Send Orders for Reprints to reprints@benthamscience.net

52 *The Open Ornithology Journal,* **2013,** *6,* **52-54**

Open Access

Where are Western Bounds of Area *S. h. minussensis*?

Mikhail G. Golovatin[1,*] and Sergey P. Paskhalny[2]

[1]*Institute of Plant and Animal Ecology, Ural Branch of Russian Academy of Sciences, 620144, 8 March str., Ekaterinburg, Russia;* [2]*Ecological Research Station, Institute of Plant and Animal Ecology, Ural Branch of Russian Academy of Sciences, 620400, Zelenaya Gorka, 18-1, Yamal-Nenets Autonomous area, Russia*

Abstract: We reported about several common terns with dark bill (subspecies *Sterna hirundo minussensis* and *S. h. longipennis*) in the Lower Ob region of Western Siberia, including nesting of the Central Siberian tern here. The ratio of terns with a dark bill and nominate color was about 8 to 1. Our findings change the previous understanding of areas of the distribution of those subspecies.

Keywords: Area, common tern, distribution, lower Ob, *Sterna hirundo minussensis*, *S. h. longipennis.*

INTRODUCTION

Four subspecies of the Common Tern are generally recognized [1,2]: Nominate *S. h. hirundo* (Linnaeus, 1758), Central Siberian *S. h. minussensis* (Sushkin 1925), Eastern *S. h. longipennis* (Nordmann, 1835) and Tibetian (Saunders, 1876). These subspecies are well distinguished by the color of the bill, so *S. h. longipennis* and *S. h. hirundo* are similar to each other even less than they and the Arctic tern *S. paradisaea are*. However, *S. h. minussensis*, which is intermediate in bill color, is often regarded as a hybrid between *S. h. longipennis* and *S. h. hirundo* [3-6]. Even if to consider *S. h. minussensis* both as an intergrade and as morphs or race, an information about distribution of this form is interesting in understanding the intraspecific differentiation of common tern.

In the last decade there have been reports about vagrant dark-billed Common terns (*S. h. minussensis* and *S. h. longipennis*) in Europe. For example, V. Sotnikov had observed a single bird *S. h. minussensis* in a colony of nominate tern in the Kirov region of European part of Russia (58º 25′ N, 50º 27′ E) [7]. Vagrant dark-billed Common tern was recorded even in England [8]. However, ornithologists and bird watchers still believe that dark-billed terns reside in Central and Eastern Siberia. This is because current descriptions of areas occupied by of those subspecies of the Common Tern are based on the handbook "Birds of Soviet Union" [3]. Distribution map from this classic volume has been copied into many other books, including modern publications. According to Dementiev and Gladkov [3] *S. h. hirundo* is found so far east as to the Yenisei River, where its area abuts *S. h. minussensis* and *S. h. longipennis* near the confluence of mouth of the Yenisei and Nizhnyaya Tunguska Rrivers (about 65º 51' N, 88º 23' E; Fig. **1**). Middle and Lower Ob was part of area of the Nominate common tern, and this was confirmed by previous observations.

*Address correspondence to this author at the Institute of Plant and Animal Ecology, Ural Branch of Russian Academy of Sciences, 620144, 8 March str., Ekaterinburg, Russia; Tel: +7 9221024289; Fax: +7(343)2606500; E-mail: golovatin@yandex.ru

The first detailed description of the avifauna of the Lower Ob River floodplain was published in 1898 by Konstantin M. Deriugin [9]. After that, there were only small fragmentary observations in 1915, 1921, 1959 [10-12]. Next thorough research of the avifauna was in 1962, 1963 by Nikolay N. Danilov [13]. Thereafter, the flow of information about birds of Lower Ob floodplain, especially near Labitnangi and Salekhard towns, become regular [14]. Since 2004, our annual thorough investigations of the avifauna of the Lower Ob River floodplain are continued. However, until 2008, researchers do not even mention the dark-billed Common terns here. And this despite the fact that Common tern is a usual species in the floodplain of the Lower Ob [14].

