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RESEARCH ARTICLE

New data on the distribution of Red-breasted goose and Lesser white-fronted goose in the south of the Gydan Peninsula

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Abstract

The Red-breasted goose *Branta ruficollis* (Pallas, 1769) and the Lesser white-fronted goose *Anser erythropus* (Linnaeus, 1758) are rare bird species nesting in the Arctic tundra zone of Eurasia usually in association with Peregrine falcons *Falco peregrinus* Tunstull, 1771. The Red-breasted goose, which has a vulnerable status according to the Red List of the International Union for Conservation of Nature (IUCN), currently has a positive population trend. The Lesser white-fronted goose with the same status, on the contrary, is declining in numbers. Both species are under the scrutiny of geese specialists. To identify the possible nesting of these species, suitable steep banks of the Indik'yakha River were surveyed in the south of the Gydan Peninsula. In 2019, six nesting aggregations of Red-breasted goose were discovered with a total number of 11 pairs in association with Peregrine falcons. In 2021, only two nesting localities with three pairs of geese were found in the same area, and in 2022 three localities each with a pair of geese. In addition, in 2022, three nesting sites of Lesser white-fronted goose were registered, also with a pair of birds in each place. In one case, the Lesser white-fronted goose and the Red-breasted goose nested in one place together. The new findings of their nesting are the southernmost nesting sites in the south of the Gydan Peninsula, providing important information for their conservation management and monitoring needs to continue.

Keywords

Anser erythropus, *Branta ruficollis*, *Falco peregrinus*, Gydan Peninsula

Introduction

The tundra zone of Western Siberia is the area of distribution of several rare species of birds, primarily Anseriformes (Red Data Book of the Russian Federation 2021), making it attractive to ornithologists. Despite the difficulty in transportation and accessibility, this territory is quite well studied in terms of ornithology (Ryabitsev V, Ryabitsev A 2010). This territory is also potentially productive by means of oil- and gas-bearing capacity, and its development in the future is inevitable. An important challenge for humans is to find a compromise between economic activity and the conservation of this vulnerable ecosystem, including habitats of rare species. Furthermore, monitoring of changes in the number of rare species and changes in their range due to factors such as climate change, hunting pressure, and other types of anthropogenic influence is of great importance. Despite the fact that the avifauna of the tundra zone of the Yamalo-Nenets Autonomous Okrug (YNAO) is systematically surveyed, including methods of aerial surveys (Rozenfeld et al. 2014; Rozenfeld et al. 2018), there are still areas that remain outside the attention of researchers, and they can give new information. We present here the results of the findings of rare bird species in one of these sites in the Indik'yaha River on the Gydan Peninsula. The aim of our study is to identify possible nesting of rare species of geese such as the Red-breasted goose (RBG) and the Lesser white-fronted goose (LWFG), which nest in associations with raptor species such as the Peregrine falcon and the Rough-legged Buzzard *Buteo lagopus* (Pontoppidan, 1763) (Quinn et al. 2003).

Materials and methods

A bird count was carried out on the Indik'yaha River, the left tributary of the Messoyaha River, from 26 to 28 June 2019. The survey was carried out from a motor boat. The length covered on this route was 100 km. Repeated surveys in the same area were carried out in 2021 on June 21-25 and in 2022 on June 23-24. In 2022, the route was longer, stretching up to the headwaters of the river, to inspect all possible steep banks that are potentially suitable for nesting rare bird species. The length covered on this route was 155 km. Compared to previously known nesting sites of the RBG, the area we surveyed was about 50 km further south (Fig. 1). For observations, we used binoculars with 8-10x magnification, as well as a Nikon 3500 camera with a Nikkor 200-500 mm lens. The surveyed area is located in the low-shrub tundra subzone (Walker 2000).

