

Comparing the different breeding strategies and migration patterns of two closely related shorebirds-the endangered Nordmann's Greenshank (*Tringa guttifer*) and ubiquitous Common Redshank (*Tringa totanus*) for enacting efficient conservation planning



project report
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Introduction

The winter period of 2019 to 2020 in the Nikolayevsk region of Khabarovsk Krai was especially warm and snowless (Figure 1). It seemed the spring came early. On the coast of Schaste Bay areas were already snowless in early April. As a result the spring was prolonged and the snow cover of western Schaste Bay only lasted until late May. The weather remained unpleasant for most of early summer with the morning air temperature often near zero. Overall, the weather during the summer of 2020 in comparison with the previous years was colder and rainier.

Our team came to the Nikolayevsk region from Khabarovsk on May 14. The ferry across the Amur River from the town of Nikolayevsk-on-Amur started to run May 12 and our car was only able to drive to a bridge near Iska River on May 16. The rest of the road was still too muddy to pass. We arrived to the village of Vlaseyvo (the entry point to Schaste Bay) on May 17. As many sections of the Bay were still covered in ice, we had to delay reaching our usual base camp on the mouth of Zimnick River and instead had to set up basecamp in a small private home in Vlaseyvo for several days. Everyday we conducted surveys on the coast of Schaste Bay with the goal of determining the date of arrival of Nordmann's Greenshank and Common Redshank, as well as to census migrating birds.

On 16 May 2020, near the village of Podgorniy (the ferry access point to Nikolayevsk-on-Amur) the trees were still bare of foliage. At this time in Khabarovsk, Hackberry (*Prunus padus*) was already finishing flowering. In Podgorniy, we observed a mass migration of Brambling (*Fringilla montifringilla*). On the road from Nikolayevsk-on-Amur to the village of Vlaseyvo the road and forest was still covered in snow, but only slightly reduced from what the snow layer was like in March.

On the 17th of May near Iska River, we packed our boat with belongings and field equipment to bring to Vlaseyvo. While on the boat, we observed the following composition and number of species: Great Cormorant (3), Grey Heron (15), Common Merganser (2), Greater Scaup (2), Osprey (91), a displaying Green Sandpiper, Common Sandpiper, Swinhoe's Snipe, Eurasian Woodcock, Kamchatka Wagtail, Eastern Yellow Wagtail, Grey Wagtail, Yellow-browed Warbler, Pine Bunting and Black-faced Bunting. Dusky Thrush were also migrating in great numbers. The weather was cold, and snow occasionally fell. On the same day we conducted a 2 km survey along the Iska River mouth. Along this area we observed displaying Common Redshank (11) flying between the estuary and sea coast, Black-tailed Godwit (4), Wood Sandpiper (1), Common Greenshank (3), Greater White-fronted Goose (100), Tundra Bean Goose (50), various ducks (1000), Slaty-backed Gulls (20), and Black-headed Gulls (20).

The same night we returned to the vehicle near Iska River and camped in our car. On the 25th of May we were finally able to transition to the basecamp on the mouth of Zimmnick River.

One of our main goals for the early season were to find birds banded in previous years. For this we conducted daily surveys with a spotting scope. Birds were banded according to color schemes developed in 2018 and approved by the East Asian-Australasian Flyway Partnership. Adult Nordmann's Greenshank were banded with red engraved flags, metal rings, and two unique color combinations. Adult Common Redshank were banded with two engraved flags (yellow and red), metal rings, and two unique color combinations. Chicks of both species were banded only with metal rings and one color band. We also collected genetic samples (blood and feathers) while banding birds. The majority of the work was conducted on the western section of Schaste Bay; however, in preparation for designating Schaste Bay as a regional protected area we also surveyed the barrier islands for avifauna (Figure 2). In the beginning of July we conducted surveys of Nordmann's Greenshank in southwest Schaste Bay, in areas we surveyed previous years for breeding and migrating individuals (Figure 3). In 2020, Covid-19 caused several issues in regards to field work and several members of our research team could not participate in the field season.

During the winter of 2019 to 2020 our American colleagues started analyzing the data from six light-level geolocators, attached to Common Redshank in 2018 and removed 2019.



Figure 1 – Snow cover at basecamp in late March 2020.

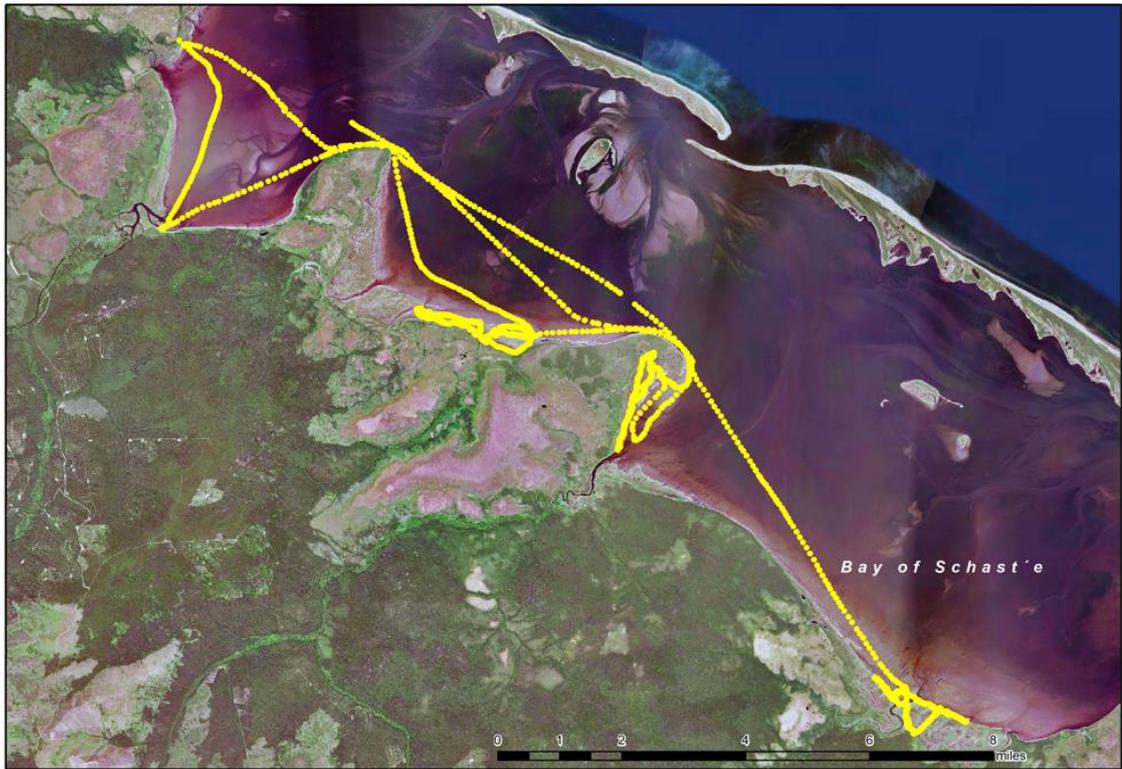


Figure 2 – Map of areas surveyed in search of Nordmann’s Greenshanks in southwestern Schaste Bay between 5-8 of July 2020.

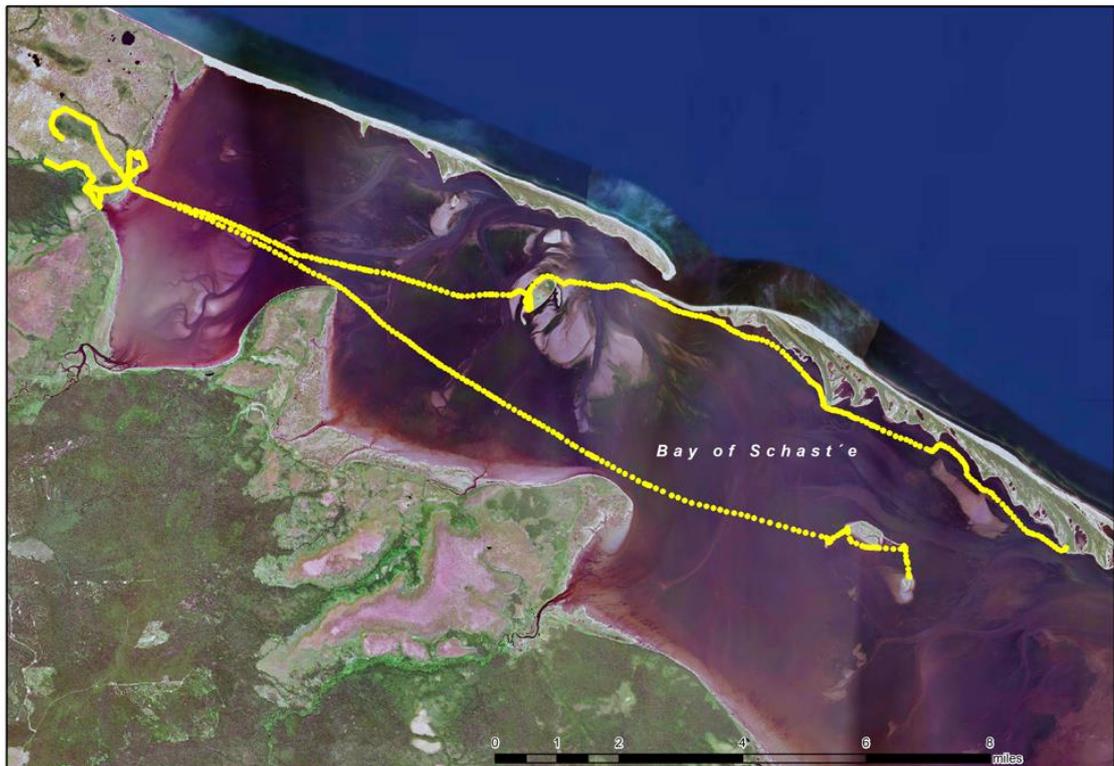


Figure 3 – Map of areas surveyed for gull species and Nordmann’s Greenshank nests in early August 2020 in Schaste Bay.

Survey of western Schaste Bay from March to April 2020.

We surveyed western Schaste Bay when the area was still covered in snow. The primary goal was to find old Nordmann's Greenshank nests that the species may reuse during the breeding season. Our secondary goal was to find and map all bird nests found, especially rare birds, for bolstering the argument to designate Schaste Bay as a regional protected area. Our tertiary goal was to find and map public hunting cabins distributed throughout the area that we can use during the summer breeding season for inland Nordmann's Greenshank observations.

We found 46 nests belonging to 8 species (Table 2 and Figure 4), as well as one Nordmann's Greenshank nest. We also found 11 hunting cabins (Table 1 and Figure 5), several of which were appropriate as summer observation posts. Based on analysis of the Nordmann's Greenshank nest found in 2019, we determined it is possible the species may reuse nests for multiple years or may use nests constructed by other birds. However, our hypotheses were not confirmed as no old nests found in the winter were inhabited during the summer. Also, no nests had signs of multi-year use. We also did not find any Oriental Turtle Dove nests, which are more similar in structure to Nordmann's Greenshank nests than any other species' nests in the region, and that Nordmann's Greenshank could potentially inhabit.

Additionally, we had an idea to return a Nordmann's Greenshank nest collected in 2019 to its original tree. This would possibly allow us to understand if the species is tied to any specific nesting area and assess their reaction to a difference in nest position. However, based on our observations of the quantity of available habitat within the study site, we decided to abandon this idea.

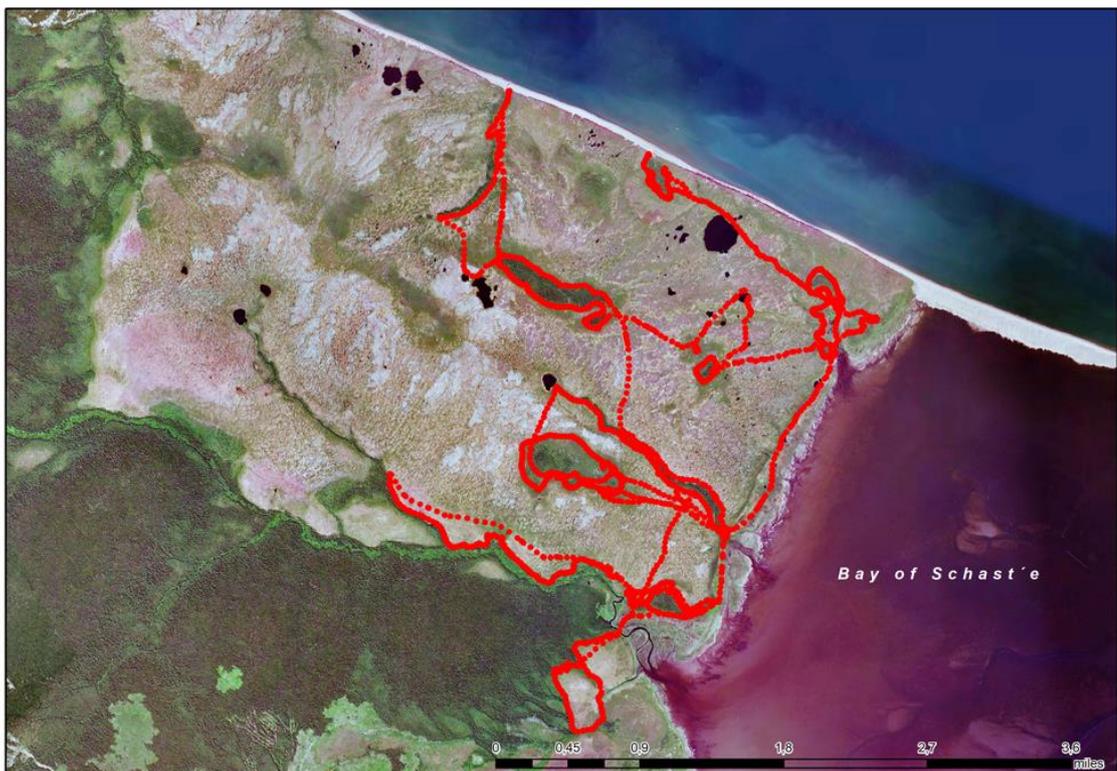


Figure 4 – Map of surveyed areas in search of nests and hunting cabins in western Schaste Bay during March and April of 2020.

Table 1 – Coordinates of hunting cabins found on out study site.

№	Coordinates		Orientation
1	53.49306	140.92848	Cabin 2/1. On the bog, Vlasievskiy Peatlands.
2	53.49313	140.91805	Cabin 2/2. Hummocks of Vanuchiy Creek, forest fragment 2.
3	53.49640	140.91920	Cabin 2/3. Hummocks of Vanuchiy Creek, forest fragment 2.
4	53.49829	140.91812	Cabin 2/4. Hummocks of Vanuchiy Creek, forest fragment 2.
5	53.49514	140.91255	Cabin 2/5. Hummocks of Vanuchiy Creek, forest fragment 2.
6	53.49987	140.87610	Cabin on a lake 4/6, forest fragment 4.
7	53.51226	140.87968	Fishing cabin on a creek.
8	53.50505	140.91541	Cabin 5/7, forest fragment 5.
9	53.48946	140.88976	Cabin on a lake near Silver Creek.
10	53.473684	140.866732	Cabin on Zimnick River.
11	53.484616	140.829426	Cabin on Zimnick River.