Finds of black-billed terns since 2008 have made this a special study to assess the present part of this form among Common terns here. The aim of this publication is to state the changes occurring in area of *S. h. minussensis.*

STUDY AREA AND METHODS

Our study covered the territory of the Lower Ob downstream 64º 33′ N, 65º 16′ E down to estuary. We made observations with binoculars while traveling on a ship and special excursions along small channels on a motorboat. In 2012, we explored flood-plain down to 66º 43′ N, 68º 07′ E. That is about 330 km along flood-plain of the Ob. Our work took place during the period 18 June – 10 July and 20 – 26 July. In 2013, we explored flood-plain downstream Arctic Circle to estuary. That is about 240 km along flood-plain of the Ob. The work was carried out from 25th June to 4th July. To find out the ratio of dark-billed and red-billed Common terns, we paid close attention to only those birds whose bill color was seen clearly. The individuals were observed at close distance (up to 30 m) with well-lit (direct lighting, and not against the light). Despite the fact that we found *S. h. longipennis*, in the identification of dark-billed terns we did not distinguish between *S. h. longipennis* and *S. h. minussensis*. In addition, we had been looking through our photos of Common terns in the Lower Ob region from over previous years of observation.

1874-4532/13

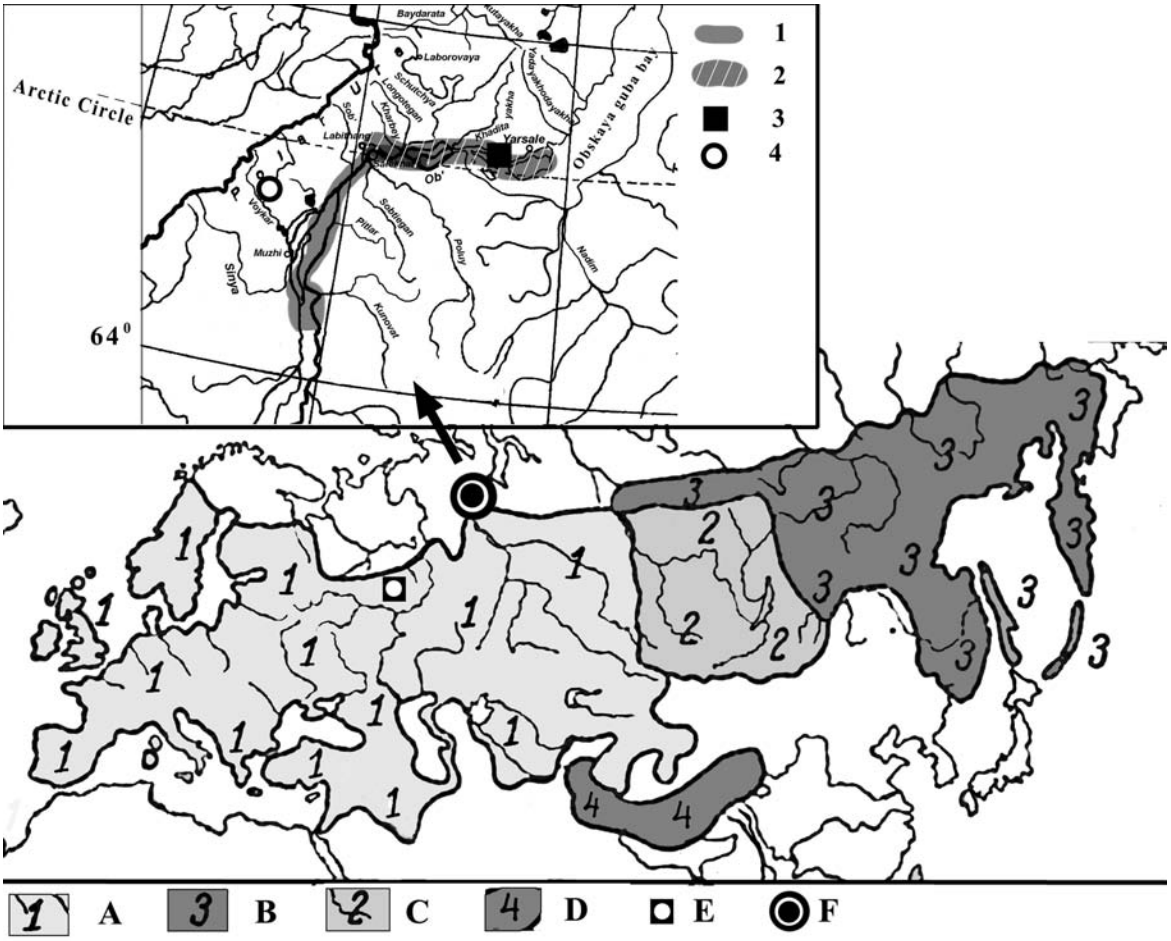

Fig. (1). Distribution map of Common Tern subspecies in Eurasia (by Dementiev 1951): A – *S. h. hirundo*, B – *S. h. lomgipennis*, C – *S. h. minussensis*, D – *S. h. tibetiana*, E – point of occurrence of *S. h. minussensis* in East European part of Russia (by Sotnikov 2002), F – area of our study. In marginal map: 1 - The area covered by our study in 2012; 2 - The area covered by our study in 2013; 3 – the most northern point of finding of *S. h. minussensis*; 4 - the most western point of finding of *S. h. minussensis*. **Photo 1**). Subspecies of the Common Tern in flood-plain of the Lower Ob river: A - Nominate *S. h. hirundo* (65º 33' N, 65º 05' E, 23 July 2012); B - Eastern *S. h. longipennis* (64º 34' N, 65º 16' E; 21 June 2012). **Photo 2**). Central Siberian Common Tern *S. h. minussensis* and its nest in the vicinity of Labytnangi town (66º 39' N, 66º 32' E, 4 July 2009). **Photo 3**). Common Tern with completely black bill and red legs (probably *S. h. minussensis*) in Upper Voikar river (66º01′N, 63º44′E; 15.06.2008).

The total length of channels, where there have been observations of terns, and also number of registered terns and individuals with identified color of bills are presented on the (Table **1**).

Table 1. The Total Length of Way (channels) with Observations of Terns (L), Number of Common Terns, Registered (N) and with Identified Bills (n).

Year	Area	L	N	n
2012	to south of the Arctic Circle	575	551	95
	to north of the Arctic Circle	135	100	13
2013	to north of the Arctic Circle	255	68	12