Result

We surveyed the Indik'yakha River in its middle part from the Messo-Yakhinsky special nature reserve approximately to the mouth of the Pyakyakha River – a tribu-

tary of the Indik'yakha. In 2019, we encountered six colonies of the RBG located on the steep banks of the meandering river (Fig. 2). All nesting aggregations were associated with the nesting of the Peregrine Falcon, under whose protection the nesting geese find safety for themselves nearby. The nests themselves were not found, but all their behaviors indicated nesting at that place. In addition, in two more places Peregrine falcons were found nesting on the cliffs, but without geese. In 2019, in total, in a section of about 70 km, the Peregrine Falcon nested on eight cliffs, of which six were associated together with the RBG. In some cases, the number of pairs of geese that nest near the peregrines ranged from 1 to 3. A total of 11 pairs of RBG nested in these six aggregations (Table 1, Fig. 3).

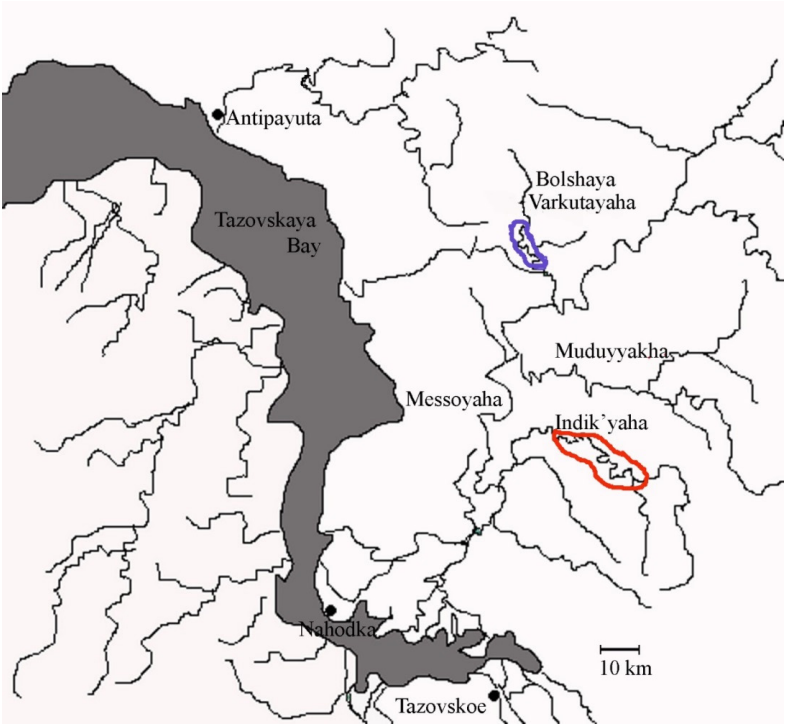

Figure 1. Study area in the south of the Gydan Peninsula (marked red). The previously known southernmost nesting sites of the Red-breasted goose are marked in violet (according to Surkov, Khantemirov 2002).

Repeated bird counts in 2021 showed that the number of RBG nesting RBG has decreased. So in 2021, only two settlements with 1 and 2 pairs of geese were found in this area (sites D and E). At the same time, the number of pairs of Peregrine falcon also decreased. Instead of eight localities, it was marked by only four (Fig. 3). The reasons for the decline in the number of RBG, either on one hand, may be associated with a decrease in the number of Peregrine falcons or, on the other hand, weather conditions such as, in particular, the abundance of snow cover and the

temperature influencing the rate of melting of snow from the slopes. For example, one of the slopes of the northern exposure in 2021 was completely covered with snow at the time of the survey. Similar reports about the dependence of the number of nesting pairs on weather conditions resulting up to the abandonment of nesting are also given by other authors (Kostin 1985; Kostin, Mooij 1995). In 2022, in the surveyed section of the river, geese were found in three different places, one pair in each of them (cliffs B, D, E).

Figure 2. Red-breasted goose on the Inkdik'jaha River.