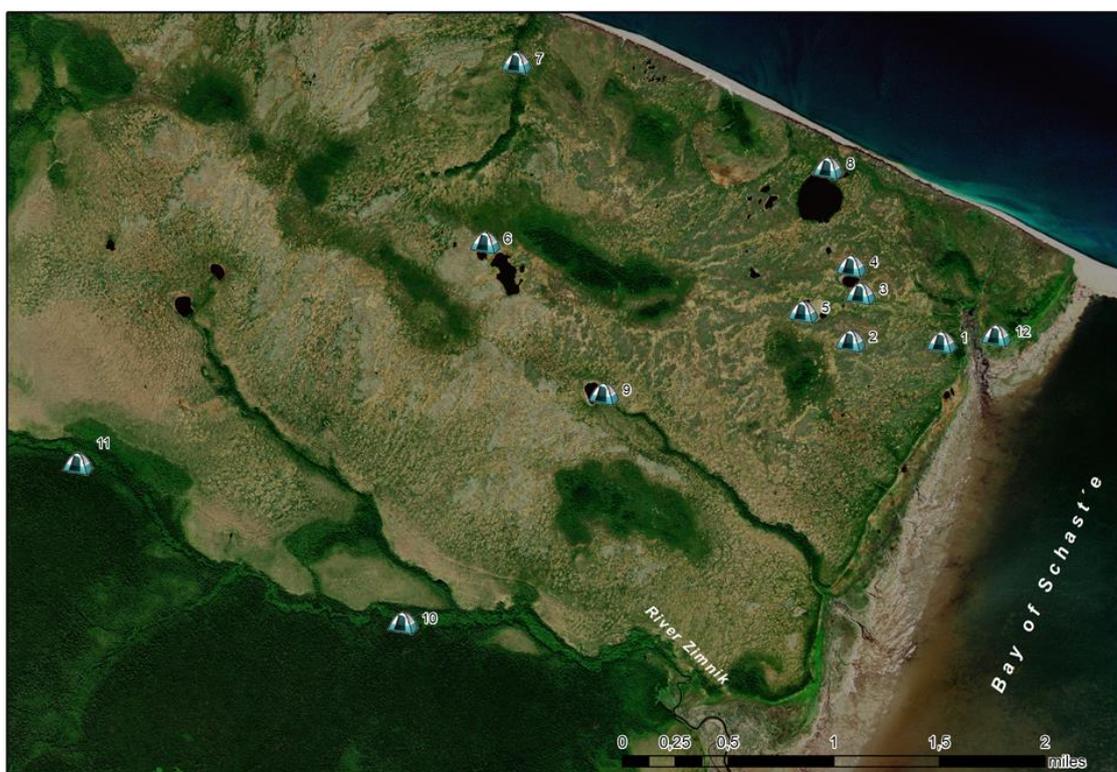


Figure 5 – Distribution of hunting cabins on the study site in western Schaste Bay.

Table 2 – Coordinates of nests found from March to April 2020.

№	Species	Coordinates	
		N	E
1	Steller's Sea Eagle	53.47980	140.89763
2	Palla's Rosefinch	53.48206	140.89816
3	Steller's Sea Eagle	53.485622	140.899235
4	Steller's Sea Eagle	53.482327	140.891913
5	Palla's Rosefinch	53.48139	140.89059
6	Steller's Sea Eagle	53.481355	140.907730
7	Crow Spp.	53.49098	140.91347
8	Steller's Sea Eagle	53.490857	140.912940
9	Steller's Sea Eagle	53.49273	140.91074
10	Steller's Sea Eagle	53.495428	140.895392
11	Steller's Sea Eagle	53.497797	140.896145
12	Steller's Sea Eagle	53.49879	140.88493
13	Steller's Sea Eagle	53.49920	140.88345
14	Steller's Sea Eagle	53.500271	140.881768
15	Steller's Sea Eagle	53.50481	140.87192
16	Steller's Sea Eagle	53.510279	140.880337
17	Steller's Sea Eagle	53.509841	140.879633
18	Crow Spp.	53.51226	140.87968
19	Steller's Sea Eagle	53.513483	140.879693
20	Steller's Sea Eagle	53.516316	140.874212
21	Steller's Sea Eagle	53.481120	140.908710
22	Steller's Sea Eagle	53.47950	140.91365
23	Steller's Sea Eagle	53.472822	140.913770
24	Crow Spp.	53.471836	140.913133
25	Steller's Sea Eagle	53.496290	140.931449
26	Steller's Sea Eagle	53.501990	140.928155
27	Steller's Sea Eagle	53.49924	140.93163
28	Crow Spp.	53.49551	140.93744
29	Crow Spp.	53.50508	140.91541
30	Crow Spp.	53.50508	140.91541
31	Steller's Sea Eagle	53.507358	140.905722
32	Steller's Sea Eagle	53.508559	140.905749
33	Steller's Sea Eagle	53.473710	140.889769
34	Nordmann's Greenshank	53.47424	140.88284
35	Brown Shrike	53.47513	140.88173
36	Steller's Sea Eagle	53.47465	140.88220
37	Steller's Sea Eagle	53.47504	140.87346
38	Steller's Sea Eagle	53.475254	140.873034
39	Steller's Sea Eagle	53.476507	140.871883
40	Brown Shrike	53.46348	140.88953
41	Spotted Nutcracker	53.469680	140.901810
42	Brown Shrike	53.48494	140.89999
43	Raven	53.485316	140.899606
44	Steller's Sea Eagle	53.488355	140.893483
45	Steller's Sea Eagle	53.47004	140.90100
46	Eurasian Magpie	53.473627	140.913914

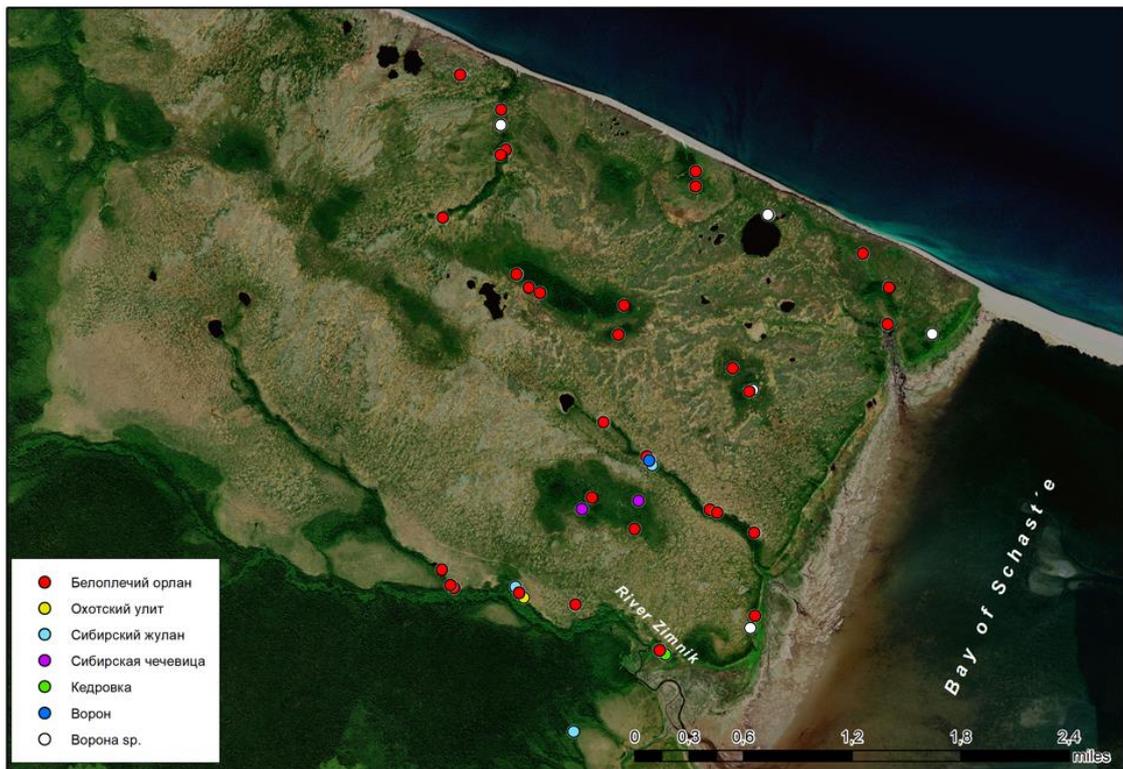


Figure 6 – Distribution of nests belonging to different bird species, found in western Schaste Bay from March to April 2020.

Common Redshank Research

In 2020, we first observed Common Redshanks 17 May. Over the course of the season we observed 9 of 15 Redshanks banded in 2019. No individuals banded as chicks were observed, either due to a low survival rate or low detection (single red band and single metal band can be difficult to spot). Another reason could be low site philopatry.

The first Common Redshank nest found in 2020 was on the 9th of June, the nest was still in the laying phase. Nesting throughout the study site likely started in early June. Common Redshank nesting is prolonged, with the last hatchings occurring in on the 27th of July. Fledging of these late-hatching chicks was likely around the 20th of August.

Adult Common Redshank were captured on the nest with bow-net traps. In 2020 we captured 17 adults (Table 3, 4, 5). All birds were banded, morphologically measured, and had genetic samples collected. We would like to use morphological measurements to determine sex of individuals in the future, as well as determine the geographical variation of this Common Redshank subspecies (*Tringa totanus ussuriensis*). Nest searching was conducted on the study site in northwestern Schaste Bay throughout the season; as well as, in southwestern sections from Chorniy River to Komel River from 5-8 of July. Throughout the study site in 2020 we found 19 nests, while in southwestern Schaste Bay we found 6 more nests (Table 6). Chicks were captured and banded right after hatching. In 2020 we measured 68 eggs and banded 32 chicks on the study site (Table 7) and measured 23 eggs in southwestern Schaste Bay (Table 9).

Common Redshank nest site selection measurements

In 2020 we measured nest-site features of 22 nests found in 2019 and 13 nests found in 2020. We also measured the same nest-site features for points a random distance and direction away from each nest to assess nest-site selection of used versus available habitat. An example of the data sheets used can be found in Figure 7. Analysis is ongoing. The goal is to determine if Common Redshanks select for particular landscape characteristics during the nesting period.

8 июля 53.47169 (серебряный) 140 91441

№ Гнезда: W2 Травник: Измерения место гнездование 2019

Маскировка когда нашли: С верху: С: Ю: В: З: Аспект:

Маскировка когда окончина: С верху: С: Ю: В: З: Асп.:

Когда нашли 8.06 Когда окончина 19.06

Дата: 11.04

Размер гнезды: Длина: Ширина: Глубина: Высота растительности: Короткая (<13) | Сред. (13-19) | Высокая (>19)

Окола гнезда: С Ю В З

1м от гнезда: С Ю В З

С: 2м 4м 6м 8м 10м 20

Ю: 2м 4м 6м 8м 10м 20

В: 2м 4м 6м 8м 10м 20

З: 2м 4м 6м 8м 10м 20

Вид Растительности: шир окол. осока, куст. ива 60 см на висл 62-4м

Высота гнезды: Рельеф:

Гнезд по отношению к вездеходы след: На след Между след Рядом с следом

Расстояние от след: Луг: Возвышенный Низкий Средний

Неровность: Низкий Средний Высокий

Вороны(?) Хищники(?)

Заметки: ПП 5%

Высота растительности около гнезда: С Ю В З

Высота растительности-1м от гнезда: С Ю В З

С: 2м 4м 6м 8м 10м 40

Ю: 2м 4м 6м 8м 10м 50

В: 2м 4м 6м 8м 10м 40

З: 2м 4м 6м 8м 10м 40

Дист. от: Глины Пруды

Реки Дерев След

Линий прилива | Затоплен? Д/Н

Дата(ы) затопления:

Дист. от ближайшего гнезда №

Ширина и длина прудов: # Пруд

1) Ш Д ПП 30%

2) Ш Д

3) Ш Д

4) Ш Д

5) Ш Д

6) Ш Д

7) Ш Д

Произвольное гнездо: измерения место гнездование

№ Произвольное гнездо: Направление N Расстояние 39

GPS С 53.47202 GPS В 140 91 443

Маскировка когда «нашли»: С верху: С: Ю: В: З: Аспект:

Маскировка когда «окончина»: С верху: С: Ю: В: З: Асп.:

Когда «нашли» 8.06 Когда «окончина» 19.06

Дата: 11.04

Высота растительности: Короткая (<13) | Сред. (13-19) | Высокая (>19)

Окола гнезда: С Ю В З

1м от гнезда: С Ю В З

С: 2м 4м 6м 8м 10м 35

Ю: 2м 4м 6м 8м 10м 35

В: 2м 4м 6м 8м 10м 30

З: 2м 4м 6м 8м 10м 30

Вид Растительности: шир осока, куртина ивн кустар, черешен, осышка

Высота гнезды: Рельеф:

Гнезд по отношению к вездеходы след: На след Между след Рядом с следом

Расстояние от след: Луг: Возвышенный Низкий Средний

Неровность: Низкий Средний Высокий

Заметки: ПП 2%

Высота растительности около гнезда: С Ю В З

Высота растительности-1м от гнезда: С Ю В З

С: 2м 4м 6м 8м 10м 60

Ю: 2м 4м 6м 8м 10м 60

В: 2м 4м 6м 8м 10м 30

З: 2м 4м 6м 8м 10м 60

Дист. от: Глины Пруды

Реки Дерев След

Линий прилива | Затоплен? Д/Н

Дата(ы) затопления:

Дист. от ближайшего гнезда №

Ширина и длина прудов: # Пруд

1) Ш Д

2) Ш Д

3) Ш Д

4) Ш Д

5) Ш Д

6) Ш Д

7) Ш Д

Figure 7 – An example of the data sheets used to measure Common Redshank nesting features.

Table 3 – Date, Time, Banding Scheme of captured Common Redshank in 2020.

№	Nest ID	Coordinates		Date Captured	Time Captured	Metal Band Number	Banding Scheme	Red Engraved Flag Code
		N	E					
1	3	53.47084	140.90244	22 June	14:35	HS012342	LB,DG/M:YF,RFE/-	KY
2	12	53.47163	140.91402	24 June	17:10	HS012343	LB,Y/M:YF,RFE/-	KU
3	5	53.46867	140.91177	26 June	18:30	HS012344	Y,LB/M:YF,RFE/-	KP
4	13	53.46778	140.91371	26 June	20:26	HS012345	Y,DG/M:YF,RFE/-	KT
5	4	53.46727	140.91264	27 June	10:20	HS012324	YF,RFE/-:Y,DG/M	AP
6	13	53.46778	140.91371	27 June	11:20	HS012346	DG,LB/M:YF,RFE/-	KL
7	4	53.46727	140.91264	30 June	11:40	HS012349	DG,Y/M:YF,RFE/-	KK
8	10	53.46815	140.91409	30 June	14:15	HS012306	YF,RFE/-:R,LB/M	AJ
9	9	53.47202	140.91409	2 July	14:19	HS012351	DB,LB/M:YF,RFE/-	KN
10	15	53.46780	140.90833	9 July	18:36	HS012356	DB,Y/M:YF,RFE/-	EH
11	14	53.46962	140.90372	9 July	19:42	HS012357	Y,DB/M:YF,RFE/-	EN
12	16	53.47087	140.91446	13 July	17:10	HS012368	LB,DB/M:YF,RFE/-	EE
13	17	53.47068	140.91440	13 July	20:30	HS012369	R,DG/M:YF,RFE/-	EC
14	16	53.47087	140.91446	15 July	18:58	HS012374	LB,R/M:YF,RFE/-	EU
15	19	53.47199	140.91780	20 July	14:10	IS001653	Y,R/M:YF,RFE/-	EJ
16	15	53.46780	140.90833	21 July	11:20	HS012379	R,LB/M:YF,RFE/-	EK
17	19	53.47199	140.91780	24 July	11:35	HS012386	DB,R/M:YF,RFE/-	EA

Table 4 — Morphological measurements of captured Common Redshank in 2020.