The total way length of the observations was 575 km south of the Arctic Circle and 390 km north of it. In 2012, a total of 651 Common terns were registered and in 2013 – 68. In 2012, the respective percentages of terns with identified color of bill were 17, 2% on the south and 13, 0% in the north of the Arctic Circle, in 2013 – 17,6%. Since on the north the annual numbers of identified birds were not large, to increase the sample size, we combined data from both years.

Confidence intervals of proportion and comparison of proportions of dark-billed terns to the south and to the north of the Arctic Circle were calculated by Fisher test.

RESULTS

In the Lower Ob region, we found Common terns with bill color typical of all three subspecies: the Nominate – red bill with a black tip and the red legs, the Central Siberian – black upper mandible with a hint of red on the lower mandible and red legs, and the Eastern – completely black bill and dark red legs (photos 1-3). In the vicinity of Labytnangi town (66º 39′ N, 66º 32′ E), a solitary nest of *S. h. minussensis* was found on 4th July 2009 on the open sandy wasteland

of anthropogenic origin. The bird was incubating three eggs (photo 2). In Lower Ob, the northernmost point of finding of *S. h. minussensis* was 66º43′41″ N, 70º20′34″ E. Also we observed Common Tern with a completely dark bill (but red legs) in the foothills of the Polar Urals (66º01′ N, 63º44′ E), that was distant from the Ob River floodplain (photo 3). This was the most western point of finding of the dark-billed terns in this region.

In the Lower Ob, Common terns were more numerous south of the Arctic Circle, as compared with the northern part. Their frequency of occurrence here was 0.96±0.04 and in the north 0.43±0.03 ind./km channels (SE=√N , from: [15, 16]).

Percentage of dark-billed birds was 88.4 (81,3-94,0%, *F*-test) on the south and 68.0 (48,8-84,4%, *F*-test) in the north of this region. The difference between these proportions is significant ($p \leq 0.05$; U = 2.26, *F*-test).

DISCUSSION

The emergence of a lot of dark-billed Common terns in the Lower Ob in recent years, in the absence of records about them in previous years suggests that this form was really absent in this region. Otherwise, any of ornithologists still would have noticed it. Thus, now the western boundary on the north of the area *S. h. minussensis* may be drawn along the Lower Ob, more precisely on 63º44′ – 66º 32′ E. The extreme northern point here may be specified as 66º43′41″ N. That is, this boundary is very close to the border between Europe and Asia.

If a datum point is taken 1925 – year of description subspecies, it may be said that during 83 years the bound of area of Central Siberian tern shifted nearly 1100 km to the west. Although this process was probably faster – in a shorter time. In all probabilities, Central Siberian tern *S. h. minussensis* may be seen as one of the examples of the long-standing process of promoting the Siberian species in the north-west, equally with such species as Pintail snipe *Gallinago stenura*, Arctic warbler *Phylloscopus borealis*, Bluetail *Tarsiger cyanurus*, Olive-backed Pipit *Anthus hodgsoni*, Petchora pipit *Anthus gustavi*, Pallas's Reed Bunting *Emberiza pallasi* and others [17, 18].

