the study period. Mixed flocks of Lesser and Greater White-fronted Geese were seen on two occasions: 4 *erythropus* with 14 *albifrons*, and 1 *erythropus* with 3 *albifrons*.

The region was probably visited too early to find broods. In mid-June, two newly predated Greater White-fronted Goose and/or Lesser White-fronted Goose nests were found in dwarf-shrub vegetation on one of the islands. One adult bird, spotted in the far distance through a telescope, appeared to be sitting on a nest under dwarf shrubs on one of the islands south of Camp I, but this could not be confirmed due to the inaccessibility of the island.

In contrast to the regular occurrence near Camp I, only a few Lesser White-fronted Geese were observed in the lower reaches of Kanchalan River: one pair and a single male near Camp II and one pair flying over near Camp III on 29 June. The latter were probably migrating birds. The first migrating flocks of Tundra Bean Geese, Greater White-fronted Geese and Black Brant *Branta bernicla nigricans*, which breed to the north of the study area, were also observed at this time.

Inspection of the remains of 20 geese recently killed by hunters and by reindeer herders in the Kanchalan area found that three were Lesser White-fronted Geese (including one freshly shot bird), seven were Tundra Bean Geese and 10 were Greater White-fronted Geese.

Goose migration was observed at Russkaya Koshka between 7–23 July. The Greater White-fronted Goose was the most common species (2,091 individuals), whereas only small numbers of Lesser White-fronted Geese (total nine birds) and Tundra Bean Geese (17 birds) were recorded (Tables 2 and 3). Lesser White-fronted Geese were seen on three days only: six (5 + 1) geese on migration on 7 July, an adult pair seen resting on 9 July, and a single migrating bird on 17 July. All of these birds were seen in small flocks of Greater White-fronted Geese and flew in a southwesterly direction.

Discussion

The Kanchalan basin is a poorly studied area and the presence of significant numbers of Lesser White-fronted Geese has not been reported in the literature (Krechmar & Kondratyev 2006; Kistchinski *et al.* 1983; Morozov & Syroechkovskiy 2002; Portenko 1972). The river system was visited by ornithologists for the first time in the late summer of 1869 (Maydel 1894, cited in Kistchinski *et al.* 1983), and a second expedition took place in the summer of 1975 (Kistchinski *et al.* 1983). The latter also visited the middle reaches of the Kanchalan River, just to the south of our Camp I, slightly later in the year in mid July. No sightings of Lesser White-fronted Geese were reported for either of these expeditions.

Although breeding by Lesser White-fronted Geese was not confirmed during the present study, the presence of several pairs in suitable habitat during the breeding season is a strong indication that birds may breed in the area. The combination of a floodplain and steep cliffs is typical of

Table 2. Numbers of geese counted on migration at Russkaya Koshka, Russia, in July 2006 (LWFG = Lesser White-fronted Geese, GWFG = Greater White-fronted Geese, BG = Tundra Bean Geese). Flight directions are given together with the sum of the numbers counted daily.

Date	LWFG	GWFG	BG	Remarks
07.7.06	6 SW	256 SW	17 SW	5 + 1 LWFG among 256 GWFG
08.7.06		47 NE, 134 SW		
09.7.06	2 SW	32 NE, 68 N, 80 SW		LWFG pair initially seen resting, later with GWFG migrating SW
10.7.06		62 NE, 77 SW		
11.7.06		246 N, 349 NE, 15 E, 70 SW		
12.7.06		292 NE, 4 N, 75 SW		
13.7.06		19 NE, 135 SW		
14.7.06		20 NE, 58 SW		
16.7.06		58 SW		
17.7.06	1 SW	8 N, 2 SW		1 LWFG with 2 GWFG
18.7.06		11 N, 11 SW		
19.7.06		10 N		
21.7.06		14 SW		
23.7.06		6 NE		

Lesser White-fronted Goose breeding habitat in other parts of Russia (Krechmar & Kondratyev 2006; Romanov 2003; Artyukhov & Syroechkovski 1999; Morozov 1999; Morozov, pers. comm.). Non-breeders use special moulting sites in mid-July and moulting pairs with small goslings are hard to detect. It is therefore possible that Lesser White-fronted Goose families were overlooked during the expedition in 1975, and that pairs on nests were missed in June 2006.