№	Mass (g)	Culmen (mm)	Nares to Tip (mm)	Head Length (mm)	Tarsus from Bone (mm)	Tarsus from Heel (mm)	Unbent Wing Length (mm)
1	110.1	39.4	31.2	70.8	44.7	42.4	156.0
2	131.9	39.6	32.6	73.7	47.4	44.4	147.5
3	111.7	40.6	32.4	74.1	47.0	43.1	145.5
4	109.9	41.5	33.0	73.6	45.3	42.2	145.0
5	111.0	39.6	31.8	72.2	47.8	45.5	153.5
6	123.8	41.4	32.1	75.7	47.0	41.6	148.0
7	105.8	38.3	31.4	70.9	44.0	41.9	148.0
8	119.3	40.0	31.6	74.0	46.2	42.9	151.0
9	112.5	37.8	29.9	70.7	45.6	42.8	149.0
10	125.6	42.2	33.7	75.8	48.5	46.5	146.0
11	124.0	44.1	34.5	76.9	49.4	46.6	150.5
12	124.1	37.7	30.7	70.2	46.6	44.2	149.0
13	106.2	40.1	33.1	71.4	49.8	48.0	150.0
14	112.5	40.8	33.7	73.8	46.9	45.0	148.5
15	123.7	41.4	33.4	73.1	47.7	45.6	150.0
16	127.4	41.8	34.1	74.7	48.9	46.3	154.0
17	119.0	43.3	34.2	75.2	50.6	47.5	146.5

Table 5 - Morphological measurements of captured Common Redshank in 2020 cont'd.

No	Straight Wing Length (mm)	Tail Length from Feather Base (mm)	Tail Length from Uropygial Gland (mm)	Feathers Collected?	Blood Sample Taken?	Chicks Banded?
1	159.0	61.0	65.7	Yes	Yes	No
2	150.5	56.0	62.3	Yes	Yes	No
3	147.5	58.0	60.5	Yes	Yes	Yes
4	146.5	58.0	67.0	Yes	Yes	No
5	154.5	56.0	64.9	No	No	Yes
6	151.0	62.0	64.7	Yes	Yes	No
7	150.0	56.0	60.2	Yes	Yes	Yes
8	152.5	60.0	66.3	Yes	Yes	Yes
9	150.0	59.0	61.8	Yes	Yes	Yes
10	147.5	60.0	61.1	Yes	Yes	Yes
11	151.5	54.0	61.4	Yes	Yes	No
12	152.0	57.0	61.1	Yes	Yes	Yes
13	152.0	57.0	61.7	Yes	Yes	No
14	153.0	60.0	69.8	Yes	Yes	Yes
15	153.0	57.4	60.8	Yes	Yes	Yes
16	155.5	61.0	64.0	Yes	Yes	Yes
17	147.0	59.0	64.5	Yes	Yes	Yes

Table 7 – Measurements of Common Redshank Nests found in 2020

Nest ID	Date Found	Latitude	Longitude	Egg Mass (g)	Egg Size (mm)	Nest Size (mm)	Nest Depth (mm)
1	9 June	53.46714	140.91235	-	43.0x30.1 43.3x29.8 43.2x30.2	11.0x10.0	4.0
2	9 June	53.46799	140.91312	-	43.0x31.1 44.4x31.7 42.8x32.0	9.0x10.0	4.0
3	13 June	53.47084	140.90244	-	45.0x30.0 45.6x29.8 44.2x29.1 44.5x29.3	8.0x12.0	6.0
4	14 June	53.46727	140.91264	18.3 18.7 19.0 18.4	42.5x29.7 43.1x29.6 42.2x29.8 42.7x29.4	-	-
5	9 June	53.46867	140.91177	19.3 20.7 21.1 20.0	42.6x30.3 43.9x31.1 44.2x31.2 43.0x30.4	-	-
6	17 June	53.47269	140.90977	-	46.6x30.6	-	7.0
7	17 June	53.47774	140.90599	-	42.8x29.9 44.0x30.1 43.8x30.8	-	5.5
8	19 June	53.48183	140.90091	15.6 15.8	40.5x27.4 40.6x27.8	12.0x10.0	9.0
9	19 June	53.47202	140.91409	17.6 18.5 17.2 16.9	43.3x30.2 44.0x30.3 41.6x29.6 41.3x29.6	9.0x9.0	3.5
10	21 June	53.46815	140.91409	21.3 20.3 20.8 21.5	43.5x31.6 43.6x31.1 43.4x31.4 42.9x32.0	11x10	3.0
11	22 June	53.47147	140.90727	18.6 18.6 19.1 16.4	43.2x29.3 43.2x29.3 43.4x29.6 42.7x27.9	9x8	2.0

Table 7 Continued

12	24 June	53.47163	140.91402	20.7 21.0 22.2 20.9	44.1x31.0 45.8x30.7 47.1x31.2 44.5x30.2	7x7	3.5
13	26 June	53.46778	140.91371	19.9 21.1 20.3 21.2	41.3x30.7 42.4x31.3 43.8x30.3 43.8x30.9	9x9	-
14	3 July	53.46962	140.90372	18.5 18.6 19.1 -	44.6x29.5 45.6x29.0 46.9x29.0 45.8x29.2	9x9	4.5
15	3 July	53.46780	140.90833	20.2 20.4 19.8 20.0	44.1x30.4 44.5x30.8 42.7x30.5 43.0x30.4	9x9	4.5
16	11 July	53.47087	140.91446	18.8 18.6 18.6 19.0	42.5x31.1 42.3x30.8 43.2x30.7 44.3x30.6	7x8	9
17	12 July	53.47068	140.91440	19.4 18.7	44.7x29.9 44.9x29.5	9x9.5	5.5
18	12 July	53.47503	140.91576	19.1 19.9	43.6x29.9 44.7x30.3	9x10	-
19	20 July	53.47199	140.91780	20.2 21.0 20.9 20.3	45.6x31.4 45.0x31.9 45.0x32.0 44.8x31.6	9x9	5

Table 7 – Date, Coordinates, and Banding Scheme of Common Redshank Chicks

Chick Number	Nest ID	Latitude	Longitude	Date Banded	Time of Banding	Metal Band Number	Banding Scheme
1	9	53.47202	140.91409	3 July	—	HS012352	-/M:R/-
2	9	53.47202	140.91409	3 July	—	HS012353	-/M:R/-
3	9	53.47202	140.91409	3 July	—	HS012354	-/M:R/-
4	9	53.47202	140.91409	3 July	—	HS012355	-/M:R/-
5	-	53.39956	140.03262	5 July	15:20	HS012380	-/M:R/-
6	-	53.39956	140.03262	5 July	15:20	HS012381	-/M:R/-
7	-	53.39956	140.03262	5 July	15:20	HS012382	-/M:R/-
8	5	53.46867	140.91177	12 July	9:44	HS012358	-/M:R/-
9	5	53.46867	140.91177	12 July	9:44	HS012359	-/M:R/-
10	5	53.46867	140.91177	12 July	9:44	HS012360	-/M:R/-
11	5	53.46867	140.91177	12 July	9:44	HS012361	-/M:R/-
12	4	53.46727	140.91264	12 July	10:10	HS012362	-/M:R/-
13	4	53.46727	140.91264	12 July	10:10	HS012363	-/M:R/-
14	4	53.46727	140.91264	12 July	10:10	HS012364	-/M:R/-
15	4	53.46727	140.91264	12 July	10:10	HS012365	-/M:R/-
16	-	53.46888	140.91544	12 July	18:30	HS012366	-/M:R/-
17	-	53.46888	140.91544	12 July	18:30	HS012367	-/M:R/-
18	10	53.46815	140.91409	13 July	21:06	HS012370	-/M:R/-
19	10	53.46815	140.91409	13 July	21:06	HS012371	-/M:R/-
20	10	53.46815	140.91409	13 July	21:06	HS012372	-/M:R/-
21	10	53.46815	140.91409	13 July	21:06	HS012373	-/M:R/-
22	16	53.47087	140.91440	17 July	—	HS012375	-/M:R/-
23	16	53.47087	140.91440	17 July	—	HS012376	-/M:R/-
24	16	53.47087	140.91440	17 July	—	HS012377	-/M:R/-
25	16	53.47087	140.91440	17 July	—	HS012378	-/M:R/-
26	-	53.46829	140.89970	21 July	12:05	HS012383	-/M:R/-
27	-	53.46829	140.89970	21 July	12:05	HS012384	-/M:R/-
28	-	53.46829	140.89970	21 July	12:05	HS012385	-/M:R/-
29	15	53.46780	140.90833	25 July	14:10	HS012339	-/M:R/-
30	19	53.47199	140.91780	27 July	9:33	HS012387	-/M:R/-
31	19	53.47199	140.91780	27 July	9:33	HS012388	-/M:R/-
32	19	53.47199	140.91780	27 July	9:33	HS012389	-/M:R/-

Interannual site fidelity of Common Redshanks to nesting territories

In 2020 on the study site we observed four Common Redshank banded in 2019 nesting again. These birds had red engraved flag codes AN, AJ, AL, and AP (Figure 8, Table 8). These four birds belonged to three nests in both years. AN and AJ nested together in consecutive years. This pair situated their 2020 nest only 11 m to the northwest of their 2019 nest. The mates of AL and AP were not banded in 2019, thus it was impossible to say if they maintained the same pair bond.

AL in 2020 situated its nest 41 m to the south of its 2019 nest. AP situated its nest 42 m to the northeast from its 2019 nest. It is noteworthy that AN and AJ's nest was successful in both years. AP's nest fate in 2019 was undetermined as it was still active upon departure (although it is highly likely that it did succeed given the late stage of incubation), and its nest was successful in 2020. Despite AL's nesting attempting having failed in 2019, it still re-nested in a very similar location in 2020.

Site fidelity was also assessed for other banded birds that nested in 2019. Birds AC, AK, AY, KA, and KE were observed in 2020, but were not confirmed to nest in the area. Thus in 2020, out of 15 banded birds with unique color combinations, nine (60%) were resighted on our study site.

Conclusions:

- 1) Re-nesting Common Redshank shifted their nesting locations an average of 31.33 m (SD 17.62, Range 11-42, $n=3$).
- 2) A total of nine birds banded in 2019 were found near their previous nesting locations in 2020, pointing to high fidelity to breeding territories.
- 3) The banded pair nesting together in 2019 and 2020 confirms Common Redshank maintain pair bonds for multiple years.
- 4) Common Redshank may nest in the same area regardless of nest success the previous year, although more data is needed to extend this result.



Figure 8 – Distribution of 3 nests on the study site from 4 banded Common Redshank (An, AJ, AL, AP) in 2010 compared to 2020. AJ and AN nested together in both years. Yellow points are 2019 nests, while red points are 2020 nests.

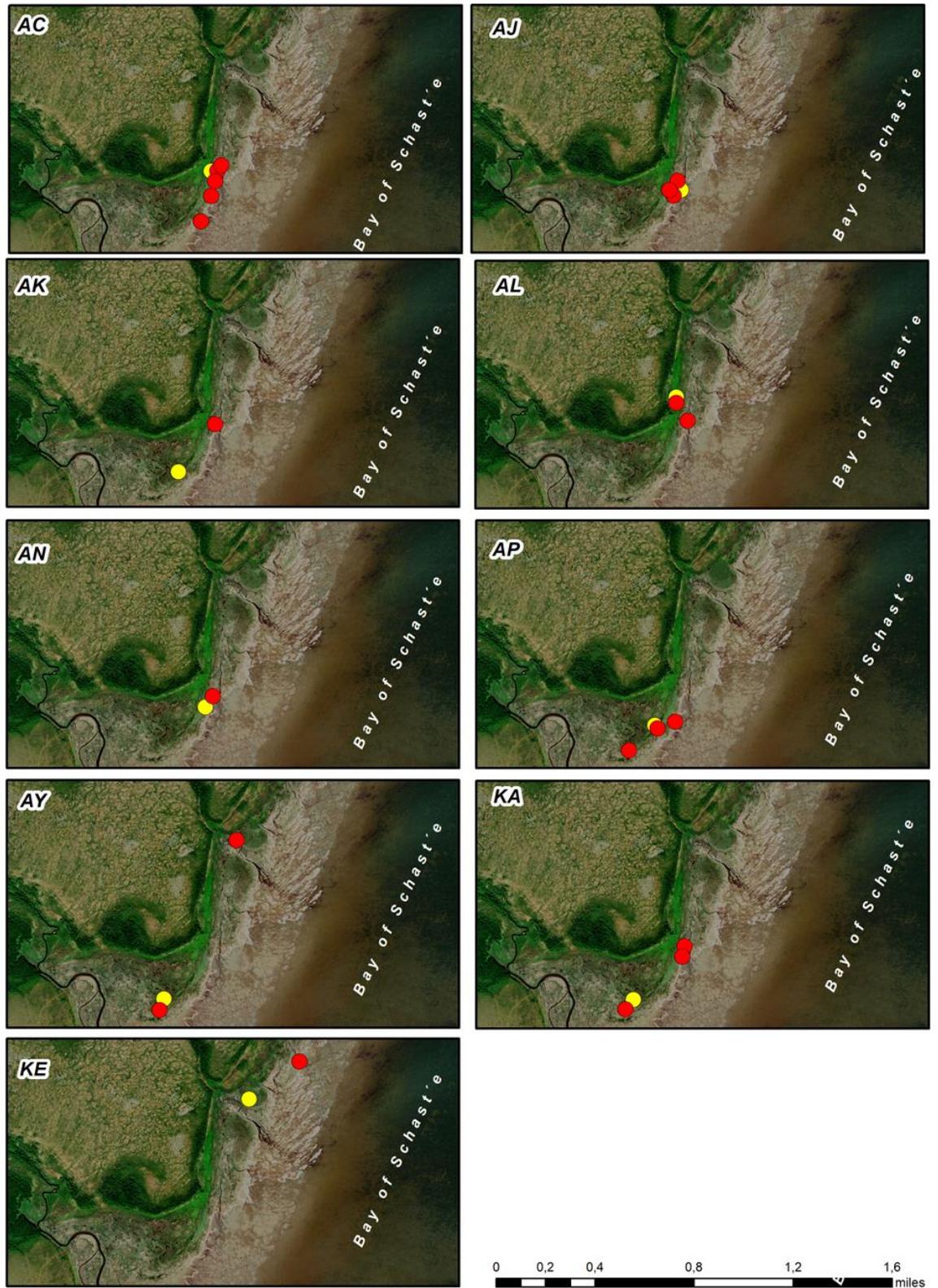


Figure 9 – Observations of banded Common Redshank in 2019 and 2020. Yellow points represent areas where birds were captured on their nests in 2019, red points represent observations of banded birds in 2020.