In general, RBG nesting is reported in the Gydan Peninsula and even specifically in the river basin of Messoyaha, but the southernmost nestings known (Surkov, Khantemirov 2002; Emelchenko et al. 2012) were located on the Bolshaya Varkutayakha River, about 50 km north of our findings (Fig. 1). Aerial surveys conducted in recent years have revealed the nesting of the RBG in the middle and northern parts of the Gydan Peninsula (Rozenfeld et al. 2018). Our findings apparently can be considered the southernmost nesting places on the Gydan. Another confirmation of the fact that the nesting of geese in the south of Gydan was not known before is the publication of V.S. Zhukov (2011), where in the shrub tundra east of the Gulf of Ob, this species is listed as nonbreeding, although on the Yamal peninsula it is known to nest in similar natural conditions. Also on the birdwatchers site (www.sibirds.ru) E. Bayanov posted photos of Peregrine falcon nestlings in the nest on the Indik'yakha River in 2006 but there is no information about related RBG. It would be difficult

not to notice RBGs during their nesting, which is usually done in cooperation with the peregrine. Therefore, we can assume that the geese began to nest here relatively recently. In fact, a number of publications (Rozenfeld, Sheremetyev 2016; Kharitonov 2021) provide facts about the RBG expansion of the range in recent years compared to previously known nesting sites to the west, east and north. Our data indicate that this is also true for the southern direction, although this can also be explained by the lack of studies of this territory in recent years.

In addition to the red-breasted goose in 2022, 3 nesting sites of another rare species, the LWFG, representing the southernmost findings on the Gydan peninsula, were also discovered. In one case, adult LWFGs with a brood of five downfeathered goslings (Fig. 4) were found in the area where the Peregrine falcon nested in 2019 and 2021 (Peregrine No 6), but without RBG (Fig. 3). It is interesting that the Peregrine Falcon was not seen here this year, but its nesting can still be assumed. The second case of nesting was observed in the area where the peregrine falcon was nesting with the RBG in 2019 (site A) and without geese in 2021. In one more place, an LWFG with a brood of 3 small goslings was found together with a pair of RBGs at site B that exhibited nesting behaviors. No broods were observed anywhere for the RBG at that time. Cases of joint nesting of LWFG and RBG are mentioned in a number of studies (Ryabitsev 1995; Rozenfeld et al. 2014). In general, LWFG nesting is also reported on the Gydan Peninsula also (Rozenfeld et al. 2018) but the findings mainly refer to the central and northern parts of Gydan Peninsula.

Table 1. Locations and characteristics of the nesting aggregations of *Branta ruficollis* and *Anser erythropus* in association with *Falco peregrinus*

Location name	Coordinates of cliffs	2019	2021	2022
Peregrine No 1 single	68°10.40' N 79°15.83' E	Pair of peregrines	–	–
Peregrine No 2 with RBG # A	68°09.45' N 79°19.85' E	Pair of peregrines + 1 pair of RBG	Pair of peregrines	Pair of peregrines + 1 pair of LWFG
Peregrine No 3 with RBG # B	68°10.32' N 79°29.05' E	Pair of peregrines + 1 pair of RBG	–	Pair of peregrines + 1 pair of RBG +1 pair of LWFG
Peregrine No 4 with RBG # C	68°06.14' N 79°31.18' E	Pair of peregrines + 1 pair of RBG	–	–
Peregrine No 5 with RBG # D	68°05.02' N 79°39.92' E	Pair of peregrines + 3 pairs of RBG	Pair of peregrines + 1 pair of RBG	Pair of peregrines + 1 pair of RBG
Peregrine No 6 single	68°02.64' N 79°38.11' E	Pair of peregrines	Pair of peregrines	1 Pair of LWFG
Peregrine No 7 with RBG # E	68°03.70' N 79°46.04' E	Pair of peregrines + 3 pairs of RBG	Pair of peregrines + 2 pairs of RBG	Pair of peregrines + 1 pair of RBG
Peregrine No 8 with RBG # F	68°01.08' N 79°49.65' E	Pair of peregrines + 2 pairs of RBG	–	–