The counts of 150–200 birds in the Kanchalan area in 2006 amount to ~ 1% of the whole Eastern flyway population, which if consistent over several years would qualify the floodplain as a site of international importance for Lesser White-fronted Geese. The area has been designated as an Important Bird Area (IBA code RU083; BirdLife International 2008), but is not protected under national or international legislation.

The Kanchalan area, together with the Nagleynyn Mountains, west of Chaun Bay, where small numbers of birds are known to

Table 3. Summary of the numbers and flight directions for different goose species seen on migration at Russkaya Koshka in July 2006.

Species	Flight direction	No. of flocks	No. of birds	Range of flock sizes	Mean flock size (± s.d.)
Lesser White-fronted Goose	SW	3	9	1–5	2.3 (1.89)
Greater White-fronted Goose	SW	109	970	1–55	8.9 (8.44)
Greater White-fronted Goose	E	1	15	15	–
Greater White-fronted Goose	N	26	279	2–40	13.9 (9.31)
Greater White-fronted Goose	NE	72	827	2–47	11.5 (8.02)
Tundra Bean Goose	SW	1	17	17	–

breed, is one of the core areas for Lesser White-fronted Geese in the Chukotka region (Birdlife International 2001; Morozov & Syroechkovskiy 2002; Krechmar & Kondratyev 2006; Table 4, Figure 2). No more than 300–400 Lesser White-fronted Geese have been recorded for the whole of Chukotka over the last decade. The observation of nine Lesser White-fronted Geese on moult migration, heading from the northeast to the southwest over the coastal site of Russkaya Koshka, suggests that there may be undiscovered breeding areas on the Chukotka Peninsula.

Natural causes of failed breeding for Lesser White-fronted Geese and for other goose species include unfavourable breeding conditions (*e.g.* bad weather and flooding) and predation (by raptors and mammals) (Lecomte *et al.* 2008; Schmutz *et al.* 2001; Syroechkovskiy *et al.* 1991). The lack of breeding records in 2006 may be due to a late spring thaw, as ice remained on the river as late as 9 June and several sections of the cliff and floodplain were covered with snow until mid June. The late snow melt also resulted in water levels in the Kanchalan River being quite high and several low-lying parts of the floodplain were flooded.

The discovery of Lesser White-fronted Geese in the remains of birds killed by hunters shows that illegal hunting and probably egg collection are additional threats to the species in the area. Additionally, a group of reindeer herders was seen on the tundra near Camp I, where cliffs with potential nesting sites were being grazed by hundreds of reindeer for several days. Egg trampling and disturbance by reindeer herds therefore may be an additional threat to the breeding success of Lesser White-fronted Geese in the region.

As knowledge of the Lesser White-fronted Goose in Chukotka is very patchy, further research in the Kanchalan area and other suitable floodplains is strongly recommended. Breeding, moulting and stop-over sites urgently need adequate

Table 4. Overview of the main breeding, moulting and stopover sites reported for the Lesser White-fronted Goose in Chukotka, Russia. Status codes: m = moult, b = breeding and pm = passage migrant.