Table 8 – Data regarding banded Common Redshank and their ties to found nests and observations in 2020

Red Engraved Flag Code	2019					2020				
	Date of capture or finding of nest	Coordinates		Capture Method	Nest Fate	Date of resighting or capture	Coordinates		Significance	Nest Fate
		N	E				N	E		
AE*	June 21	53.46654	140.91156	Nest 1	Success	Undetermined				
AK	June 08	53.46654	140.91156	Nest 1	Success	May 27	53.46933	140.91512	Survey	
AH*	June 12	53.46577	140.91040	Nest 6	Failure				Not Identified	
AE/AH*						May 27	53.46933	140.91512	Survey	
AE/AH*						May 27	53.46642	140.91168	Survey	
AE/AH*						June 1	53.46633	140.91350	Survey	
AE/AH*						June 4	53.46605	140.91289	Survey	
AC	June 10	53.46930	140.91451	Nest 3	Failure	May 27	53.46933	140.91512	Survey	
AC						June 1	53.46965	140.91551	Survey	
AC						June 1	53.46870	140.91490	Survey	
AC						June 1	53.46632	140.91350	Survey	
AC						June 4	53.46783	140.91451	Survey	
AA	June 12	53.47480	140.91534	Nest 8	Failure				Not Observed	
AN	June 21	53.46807	140.91418	Nest 10	Success	June 1	53.46870	140.91490	Survey	
AN						July 10	53.46815	140.91409	Nest 10	Success
AJ	June 21	53.46807	140.91418	Nest 10	Success	June 1	53.46870	140.91490	Survey	
AJ						June 4	53.46783	140.91451	Survey	
AJ						June 30	53.46815	140.91409	Nest 10	Success
AL	June 30	53.47104	140.91437	Nest 13	Failure	June 1	53.46965	140.91551	Survey	
AL						?	53.47068	140.91440	Nest 17	Failure
EC						July 13	53.47068	140.91440	Nest 17	Failure
AU	July 2	53.47619	140.91928	Nest 16	Success				Not Observed	
AT	July 4	53.46693	140.91196	Nest 17	Failure				Not Observed	
KJ	July 4	53.46591	140.91087	Nest 18	Failure				Not Observed	
KE	July 5	53.47550	140.91846	Nest 19	Failure	July 4	53.47773	140.92340	Survey	

Table 8 Continued

AP	July 10	53.46699	140.91222	Nest 20	Success	May 27	53.46681	140.91249	Survey	
AP						May 27	53.46550	140.90971	Survey	
AP						June 1	53.46719	140.91422	Survey	
AP						June 27	53.46727	140.91264	Nest 4	Success
KK						June 20	53.46727	140.91264	Nest 4	Success
KA	July 12	53.46616	140.91011	Nest 22	Failure	May 27	53.46933	140.91512	Survey	
KA						May 27	53.46560	140.90936	Survey	
KA						June 1	53.46870	140.91490	Survey	
AY	July 12	53.46616	140.91011	Nest 22	Failure	May 27	53.46550	140.90971	Survey	
AY						May 28	53.47553	140.91722	Survey	
KC	July 18	53.46526	140.90906	Nest 23	Success				Not Observed	
KH	July 24	53.469810	140.915484	Elevated Bow-net Table					Not Observed	
KP						June 26	53.46867	140.91177	Nest 5	Success
KN						July 2	53.47202	140.91409	Nest 9	Success
KY						June 22	53.47084	140.90244	Nest 3	Success
KU						June 24	53.47163	140.91402	Nest 12	Failure
KT						June 26	53.46778	140.91371	Nest 13	Failure
KL						June 27	53.46778	140.91371	Nest 13	Failure
EH						July 9	53.46780	140.90833	Nest 15	Success
EK						July 21	53.46780	140.90833	Nest 15	Success
EN						July 9	53.46962	140.90372	Nest 14	Success
EE						July 13	53.47087	140.91446	Nest 16	Success
EU						July 15	53.47087	140.91446	Nest 16	Success
EJ						July 20	53.47199	140.91780	Nest 19	Success
EA						July 24	53.47199	140.91780	Nest 19	Success

Not Captured	June 08	53.47170	140.91441	Nest 2	Failure
Not Captured	June 11	53.47081	140.91391	Nest 4	Failure
Not Captured	June 12	53.46567	140.91002	Nest 5	Failure

Not Captured	June 12	53.47280	140.90775	Nest 7	Failure					
Not Captured	June 18	53.46547	140.90961	Nest 9	Failure					
Not Captured	June 29	53.46581	140.90800	Nest 11	Failure					
Not Captured	June 29	53.46647	140.90710	Nest 12	Failure					
Not Captured	July 1	53.47561	140.91527	Nest 14	Failure					
Not Captured	July 1	53.47604	140.91736	Nest 15	Failure					
Not Captured	July 10	53.47608	140.91856	Nest 21	Failure					
Not Captured						June 9	53.46714	140.91235	Nest 1	Failure
Not Captured						June 9	53.46799	140.91312	Nest 2	Failure
Not Captured						June 17	53.47269	140.90977	Nest 6	Failure
Not Captured						June 17	53.47774	140.90599	Nest 7	Failure
Not Captured						June 19	53.48183	140.90091	Nest 8	unknown
Not Captured						June 22	53.47147	140.90727	Nest 11	Failure
Not Captured						July 12	53.47503	140.91576	Nest 18	Failure

In 2019, one mistake was made during banding. Two birds with metal bands HS012303 and HS012304 were banded with the same color bands Orange over Dark Green. In 2020, we were not able to conclude if the Orange over Dark Green individual observed was one or the other.

Distribution of Common Redshank nests on the study site

The distribution of Common Redshank nests on the study site for 2019 and 2020 are represented in Figures 10 and 11. It must be stated that search effort throughout the inland hummock bog was expanded in 2020 compared to 2019. As such, more nests (5) were found on the inland bog in 2020 than in 2019 (Figure 1). The coastal meadow was searched thoroughly, regularly, and with similar intensity in both years. Despite similar search effort, coastal meadow nests between years decreased from 22 to 13.

As is shown in Figure 10, the changes in nest quantity and distribution occurred on the southern and northern sections of the study site. Our leading hypothesis to these inter-annual differences is a change in the hydrological dynamics of the study site between years, especially extent of flooding during high tide. In 2020, Common Redshank tended to nest in more elevated areas, where there was a lower chance of flooding during high tide.

On New Years Eve 2019 and New Years Day 2020, a flood swept several sections of our study site and surrounding area. This flood was likely caused by storm surge during a wind storm throughout the Okhotsk Sea. Such high water levels during the winter has not occurred in a long time. Flooding reached all the meadow sections of Schaste Bay, to houses in Vlaseyvo, as well as other sections of the Okhotsk coast and the Amur estuary. This water then froze on the coast, and thus possibly caused changes to the structure and hydrological dynamics throughout Common Redshank coastal meadow nesting areas. These changes may have forced Common Redshanks to nest in the inland bog instead of on the coastal meadow.

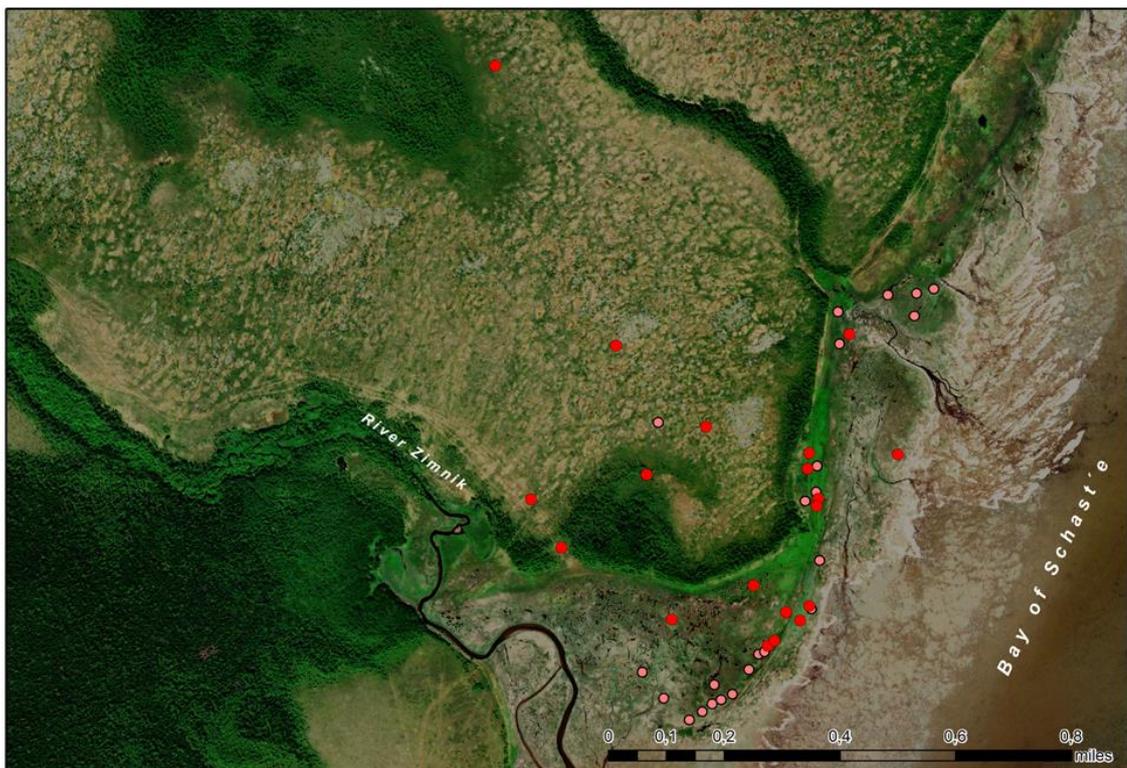


Figure 10 – Distribution of Common Redshank nests on the study site in 2019 and 2020. Pink points are 2019 nests, red points are 2020 nests.

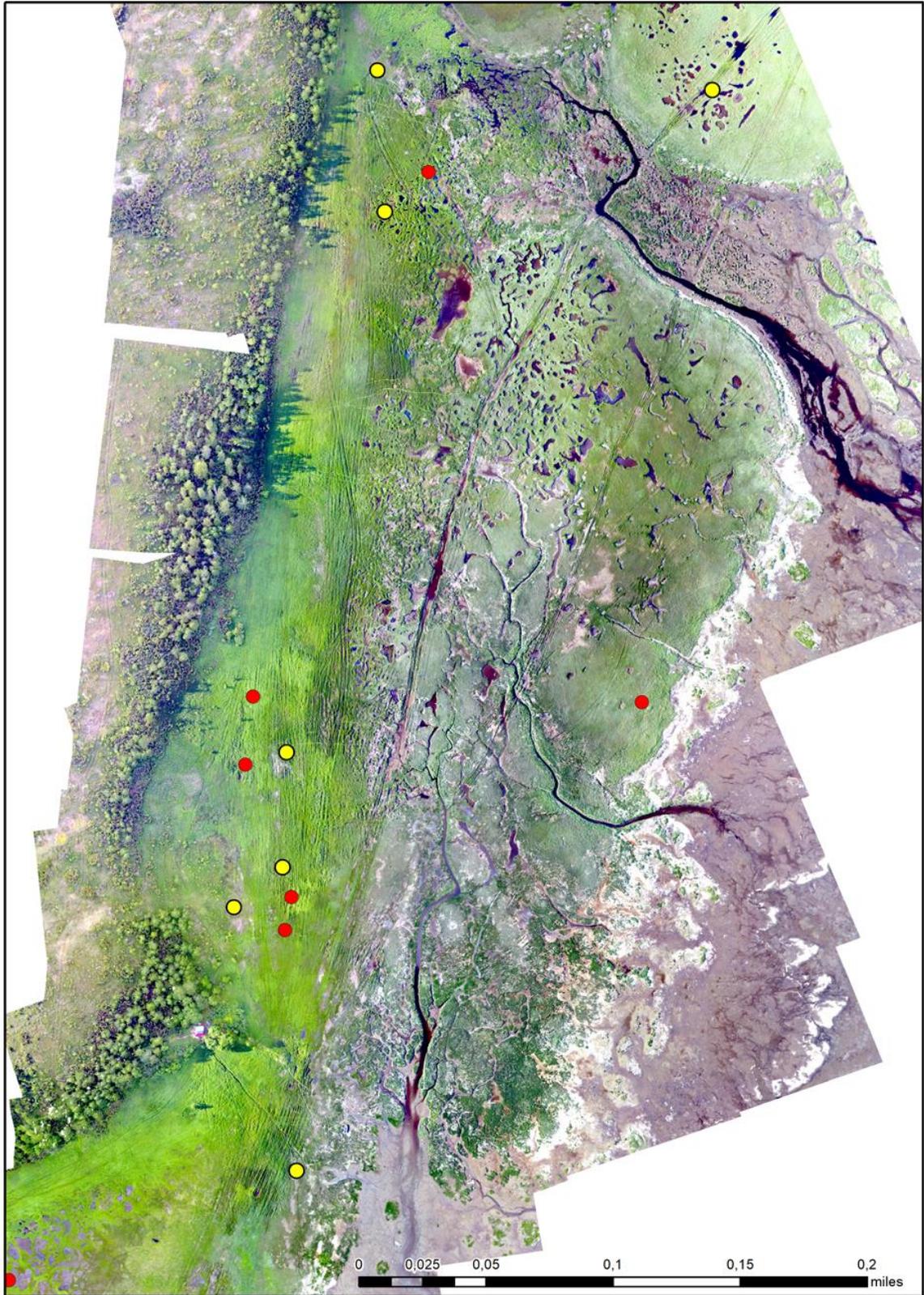


Figure 11 – Mosaic of the northern section of our study site taken with a DJI Phantom 4 drone. Yellow points are Common Redshank nests found in 2019, red points are nests found in 2020.