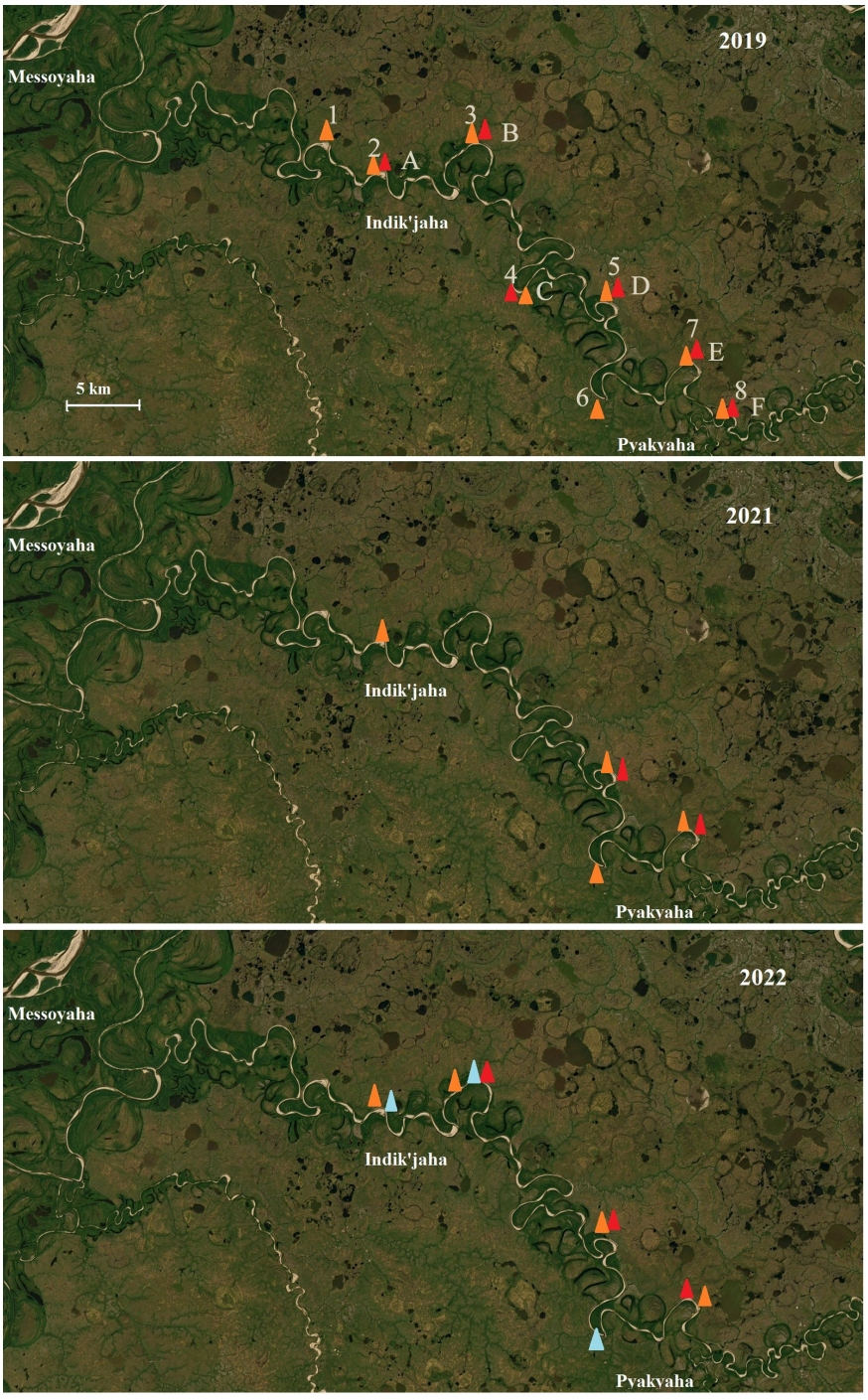

Figure 3. Peregrine falcon nest site locations (orange triangles) and associated locations of RBG (red) and LWFG (blue) on the Indik'yaha River. The maximum number of birds was in 2019, peregrines were marked with 1-8 and RBG with A-F.

Figure 4. Lesser white-fronted goose with goslings.

Conclusions

Therefore, the nesting of rare species of geese observed on the Indik'yaha River is of undoubted interest and requires further monitoring and study. We assume that this territory represents the southern periphery of their ranges on the Gydan Peninsula. These findings illustrate the possible expansion of the Red-breasted goose southward and the possibilities of stabilizing the numbers of Lesser white-fronted goose in the future.

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