Site No.	Site name	Status	Comments	Source
1	Avtatkuul River mouth	m?	Small numbers regularly recorded at the beginning of the moulting period in July (1990s and 2000s) in flocks of Greater White-fronted Geese	Kondratyev (1997); Morozov & Syroechkovskiy (2002)
2	Tanyurer River	b	Reported breeding by local people in middle and upper reaches of the river in the 1970s	Kistchinski *et al.* (1983)
3	Enmyvaam River	b	Single brood in 1993	Krechmar & Kondratyev (2006)
4	Middle Anadyr River	b, m, pm	Breeding records of a few pairs and moulting flocks of up to 150 birds in 1970s and 1980s; no records in early 2000s	Krechmar *et al.* (1991); Morozov & Syroechkovskiy (2002)
5	Chaun-Palyavaam Delta	pm	Commonly seen on autumn migration up to the end of the 1970s, but rare in recent years	Krechmar *et al.* (1991)
6	Omolon River	b, pm	Breeding records in middle reaches of the Omolon River in 1972 and 1973. Regular passage migrant in the 1960s and 1970s, when flocks of up to 40 individuals were recorded	Krechmar *et al.* (1978)
7	Lake Achchen	b	Single brood in 1991	Krechmar & Kondratyev (2006)
8	Nagleynyn Mountains west of Chaun Bay	b, m	30–40 breeding pairs at Nagleynynvaam River and 40–70 moulting birds at Teukulkay River in 2002 and 2003	Solovieva *et al.* (2003)
9	Kanchalan River	b, pm	150–200 birds including 40–50 pairs in June 2006	This publication
10	Russkaya Koshka	pm	Total of nine birds in July 2006	This publication

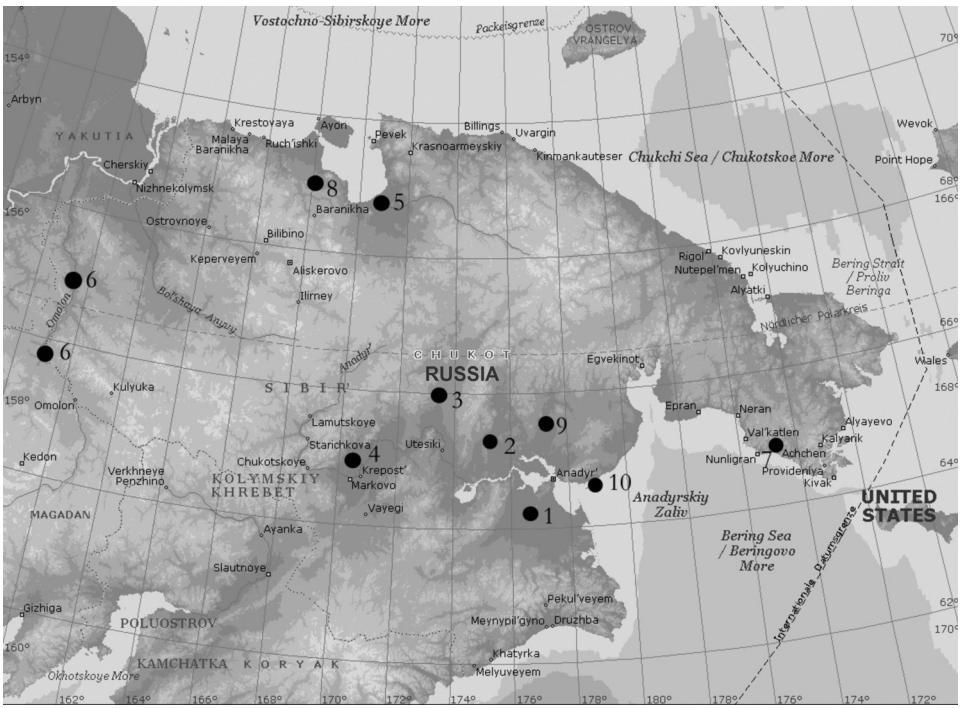

Figure 2. Location of known Lesser White-fronted Goose breeding, moulting and stopover sites in Chukotka, Russia. Site numbers refer to those in Table 1.

protection. Illegal hunting of Lesser White-fronted Geese should be addressed. Legal hunting of the declining Eastern Tundra Bean Goose *Anser serrirostris serrirostris* population, which may result in accidental shooting of Lesser White-fronted Geese, should also be discouraged.

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