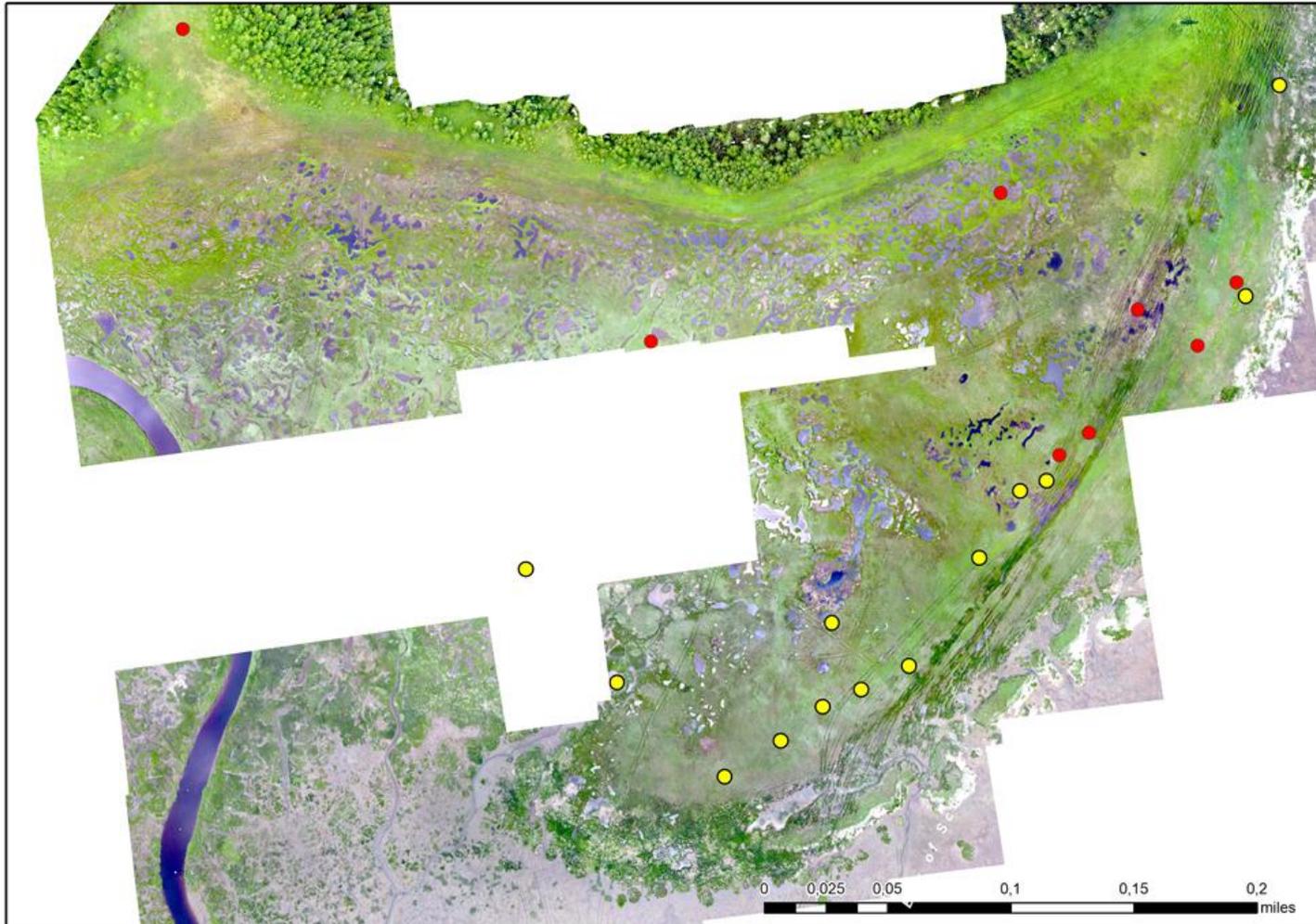


Figure 12 – Mosaic of the southern section of our study site taken with a DJI Phantom 4 drone. Yellow points are Common Redshank nests found in 2019, red points are nests found in 2020.

Breeding Success of Common Redshank and Possible Limiting Factors

In 2020, Common Redshank nests had a success rate of 47.4% (i.e. 9 out of 19 nests successfully hatched chicks). Out of the other 10 nests, 9 failed and 1 had an unknown fate (Table 8). Reasons for nest failure were depredation by crows and foxes (2 nests), abandonment due to disturbance from predators and researchers (5 nests), and flooding during periods of high tide (2 nests). In 2019 nest success was 21.74% (5/23), 17 failed, and 1 had an unknown fate.

The difference in nesting success between years was likely due to varying levels of Large-billed Crow (*Corvus macrorhynchos*) activity. In 2019 their abundance and presence on the coastal meadow was higher than in 2020. It is also possible nest abandonment was higher in 2019 due to increased researcher presence.

Common Redshank Migration

In the three years of the project we banded 42 adult Common Redshank: 8 in 2018, 17 in 2019, and 17 in 2020. We also banded chicks: 7 in 2019 and 32 in 2020. Despite the high number of banded individuals, not a single bird has been resighted throughout the flyway. It is possible this is due to the little attention paid to this common species during surveys. It is also possible banded individuals are lost in the crowd, as there are tens of thousands of the far eastern Common Redshank subspecies (*Tringa totanus ussuriensis*). In addition, in 2020 we observed one Common Redshank banded with white over black flags from Shanghai, China. Unfortunately, the individual bird was missing color bands or a metal band and as such individual information cannot be obtained.

Nevertheless, thanks to tagging, and subsequently re-capturing, the species with MK-5093 light-level geolocators, we were able to obtain interesting and valuable information about their migratory ecology. Analysis is ongoing (Figure 13).

HS012392 stationary 2+ days

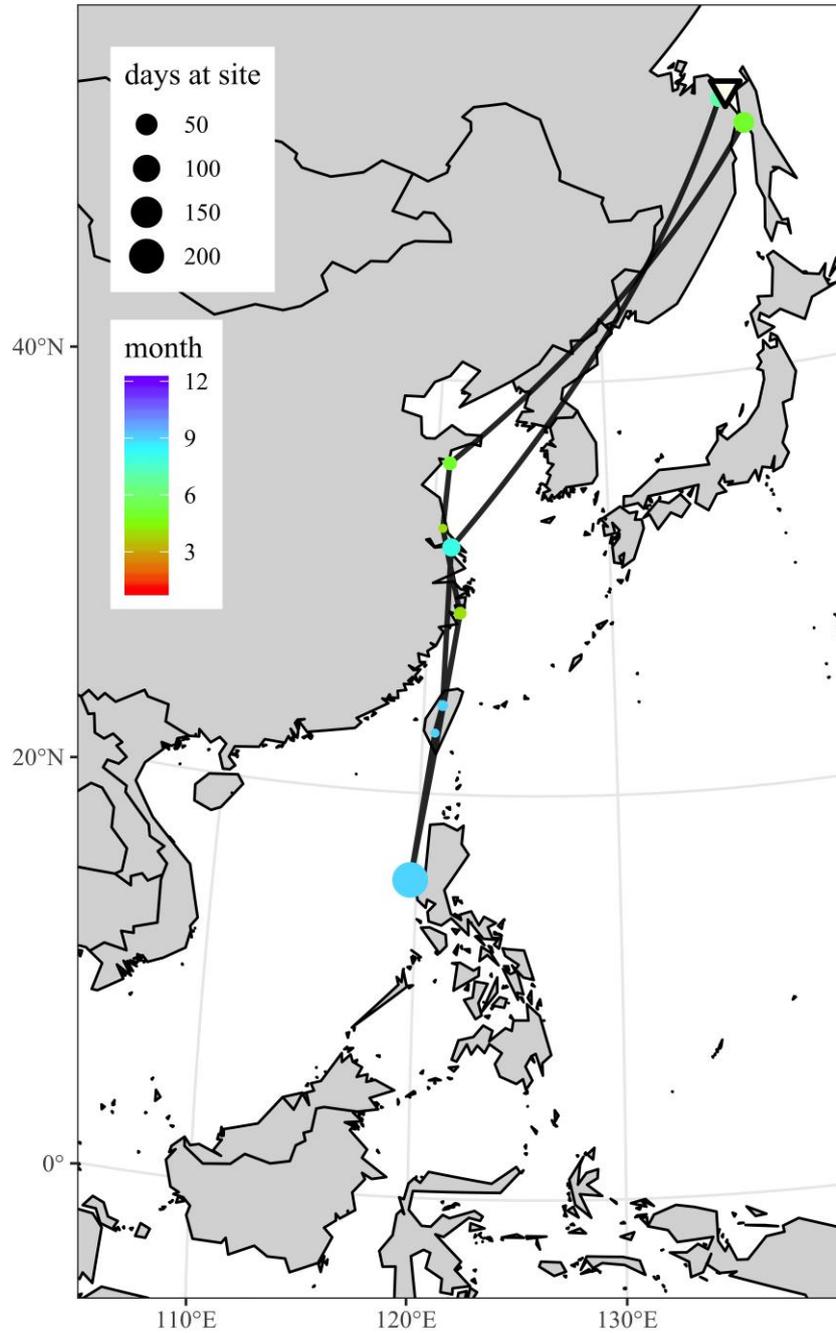


Figure 13 – Migratory path of one Common Redshank tagged with a MK-5093 light-level geolocator from 2018 to 2019.

Searching for Common Redshank nests in southwestern coastal Schaste Bay

The southern coast of Schaste Bay from the mouth of Chorniy River to the mouth of Komel River was surveyed 5-8 of July 2020 for Common Redshank nests. We found six nests and measured 23 eggs (Table 9).

Table 9 – Common Redshank nest features in southwestern Schaste Bay

Nest ID	Date Found	Latitude	Longitude	Mass (g)	Egg size (mm)	Nest size (cm)	Nest depth (cm)
1	5 July	53.40022	141.03137	-	43.3x30.1 45.8x30.0 44.7x29.4 45.8x30.1	7.5x8.5	3.0
2	5 July	53.40442	141.01048	-	43.0x31.2 42.2x31.5 43.4x30.7 42.2x30.7	9x9	4.5
3	5 July	53.40434	141.01190	-	42.0x30.7 42.3x31.2 42.9x29.9 42.3x30.0	9x9	6.5
4	6 July	53.38314	141.09012	-	43.4x29.2 42.5x30.0 41.4x29.3 44.5x30.0	11x11	7
5	8 July	53.31079	141.20856	20.8 20.6 21.1	45.2x30.5 43.7x30.8 42.8x31.4	9x8	5
6	8 July	53.31233	141.20718	19.0 19.3 19.0 19.1	42.2x30.1 41.7x30.5 41.2x30.6 41.9x30.7	8.5x8.5	4.5

Monitoring Nordmann’s Greenshank

In 2020 we first observed Nordmann’s Greenshank arriving to Schaste Bay on the 19th of May—two days later than Common Redshank. In other years, Nordmann’s Greenshank typically arrive before Common Redshank. For example, in 1990 near the southern portion of Tugur Bay, Nordmann’s Greenshank arrived on the 19th of May, whereas Common Redshank arrived on the 22nd. As Common Redshank are very noticeable species, errors in the first day of observation are unlikely.

In 2020, on our study site we observed nine breeding Nordmann’s Greenshank pairs, of which several were banded in previous years, including birds with red engraved flag codes of P1 and P2 which nested together in consecutive years. Other banded birds that nested in our study site included T1, J1, X2, and V2.

Captured and Banded Nordmann’s Greenshank

In 2020 we captured and banded 2 adult Nordmann’s Greenshank. See Table 15 and 16 for capture dates, locations, and morphological measurements. The lower number of banded birds was due to a high site fidelity of already banded birds. We also banded 1 Nordmann’s Greenshank chick. See Table 10 and 11 for details.

Nordmann’s Greenshank Breeding

On the 19th of June 2020, on the ground of an inland bog, we found an active Nordmann’s Greenshank nest. This ground nest is the first ever found for the species and highlights how little we know about their true breeding ecology. This was also only the 6th active nest belong to the species ever found. This nest belonged to a pair banded in 2019 (P1 and P2). The nest produced three chicks, which we later observed alongside P1 in the coastal meadow and mudflat of our study site. Additionally, we found 3 not active nests belonging to the species (Figure 14).

Table 10 — Nordmann’s Greenshank 2020 nest egg dimensions and coordinates

Date found	Latitude	longitude	Egg size (mm)
19 July	53.48263	140.90147	49.6x34.5
			48.2x35.0
			49.2x35.0
			50.5x34.0

Table 11 – Date and coordinates of the banded Nordmann’s Greenshank chick

Coordinates		Date	time	Metal Band Number	Banding Scheme
N	E				
53.46651	140.91321	28 June	20:37	HS012347	-/M:R/-

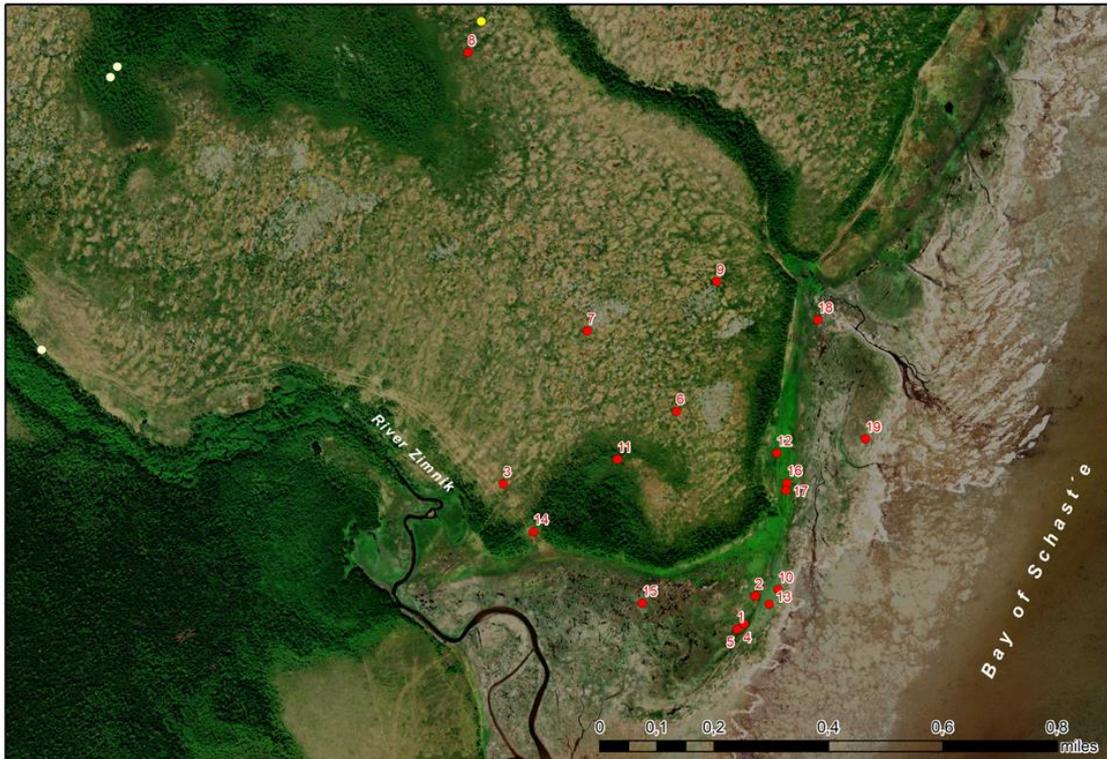


Figure 14 – Map of the locations of Nordmann’s Greenshank and Common Redshank nests found in 2020. Red points are active nests of Common Redshank, yellow points are active nests of Nordmann’s Greenshank, white points are old nests of Nordmann’s Greenshank.

Nordmann’s Greenshank Breeding Success and Possible Limiting Factors

In the three years of the project we have found two active nests. The difficulty of finding nests lies in the low density of this Endangered species, as well as how difficult it is to search in the vast wilderness. The 2019 nest was depredated by a Large-billed Crow. The same year, near the coastal meadow and intertidal flat, we found the remains of a two-week-old fledgling depredated by a Short-eared Owl.

The 2020 active nest hatched 3 chicks. The fourth chick did not hatch. The habitat of Schaste Bay is relatively pristine with few anthropogenic threats; thus, it is likely the main limiting factor for nesting Nordmann’s Greenshank, at least at our study site, is depredation pressure.

Interannual Site fidelity of Nordmann’s Greenshank banded in 2019

In 2020 we observed five of seven (71.4%) individual adult Nordmann’s Greenshank banded in 2019 return to their breeding grounds. Interestingly, observed Nordmann’s Greenshank are faithful to the same site and a site’s particular location year after year. See Table 12, Figure 15 for details.

In 2020 we did not observe a single Nordmann’s Greenshank banded as a chick in 2019. On one hand it could indicate a low survival of juveniles, but on the other hand it could be a problem with the banding scheme (one metal band and a single color band). This banding scheme, compared to adults, is significantly less noticeable. This low number of observed juveniles could also be the result of low site philopatry. Information about juvenile use of staging and stopover sites is also limited.

Table 12 — Date, coordinates and flag code of observed Nordmann's Greenshank.