It should be noted, however, that in the Lower Ob region the expansion of *S. h. minussensis* has been accompanied by a reduction in the number of birds of nominate Common tern *S. h. hirundo*. According to our observations, the ratio of dark-billed to nominate terns was about 8 to 1 on the south and about 2 to 1 on the north of the Arctic Circle. Though the total number of Common Terns remained the same – about 1 ind./ km channels [14]. Consequently, it may well be that nominate race has been absorbed by eastern races. For more accurate conclusions, genetic studies are needed.

CONFLICT OF INTEREST

The author(s) confirm that this article content has no conflicts of interest.

ACKNOWLEDGEMENT

The study was supported by Programs of the Presidium of the Ural Branch of the Russian Academy of Sciences № 12-M-45-2062 and № 12-4-012-3-ARCTIC.

REFERENCES

[1] Harrison P. Seabirds, an identification guide. Boston: Houghton Miflin Co. 1983.

[2] Koblik EA, Red'kin YaA, Arhipov VYu. Check-list of birds of the Russian Federation. Moscow: KMK 2006.

[3] Dementiev GP. Order Gulls In: Dementiev GP, Gladkov NA, Eds. Birds of Soviet Union. Moscow, Soviet Science 1951: vol. III: pp. 372-603.

[4] Vaurie Ch. The birds of the Palearctic fauna. Non-Passeriformes. London: H.F. and G. Witherby vol. 1: 1965.

[5] Cramp S, Brooks DJ, Dunn E, *et al.* Handbook of the birds of Europe, the Middle East, and North Africa: the birds of the Western Palearctic. vol. IV. Terns to Woodpeckers. Oxford; London. New York: Oxford University Press 1985.

[6] Olsen KM, Larsson H. Terns of Europe and North America. Princeton, NJ: Princeton University Press 1995.

[7] Sotnikov VN. Birds of the Kirov region and adjacent areas. vol. 1: Non-Passeriformes. Part 2. Kirov: OOO "Triada-S" 2002.

[8] Nixon S. The Eastern Common Tern in Suffolk. Birding World 2011; 24 (5): 211-5.

[9] Deryugin KM. Journey to the valley of the middle and lower reaches of the Ob river and fauna of this area. Proceedings of the St. Petersburg Society of naturalists. Branch Zool Physiol 1898; 39 (2): 47-140.

[10] Shuhov IN. Birds of Obdorsk land. Year book. Zool Muse Imperia Acad Sci 1915; 20 (2): 167-238.

[11] Shostak AS. Ornithological observations in summer 1920 (Tomsk – Trekhbugorny cape – Krugly cape). Bull Tomsk Ornithol Soc 1921; 1: 105-14.

[12] Dobrinsky LN. Data about northern bound of distribution of some species of birds in the territory Yamal-Nenets national okrug. Materials on fauna of the North Priob'ye and its use. Proceedings of the Salekhard station of the Ural Branch of Academy of Sciences of USSR. Issue 1. Tiumen: Tiumen Book Press 1959; pp. 367-84.

[13] Danilov NN. Birds of the Lower Ob and the changes in their distribution over the last decade. Proceedings of the Institute of Biology, Ural branch of the Academy of Sciences USSR 38: Ecology of vertebrate animals of the Far North 1965; pp. 103-9.

[14] Golovatin MG, Paskhalny SP. Avifauna of Lower Ob flood-plain. Scientific Bulletin 4: Materials to the knowledge of the fauna and flora of the Yamal-Nenets Autonomous District (Part 1). Salekhard 2000; pp. 18-37.

[15] Smirnov VS. Methods of census mammals. Prerequisites for their improvement and evaluation of the accuracy for the results of the census. Sverdlovsk: Middle Urals book Press 1964.

[16] Järvinen O, Väisänen RA. Confidence limits for estimates of population density in line transects. Ornis Scand 1983; 14: 129-34.

[17] Golovatin MG, Morozova LM, Ektova SN, Paskhalny SP. The change of tundra biota at Yamal peninsula (the North of the Western Siberia, Russia) in connection with anthropogenic and climatic shifts. In: Gutierrez B, Pena C. Eds, Tundras: Vegetation, Wildlife and Climate trends. New York: Nova Science Publishers Inc. 2010: pp. 1-46.

[18] Golovatin MG. Modern aspects of the dynamics of the avifauna north of Western Siberia. In: Matishov GG, Tishkov AA, Ed. Terrestrial and marine ecosystems. Moscow: Saint-Petersburg, Paulsen Editions 2011: pp. 365-78.

Received: June 24, 2013 Revised: November 13, 2013 Accepted: November 18, 2013