№	Date	Coordinates		Flag code
		N	E	
1	19 June	53.48263	140.90147	P1
2	19 June	53.48263	140.90147	P2
3	21 June	53.47685	140.92056	V1
4	25 June	53.48263	140.90147	P1
5	25 June	53.48263	140.90147	P2
6	29 June	53.47764	140.92366	V1
7	30 June	53.46630	140.91307	X2
8	12 July	53.47289	140.91898	P3
9	16 July	53.46513	140.91104	X2
10	17 July	53.48571	140.92796	P1

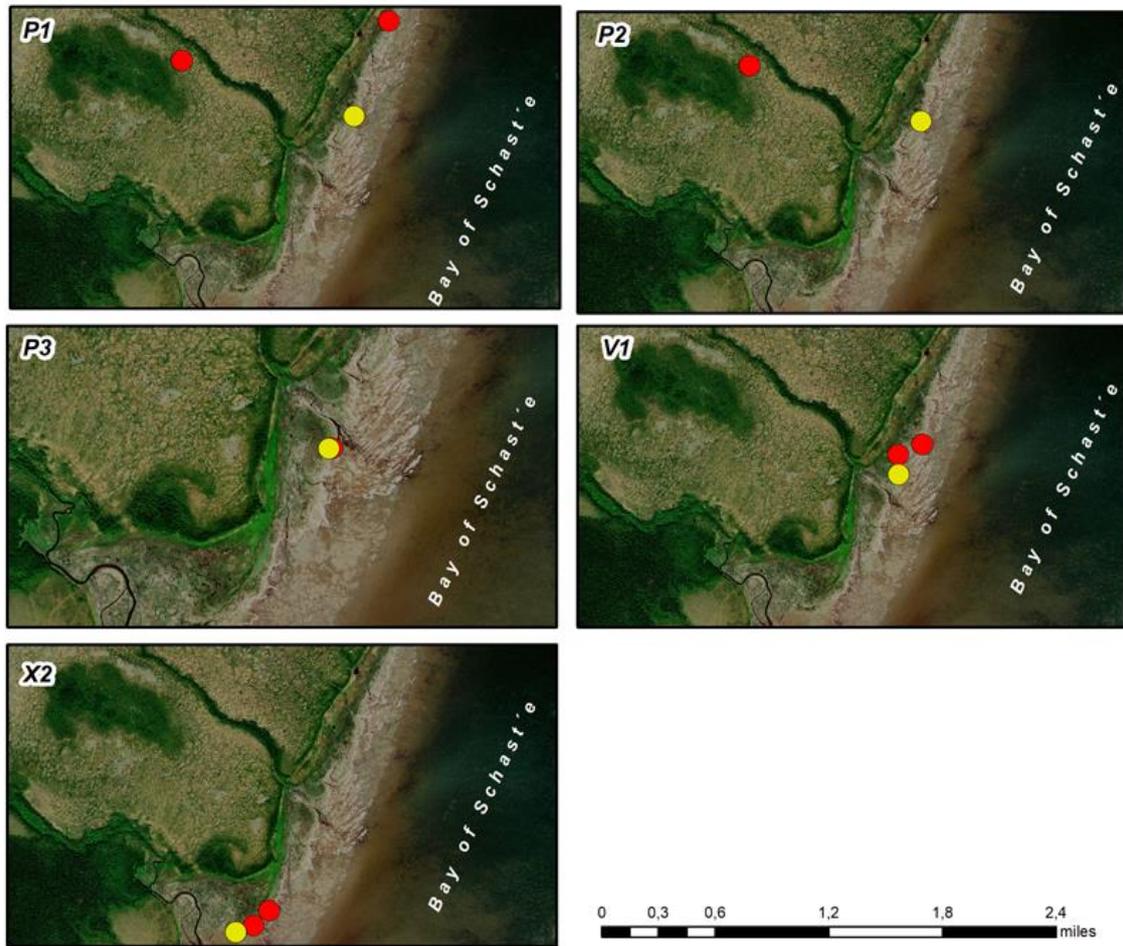


Figure 15 – Locations of observed adult Nordmann's Greenshank banded in 2019. Yellow points are banding locations in 2019, red points are observed locations in 2020.

Description of Nordmann's Greenshanks nests found in 2020

Nest #1: N 53.47424, E 140.88284.

An old uninhabited nest found 2 April 2020. It was 20 m from the left bank of Zimnick river, on the northern margin of a larch and dark-coniferous forest patch that was ~180 m wide, and near a stream bed where the habitat turns into a shrub-larch swamp. 1.8 km separated the nest from the Zimnick River mouth.

The nest was located on a live 15 m tall larch tree, 8 m above the ground, facing eastward. It was separated from a bog by two other trees, each 3-5 meters tall. The tree diameter at nest height was 20 cm. The nest-supporting branch was 2- 2.5 m long, with a base diameter of 5.5 cm.

The nest measured 22 x 18.5 cm, with a nest cup 11 x 12 cm. The overall nest depth was 5–5.5 cm while the outer edge height was 2.5 cm. It was constructed of larch twigs and lichen. Some of the external larch twigs reached 35 cm long while internal larch twigs were 10–15 cm long. Internal twigs also had several small cones. The walls were lined with light green lichen (~5–10%), black lichen (~60–70%), and thin larch twigs (~20%). Dwarf pine needles were distributed around the nest (~3-5%). On the south aspect, a part of the nest was made of black lichen with light green lichen is woven into it.

In June 2020, the nest was checked for nesting birds, with none found. In August, it was collected for further analysis.

* On 24 May 2018, a Nordmann's Greenshank "Vek" call was heard during nest searching in the area. No nest was not found at that time. It is possible this nest belonged to that bird.

Nest #2: N 53.481190, E 140.885740.

An old, uninhabited nest found in June 2020. It was presumably built in 2018. The nest was in a sparse larch forest patch 107 m from the western edge, 383 m from the northern edge, 75 m from the eastern edge, and 153 m from the southern edge. It was 2.375 km from the mouth of the Silver Creek mouth. In 2019, an inhabited nest was found in the same part of the forest, 560 m to the east.

The forest patch was a sparse shrub-larch woodland with sections of uneven bog. The shrub layer included wild rosemary, blueberry, Middendorf birch, and dwarf pines up to 2–3 m tall. The grassy layer mostly consisted of *Carex spp.* sedge. In the vicinity there was: a 16 m tall dead tree 3 m northwest with a 25 cm DBH; a 16 m tall live tree 4 m northeast with a 32 cm DBH; a 15 m tall live tree 3 m away with a 29 cm DBH; a 13 m tall snag 15 m to the south with a 18 cm DBH; and a 8 m tall bent larch tree in 16 m from the nest with a 19 cm DBH.

The nest was located 0.57 m off the ground, 1 m away from the trunk, on a 15 m tall live larch tree. The tree had a diameter at breast height (DBH) of 37 cm, and a diameter at nest height of 25 x 21 cm. The larch tree was shaped like a flag, with its upper branches stretching to the south. The southwest facing nest-supporting branch was 5 m long. The branch had a base diameter of 12 cm, and a diameter underneath the nest of 8 cm. 25% of the nest was covered from the top by the spread twigs of two branches, one of which was only 7 cm above.

The nest was 17 cm long and 14 cm wide. The nest and nest cup were both 4 cm deep. In the nest were sparse dry larch twigs, larch bark, and three types of lichen (a green and calcareous lichen, and one unidentified). Although there was a lot of lichen, no green lichen bordered the top of the nest (possibly already decayed since nests construction). The base of the nest was lined with larch needles, pieces of larch bark, and light-colored lichen. There were no dwarf pine needles. The nest is very similar to the inhabited nest found in 2019.

In August 2020, the nest was collected for further analysis.

Nest #3: N 53.481460, E 140.886030.

An old, uninhabited nest most likely built in 2019, found in June 2020. The nest was located at the western end of a sparse larch forest patch, 128 m from the western edge, 265 m from the northern edge, 77 m from the eastern edge, 190 m from the southern edge, 2.367 km from the Silver Creek mouth, and 35 m northeast of nest # 2. In 2019, an inhabited nest was found in this forest section, 0.544 km to the east. This patch was a shrub-larch woodland with crowberry, wild rosemary, blueberry, Middendorf birch representing the 0.5 m tall shrub flora. 2-3 m tall dwarf pines were also present. There was also a small number of cloudberry and lingonberry bushes. The grass layer was dominated by *Carex spp.* sedge.

Trees in the surrounding area:

- 5 meters to the northwest, 15 m tall, 32 cm DBH.
- 10 meters to the north, 32 cm DBH.
- 12 meters to the north, 15 m tall, 28 cm DBH.
- 11 meters to the north, 15 m tall, 46 cm DBH.
- 13 m to the east, 6 m tall, 10 cm DBH.
- 13 m to the east, 6 m tall, 7 cm DBH.
- 13 m to the southeast, 8 m tall, 10 cm DBH.
- 13 m to the south, 4 m tall, 6 cm DBH.
- 6 m to the south, 8 m tall, 21 cm DBH.
- 7 m to the south, 2 m tall, 2.5 cm in DBH.
- 8 m to the southwest, 6 m tall, 11 cm DBH,
- 12 m to the southwest, 8 m tall, 13 cm DBH.
- A group of dwarf pine, 14 m to the southwest, 3.5 m tall, 3.5 m in circumference.
- Several Middendorf's birch trees, 8 m to the north, 2 m tall.
- Several dwarf pines 12 m to the north.

The nest was located on live 12 m tall Y-shaped larch tree with a tree with a trunk measuring 30 cm wide by 46 cm long. The nest was 4.38 m off the ground, with the tree's diameter at nest height at 20 cm. Most of the tree branches faced the south; however, the 3m long nest-supporting branch faced the northwest, with the nest placed 60 cm from the tree trunk. The diameter of the branch was 7 cm at the base, and 6 cm under the nest. The nest was partially covered by a dead branch 9 cm above the nest and another branch 30 cm above

The nest cup was 10 cm wide by 12 cm long, while externally it was 16 cm wide and 17 cm long. The nest's border was wide: 3.5 x 3 cm. The nest was 4.5 x 5 cm high, and 2.5 cm deep. The nest contained larch twigs, plentiful bearded lichen, another light-colored lichen; and dwarf pine needles woven into the nest. There are many dead twigs at the base of the nest, growing out of the main branch. The nest's shape was expressed very clearly, and it was in excellent condition, almost like new.

The nest was collected in early August 2020 for further analysis.

Nest #4: N 53.48299, E 140.90143.

An active nest found 19 June 2020. The nest was located on the ground of a slightly hummocky bog in an area between Silver Creek and an inland larch forest patch where nests 2 and 3 were found. It was 142 m west of Silver Creek, 144 m northeast of all-terrain vehicle tracks, 1.595 km from the Silver Creek mouth, 230 m from a larch forest patch, 1 km west of nests 2 and 3, and 550 m southeast from the nest found in 2019. 15 m to the south was a 13 m tall live larch with a 25 cm DBH and a dry top.

The nest was located underneath and between a group of 3 sapling larches, each 93, 82 and 70 cm tall with diameters 4.0, 3.0, 3.5 cm respectively. 8, 37, and 48 cm separated each tree,

forming a 1.0 m wide by 1.34 m long canopy. There was a dry dwarf pine bush to the east, and an ant colony 5 m to the south. The nest was covered by a live larch branch 37 cm above. There was also a dead branch covering the nest 21 cm above. The shrub vegetation around the nest consisted of crowberry, blueberry, cloudberry, lingonberry, wild rosemary, and Middendorf birch. Dwarf pines were also located to the southeast and northwest. The bog sparsely contained distributed larch trees. The grass species were predominantly *Carex spp.* sedges. Reindeer moss was also distributed in the area.

The nest was 11 wide and 12 cm long. The base was expressed significantly but there was no nest cup. Sparse broken larch twigs, larch bark and dry leaves of cloudberry lined the nest. For the first time we found reindeer lichen lining the nest. There was also one damaged egg. When the nest was found, ants were crawling on top of the live eggs.

In August, the nest and damaged egg were collected for further analysis.

Abundance of Nordmann's Greenshank in southwestern Schaste Bay

The southwestern coast of Schaste Bay was surveyed for Nordmann's Greenshank from the 5-8 of July 2020. Surveys were focused on estuaries of the Chorniy, Avri, and Komel Rivers. In total, 76 Nordmann's Greenshank were censused, of which 60 were migratory individuals. The other 16 birds likely bred in the area and represented 12 breeding pairs (Table 13, Figure 16). It is possible a group of 26 birds observed 6 July near Avri River was the same group observed 8 July near Komel River.

In 2019, during surveys in the same region, 19 Nordmann's Greenshank pairs were observed. Low counts near Chorniy and Komel Rivers in 2020 may have contributed to the reduction of observed breeding birds compared to 2019 numbers. The limited survey effort could have caused lower detection and an underrepresentation of breeding pairs; as such, expanded surveys for longer periods of time, or repeated surveys, are necessary.

Table 13 — Observed Nordmann's Greenshank in southwestern Schaste Bay from 5-8 July 2020.

Date	Time	Latitude	Longitude	# Observed	Status
5 July	11:54	53.40104	141.03845	3	Migrating
5 July	12:30	53.40073	141.04974	3	Migrating
5 July	16:55	53.40683	141.00819	1	Breeding
6 July	15:30	53.37337	141.08482	26	Migrating
6 July	16:40	53.38757	141.09552	1	Breeding
6 July	16:54	53.38928	141.09743	1	Breeding
8 July	10:00	53.31405	141.20190	26	Migrating
8 July	15:29	53.31138	141.21303	2	Migrating
8 July	15:39	53.31077	141.21419	1	Breeding
8 July	15:44	53.30952	141.21875	1	Breeding
8 July	15:50	53.30885	141.22034	4	Breeding
8 July	16:47	53.31405	141.20190	1	Breeding
8 July	17:14	53.31595	141.19453	2	Breeding
8 July	17:24	53.31541	141.19165	2	Breeding
8 July	17:41	53.31696	141.18906	1	Breeding
8 July	18:03	53.31910	141.18588	1	Breeding

Migration of Nordmann's Greenshank

In 219 we tagged seven adult and eight chick Nordmann's Greenshank, while in 2020 two more adults and one chick were added. One other chick was banded in 2018. Of these banded birds five were spotted in Tiaozini, China, and another near Hwaseong Flyway Network Site, South Korea (see Table 14 for details). Noteworthy records include the observation of V1 in Tiaozini Wetland Park, China from 5 August to 4 October 2019 (a stopover period of at least 61 days), and of T1 near Hwaseong Flyway Network Site, South Korea on 7 August 2020.

Interestingly, out of 10 banded chicks, not a single one has been resighted. This could be due to a low survival of fledged and juvenile birds, but also the inconspicuous banding scheme for chicks (one metal and one color band).

Table 14 – Resighted Nordmann's Greenshank banded in Schaste Bay.

Red Engraved Flag	Date (YYYYDDMM)	Lat.	Long.	Site	Region	Country
P2	2019_15_09	32.77626	120.9642	Tiaozini Wetlands Park	Dongtai, Jiangsu	China
P2	2019_16_09	32.77626	120.9642	Tiaozini Wetlands Park	Dongtai, Jiangsu	China
P2	2020_19_09	32.77626	120.96419	Tiaozini Wetlands Park	Dongtai, Jiangsu	China
P3	2019_04_10	32.77575	120.9619	Tiaozini Wetlands Park	Dongtai, Jiangsu	China
P3	2020_19_09	32.77626	120.96419	Tiaozini Wetlands Park	Dongtai, Jiangsu	China
T1	2020_07_08	37.14	126.74	Hwaseong FNS	Hwaseong	South Korea
V1	2019_05_08	32.77626	120.9642	Tiaozini Wetlands Park	Dongtai, Jiangsu	China
V1	2019_06_08	32.77626	120.9642	Tiaozini Wetlands Park	Dongtai, Jiangsu	China
V1	2019_15_09	32.77626	120.9642	Tiaozini Wetlands Park	Dongtai, Jiangsu	China
V1	2019_16_09	32.77626	120.9642	Tiaozini Wetlands Park	Dongtai, Jiangsu	China
V1	2019_04_10	32.75783	120.954069	Tiaozini Wetlands Park	Dongtai, Jiangsu	China
V2	2020_04_09	32.77575	120.9619	Tiaozini Wetlands Park	Dongtai, Jiangsu	China
X1	2019_05_08	32.77626	120.9642	Tiaozini Wetlands Park	Dongtai, Jiangsu	China
X1	2019_06_08	32.77626	120.9642	Tiaozini Wetlands Park	Dongtai, Jiangsu	China
X1	2019_15_09	32.77626	120.9642	Tiaozini Wetlands Park	Dongtai, Jiangsu	China
X1	2019_16_09	32.77626	120.9642	Tiaozini Wetlands Park	Dongtai, Jiangsu	China
X1	2020_21_09	32.766094	120.95424	Tiaozini Wetlands Park	Dongtai, Jiangsu	China

Table 15 — Dates and places of captured adult Nordmann's Greenshank and their banding scheme in 2020

№	Dates	Time	N	E	Metal band	Tagging scheme	Red engraved flag code
1	28 June	19:20	53.46651	140.91321	HS012348	R, LB/M: RFE/-	J1
2	30 June	20:37	53.46831	140.91466	HS012350	ODG/M: RFE/-	T1

Table 16 — Morphological measurements of banded Nordmann's Greenshank in 2020

№	Mass (g)	Culmen (mm)	Nares to top (mm)	Head length (mm)	Tarsus from bone (mm)	Tarsus from heel (mm)	Bent Wing (mm)	Straight wing (mm)
1	146.5	51.0	40.3	86.4	45.4	42.4	168.0	171.0
2	158.0	54.5	44.4	91.2	48.2	42.0	176.5	180.0

Table 17 — Morphological measurements of banded Nordmann's Greenshank in 2020 cont'd

№	Tail from feathers base (mm)	Tail from uropygial gland (mm)	Feathers collected?	Blood samples taken?	Banded chicks?
1	65	67.2	Yes	Yes	Yes
2	66	70.9	Yes	Yes	No

Inter-annual site fidelity of adult Nordmann's Greenshank to brooding territories

In 2020, we observed five Nordmann's Greenshank we banded in 2019 (Table 18, Figure 17, 18). All birds were near broods during capture and banding. Birds with engraved red flag codes P1 and P2 were paired together in both in 2019 and 2020. Resightings were concentrated on the mudflat, in an area from Silver Creek to Vonuchiy Creek. This shows that Nordmann's Greenshanks may maintain pair bonds for multiple years and between seasons. The birds raised their brood, in an area ~860 m wide, on the border of the coastal meadow and tidal flat, ~1.6-1.8 km away from the nest. In 2020, P1 was last observed near its brood on 17 July, or shortly before chicks fledged. Its mate, P2, in both years was only observed until 6 July. At this moment we cannot confirm which sex stays longer with their brood; however, there is reason to believe only in the early chick-rearing stage do both birds actively parent. To answer this question, we need to run a genetic analysis.

V1 was observed with a brood in 2019 and 2020 in an area 320 m north of the Silver Creek mouth. This bird was observed still without a brood on 21 June 2020.

In both years P3 was observed with a brood a little south of Silver Creek mouth. The location differed by 18 m from 2019 observations.

During the brood rearing stage in both years, X2 was observed north of Zimnick River mouth. The location differed by 335 m from 2019 observations.

Table 18 – Date, ID, and coordinates of observed banded Nordmann's Greenshank in 2019 vs 2020

Date of Observation	2020		2019	
	N	E	N	E
	P1			
25 June	53.48263	140.90147	—	—
6 July	—	—	53.47837	140.92349
17 July	53.48571	140.92796	—	—
	P2			
19 June	53.48263	140.90147	—	—
25 June	53.48263	140.90147	—	—
6 July	—	—	53.47837	140.92349
	V1			
21 June	53.476850	140.920560	—	—
29 June	53.477640	140.923660	—	—
10 July	—	—	53.475330	140.92061
	P3			
11 July	—	—	53.47285	140.91873
12 July	53.47289	140.91898	—	—
	X2			
30 July	53.46630	140.91307	—	—
16 июля	53.46513	140.91104	53.46464	140.9088

*— Engraved Flag Code

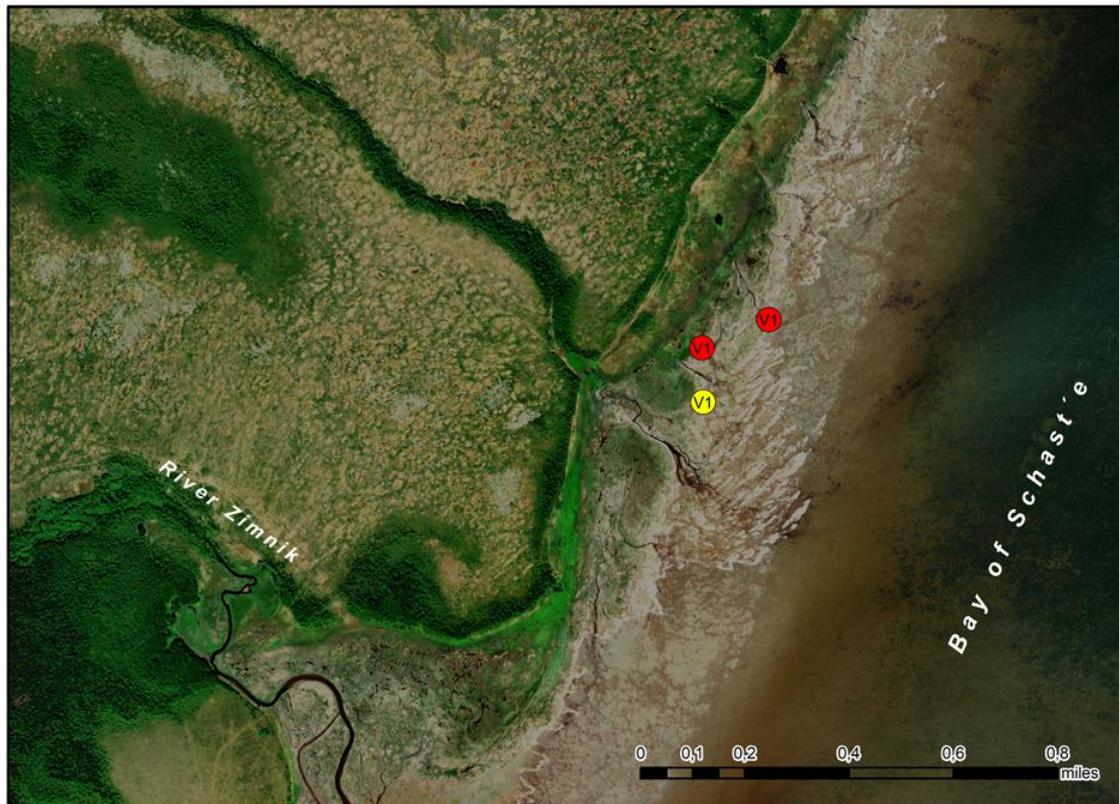
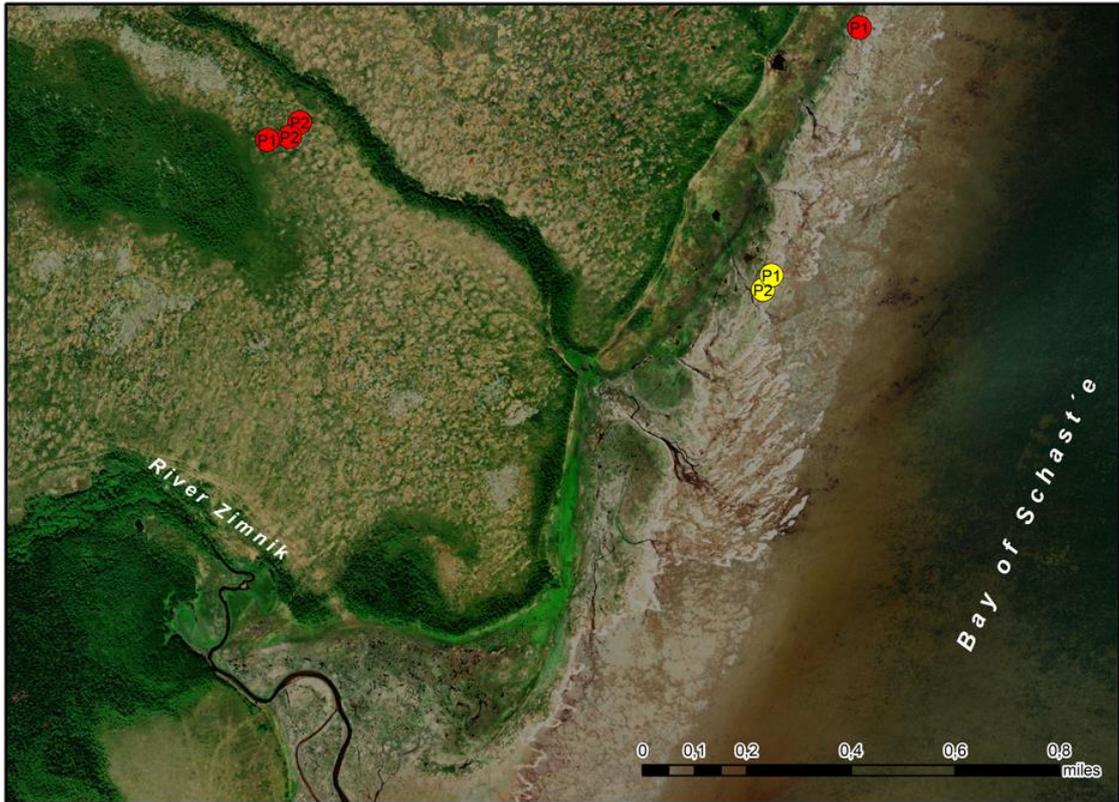


Figure 17 – Mapped coordinates of observed Nordmann's Greenshank (P1, P2, V1) banded in 2019. Yellow points are areas of capture and banding in 2019, red points are points where they were observed in 2020.



Figure 18 – Mapped coordinates of observed Nordmann’s Greenshank (X2, P3) banded in 2019. Yellow points are areas of capture and banding in 2019, red points are points where they were observed in 2020.

Preparations for the ecological and economic reasons to designate Schaste Bay as a regional Nature Park.

To prepare the argument to designate Schaste Bay as a regional Nature Park, the following actions are being taken:

- Cartography of the habitat disturbance.
- Cartography of habitat relief.
- Description of climatic factors.
- Description of soil conditions.
- Description of hydrological regimes.
- Surveys for forest fauna.
- Surveys for animal biota.
- Surveys for flora and fauna of conservation concern, including rare and endangered species.
- Cartography of different habitat types throughout the region.
- Descriptions of the valuable natural resources in the region.
- Descriptions of the various medicinal natural resources as well as recreational opportunities.
- Description of the history and culture of the region.
- Description of factors negatively effecting the region.

Conclusion

As a result of the 2020 season we were able to accomplish the following:

- 1) For the first time in history we documented Nordmann's Greenshanks nesting on the ground.
- 2) We found 4 nests, 1 new and 3 old. We described and mapped all nests. Of the 10 Nordmann's Greenshank nests ever found, we found 5.
- 3) We continued the long-term monitoring for breeding and migratory Nordmann's Greenshanks throughout Schaste Bay and documented a decline in their breeding population in southwestern Schaste Bay, albeit likely due to insufficient survey effort.
- 4) Conducted winter surveys of Schaste Bay and found 46 nests belonging to 8 species.
- 5) Did not find evidence that Nordmann's Greenshanks use nests for multiple years.
- 6) Found, monitored, and measured habitat variables around 25 Common Redshank nests, compared their locations to 2019 nests, and made inferences on why their nest locations differed (likely influenced by hydrological regimes).
- 7) Banded, collected morphological measurements, and collected genetic samples on 17 adult Common Redshank and 32 chicks, 2 adult Nordmann's Greenshank and 1 chick. Also measured 91 Common Redshank eggs and 4 Nordmann's Greenshank eggs.
- 8) Monitored the interannual (2019 vs 2020) variation in nest location for 3 pair of banded Common Redshank. Locations in both years was very similar, pointing to high site and breeding territory fidelity.
- 9) Found evidence Common Redshanks and Nordmann's Greenshanks maintain pair bonds for consecutive years.
- 10) Monitored Common Redshank apparent nest success, which in 2020 was 47.4%.
- 11) The only Nordmann's Greenshank nest found in 2020 was successful.
- 12) Started analysis on the migratory ecology of 6 Common Redshank attached with light-level geolocators.
- 13) Recorded when Common Redshank and Nordmann's Greenshank first arrive to their breeding grounds.
- 14) Determined the main limiting factor for both species on our study site is likely predation pressure. For Common Redshank another factor in play is the hydrological regime.

15) Site fidelity of Common Redshank was 60% while for Nordmann's Greenshank it was 71.4%.

16) Banded Nordmann's Greenshank were resighted during migration near Hwaseong Flyway Network Site in South Korea, and in Tiaozini, China. No banded chicks have been resighted. Banded Common Redshank have yet to be resighted as well.

17) Our research was highlighted by several media outlets including the EAAFP newsletter, Wader Quest, the Information Material for the Working Group on Waders of Northern Eurasia, and a local newspaper "Pacific Ocean Star".

18) We collected significant data to justify the designation of Schaste Bay as a regional Nature Park.

Appendix

1. Results of the 2019 Season via the Information of the Shorebird Working Group

РАБОЧАЯ ГРУППА ПО КУЛИКАМ
СЕВЕРНОЙ ЕВРАЗИИ

ИНФОРМАЦИОННЫЕ МАТЕРИАЛЫ
РАБОЧЕЙ ГРУППЫ ПО КУЛИКАМ

№ 33



Москва, 2020

НОВОСТИ О ПРОЕКТАХ ПО КУЛИКАМ / NEWS ABOUT PROJECTS ON WADERS

ПРОЕКТ ПО ИССЛЕДОВАНИЮ ОХОТСКОГО УЛИТА В ХАБАРОВСКОМ КРАЕ

В 2018 и 2019 гг. на территории Хабаровского края в заливе Счастья Охотского моря осуществлялся исследовательский проект, направленный на изучение экологии охотского улита. Вид является гнездовым эндемиком Дальнего Востока России. Из-за небольшой и сокращающейся численности он занесён в Красную книгу МСОП как находящийся под угрозой исчезновения. Согласно подсчётам в местах миграционных остановок, численность охотского улита оценивается всего в 600–1300 особей (BirdLife International, 2020). Систематических учётов этого кулика в местах размножения и зимовки никогда не осуществляли. Кроме того, в связи с труднодоступностью побережий Охотского моря остаётся не до конца выясненным и его гнездовой ареал.

Современный гнездовой ареал охотского улита представляет собой несколько очагов, расположенных на побережьях севера и запада Охотского моря. На северном побережье этот кулик гнездится в дельте р. Малкачан (Ямская губа, зал. Шелихова). На западном — распространён от Амурского лимана до Удской губы. В частности, известно гнездование на побережье заливов Удская губа (приустьевые участки рек Уда и Тором), Тугурский (южная часть), Ульбанский (междуречье Ульбан-Сыран), Константина (западное побережье), Николая (южная и северная часть — бухта Нерпичья), Счастья. Южнее, в прол. Невельского (север Татарского прол.), населяет приустьевую зону р. Нигирь.

В начале XX в. охотский улит размножался в южной части о-ва Сахалин на побережье зал. Анива. Позднее, в результате хозяйственного освоения этой территории, его гнездование там прекратилось. Во второй половине XX в. на Северном Сахалине размножение вида было установлено или оно предполагалось как для западного (заливы Виахту, Тык, Байкал, между устьями рек Уанга и Лах, а также на побережье Амурского лимана вблизи бывшего с. Зелёный Гай и в устье р. Теньги), так и для восточного побережий (заливы Луньский, Набильский, Ныйский, Даги, Чайво и Пильтун). За последние десятилетия на Сахалине гнездовая область распространения охотского улита существенно сократилась — вид перестал размножаться в заливах Набильский, Чайво, Байкал. Основная часть гнездовой группировки сохраняется в труднодоступных участках северо-западного побережья острова.

Вид зимует в Индии, Шри-Ланке, Бангладеш, Таиланде, Малайзии, на о. Хайнань, а также в Мьянме, Вьетнаме и на о-вах Суматра и Сулавеси, Северных и Центральных Филиппинских островах, Гуам.

Охотскому улиту свойственна узкая специализация в выборе мест размножения — необходимы листовенничные редколесья для устройства гнезда, приморские луга для кормления и укрытия птенцов и приливно-отливная зона для кормежки взрослых птиц. В местах миграционных остановок и зимовки он использует литораль мелководных морских заливов.

Для изучения экологии охотского улита был выбран участок на западном побережье залива Счастья близ устья р. Зимник. Выбор района работ был случаен. В 1993 и 2009 гг. мы посещали это место, поэтому имели хорошее представление о распределении птиц на побережье и природных особенностях района. Залив Счастья является относительно легко доступным для исследователей, так как расположен в 40 км от г. Николаевск-на-Амуре, с которым имеется автомобильное сообщение. Прочие известные места обитания охотского улита в Хабаровском крае весьма труднодоступны. Для отработки методики в качестве модельного вида выбрали близкородственный охотскому улиту вид — травника, который достаточно многочислен в районе исследований.

В 2018 г. полевые работы проводили с 21 мая по 16 июля. Были выявлены некоторые особенности биологии двух видов куликов, установлены фенологические даты в жизни птиц, отработаны возможные методы отлова, 8 травников помечены световыми геолокаторами (МК 5093).

Зимний период 2018/2019 гг. был относительно малоснежным и маловетренным, поэтому к началу наших работ в 2019 г. значительная площадь контрольного участка уже освободилась от снежного покрова. Небольшие участки снежных надувов сохранялись на границе приморского луга и ленточного леса. Западная часть залива Счастья к 17 мая уже освободилась от ледового покрова. В период выполнения полевых работ стояла относительно тёплая погода с небольшим количеством осадков. Во второй половине июля высота травостоя на приморском лугу, примыкающем к лесу, достигала 1,5 м.

В 2019 г. 6 из 8 помеченных в 2018 г. травников удалось поймать и снять с них геолокаторы. В настоящее время ведётся расшифровка записанной на них информации о миграционных маршрутах и местах зимнего пребывания птиц.

Поиск гнёзд травника проводили путём сплошного прочёсывания гнездопригодных местообитаний. В 2019 г. на контрольном участке близ устья р. Зимник удалось найти 23 гнезда, ещё 7 гнёзд обнаружили на участках приморского луга, примыкающих к устьям рек Чёрная, Аври и Комель в юго-западной части залива Счастья.

В результате выполненного нами исследования установлены даты первого весеннего появления птиц и начала спаривания обоих видов куликов, начала кладки яиц травника, периода инкубации кладок травника, начала осенней миграции охотского улита, даты подъёма на крыло птенцов охотского улита. В 2019 г. появление первых травников произошло в третьей пятнадцатке мая. Первые охотских улитов мы отметили 22 мая.

Первое спаривание у травника видели 24 мая. Токовая вокализация этих птиц начинается сразу после прилёта в места размножения. В предыдущие годы токование травников мы отмечали также вдали от моря.

Токовая вокализация самцов охотского улиты началась сразу же по прилёту в зал. Счастья. Первое спаривание отмечено 25 мая. Продолжительность спаривания у одной пары составляла 5 и 7 с. В тот же день мы впервые наблюдали токовый полёт одного и одновременно трёх самцов охотского улиты. Максимальная токовая активность отмечена 27 мая.

Найденные гнёзда птиц описывали по общепринятым методикам. Кроме того, для изучения режима инкубации использовали термолокаторы. Для изучения гнездовой биологии травника пытались использовать также фотоловушки, но от них пришлось отказаться из-за высокой гибели кладок от хищничества ворон. Наиболее важная находка — жилое гнездо охотского улиты, обнаруженное 17 июня 2019 г. во фрагменте (1,35x0,53 км) редкостойного лиственничного леса в междуречье Зимника и Серебряного, в 1,8 км от морского берега. Оно располагалось на лиственнице Каяндера на высоте 3,7 м от поверхности земли, на сухой ветке в 0,83 м от ствола, а сверху было скрыто живой веткой (на высоте 0,4 м над гнездом). С южной стороны в 13 м от дерева проходил край леса, переходящий в пушицево-моховое болото. Птица плотно сидела на кладке и не слетела даже во время обхода дерева наблюдателями. Отметим, что за всю историю орнитологических исследований до 2019 г. только В.А. Нечасу в 1976 г. удалось обнаружить 5 гнёзд этого вида на северо-восточном побережье о. Сахалин. К сожалению, обнаруженное нами гнездо 27 июня оказалось разорено большескловой вороной. Большинство (80%) кладок травника на контрольном участке также погибло от большескловой вороны.

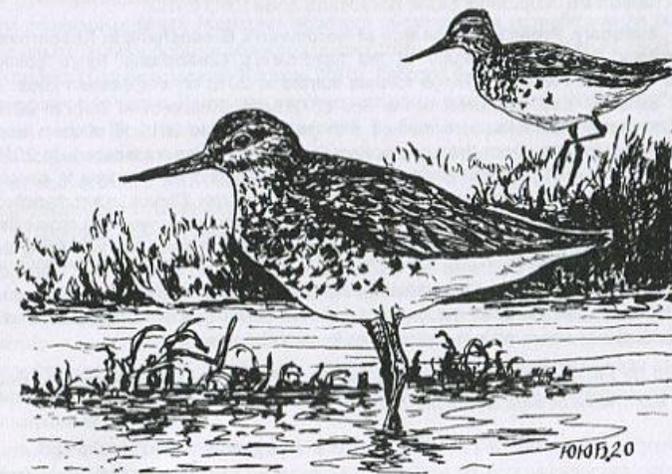
Отработана методика отлова обоих видов куликов. Отлов травника производили в основном на гнёздах автоматическими и полуавтоматическими лучками. Взрослых охотских улитов ловили только возле птенцов в июле, когда птицы с выводками перемещались из моховых болот на приморские луга. Наши многочисленные попытки поймать взрослых птиц в приливно-отливной зоне не увенчались успехом. Возле птенцов птиц отлавливали паутинными сетями, под которые подсаживали беспокоящихся птенцов, а также полуавтоматическими лучками, установленными на искусственные столики. Высокую эффективность показал последний из упомянутых способ отлова охотского улиты.

В 2018 г. Восточноазиатско-австралийское партнёрство по исследованию миграционных путей птиц (ЕААФР) утвердило схему цветowego мечения куликов для Хабаровского края. Взрослых охотских улитов метили красным флажком с выгравированным кодом, двумя индивидуальными пластиковыми цветными кольцами и металлическим кольцом. Птенцов охотского улиты и травника метили красным пластиковым и металлическим кольцами. Взрослых травников — жёлтым флажком, красным флажком с выгравированным кодом,

двумя цветными пластиковыми кольцами и металлическим кольцом. Всего помечено 15 охотских улитов (7 взрослых птиц и 8 пуховых птенцов) и 24 травника (17 взрослых птиц и 7 птенцов). Таким образом, заложено начало создания группировок меченых куликов двух видов. В будущем это, возможно, позволит вести мониторинг демографических показателей. Всех пойманных птиц обследовали и измеряли. Проведён отбор перьев, у части птиц взяты пробы крови для генетического анализа. В первой половине августа 2019 г. три из восьми помеченных нами взрослых охотских улитов были зарегистрированы китайскими наблюдателями на побережье Восточно-Китайского моря близ г. Шанхай. Там же в начале октября отмечена ещё одна, четвёртая, помеченная нами птица.

В период со 2 по 5 июля 2019 г. при помощи двух моторных лодок выполнено обследование юго-западного побережья залива Счастья от устья р. Исека до м. Коспах (45 км) с целью установления численности охотского улиты. На участке побережья, примыкающего к устью р. Чёрная, обнаружили две пары охотских улитов, в устье р. Аври — две пары, на сопредельном с устьем р. Комель участке — 15 пар. На основном участке исследований (от устья р. Исека до основания косы Петровская) зарегистрировано 9 местных пар охотского улиты.

В 2019 г. собран дополнительный материал для подготовки эколого-экономического обоснования организации ООПТ регионального значения —



природного парка «Залив Счастья». Организация такой территории позволит снизить антропогенную нагрузку на ключевую для ряда видов территорию. Достигнута договоренность с администрацией Николаевского р-на о необходимости организации ООПТ.

В Зоомузее МГУ (Москва) 16 декабря 2019 г. состоялось совещание по разработке научных основ сохранения охотского улита, в котором приняли участие 14 экспертов. Оно было организовано в рамках третьего заседания Рабочей группы по сохранению охотского улита под эгидой Русского общества сохранения и изучения птиц (РОСИП), председателем которой является В.В. Пронкевич.

В различные периоды 2018 и 2019 гг. в полевых работах принимали участие сотрудники В. Росляков, Д. Матвеев, В. Пронкевич (Институт водных и экологических проблем ДВО РАН, г. Хабаровск), К. Масловский (Федеральный научный центр наземного биоразнообразия Восточной Азии ДВО РАН, г. Владивосток), Ф. Малеко (Университет Флориды, г. Гейнсвилл), А. Кальченко, Б. Тютин (Коопохотпром «Николаевский», г. Николаевск-на-Амуре).

Исследования проводили при финансовой и информационной поддержке АНО «Общество сохранения диких животных», Программы малых грантов Восточноазиатско-австралийского партнерства по изучению пролётных путей птиц (ЕААФР), а также при поддержке Университета Флориды и Службы рыбы и дичи США, Института водных и экологических проблем ДВО РАН, Русского общества сохранения и изучения птиц (РОСИП), Федерального научного центра наземного биоразнообразия Восточной Азии ДВО РАН.

Summary. Project for research of Nordmann's Greenshank in Khabarovsk Territory, Russia. The study of the Nordmann's Greenshank *Tringa guttifer* and Common Redshank *Tringa totanus* started in 2018 on the western coast of the Schastya Bay, southwest of the Sea of Okhotsk (Khabarovsk Krai). In 2018, 8 Common Redshanks were marked with geolocators. In 2019, 6 of them were caught, information from their geolocators is currently being transcribed. In 2019, an occupied nest of Nordmann's Greenshanks was found for first time in several decades, however it was predated by a Large-billed Crow *Corvus macrorhynchos*. About 80% of the Common Redshank clutches were also destroyed by Large-billed Crows. In July 2019, 28 pairs of Nordmann's Greenshank were counted along the 45-km stretch of the southwestern coast of Schastya Bay. In total, 17 adult Common Redshanks were ringed. Three Nordmann's Greenshanks, ringed in July — August 2019, were later found on the coast of the East China Sea. An additional (fourth) individual was observed in the same area in early October.

BirdLife International. 2020. Species factsheet: *Tringa guttifer*. Downloaded from <http://www.birdlife.org> on 08/02/2020.

В.В. Пронкевич (координатор проекта),
К.С. Масловский, Ф.Н. Малеко

ПЕРВЫЕ РЕЗУЛЬТАТЫ СОВМЕСТНОГО ПРОЕКТА РОСИП И РГК СЕ ПО ОЦЕНКЕ ПРЕССА ОХОТЫ НА КУЛИКОВ НА КАМЧАТКЕ

Исследований по оценке охоты на куликов на Дальнем Востоке России до настоящего времени не проводили. На последнем совещании РГК СЕ в Минске принято решение инициировать такой проект. В ходе международных переговоров о необходимости уменьшения пресса охоты на куликов восточноазиатско-австралийского миграционного пути в Китае и Юго-восточной Азии, возникла необходимость оценить роль России в суммарном ущербе популяциям куликов. Эти данные нужны также для выполнения обязательств России по двухсторонним конвенциям по сохранению мигрирующих птиц с Китаем, Японией и Кореей. РОСИП взялся за организацию такого проекта, опираясь в первый год его выполнения на своё Камчатское отделение. Проект запланирован как многолетний и осуществляется совместно с РГК СЕ и Камчатским филиалом Тихоокеанского института географии ДВО РАН. В дальнейшем запланированы работы на Сахалине и побережьях Магаданской области, Хабаровского и Приморского краёв.

В 2019 г. на Камчатке выполнен первый этап проекта. Работа включала анализ данных по возврату колец от добытых охотниками куликов, который осуществили сотрудники Центра кольцевания ИПЭЭ РАН, и полевое обследование, в том числе неформальные интервью с экспертами (специалистами Агентства по лесному хозяйству и охране животного мира Камчатского края и руководителями охотничьих обществ) и опрос охотников с использованием анонимных анкет. Методика полевого обследования разработана на основе опыта оценки добычи водоплавающих птиц в восточной части Российской Арктики (Сыроечковский, Клоков, 2010). Работой были охвачены 12 посёлков в различных частях Камчатки, репрезентативных для разных участков побережий и город Петропавловск-Камчатский. Выбор мест для обследования сделан на основе данных возврата колец куликов, предоставленных российским Центром кольцевания. С.П. Харитонов составил по этим данным карты, позволившие выявить места наиболее интенсивной охоты на куликов.

Неформальное интервью проводили с целью получения информации по широкому кругу вопросов, связанных с охотой и сохранением куликов.

Короткая анонимная анкета содержала вопросы о количестве добытых куликов с просьбой разделить их на 3 группы: средние кроншнепы («ягодники»), которых на Камчатке знают все охотники; все крупные и средние виды, за исключением среднего кроншнепа; все мелкие виды. Анкета включала также просьбу указать виды добытых куликов (кроме среднего кроншнепа), однако выполнили её единицы.

При обработке анкет средние значения добычи рассчитаны по 5 группам районов Камчатского края, выделенных с учётом их географических особен-

6 стр
Судьба
С
КАБА
ПО Д

Что происходит

Сколько птиц пролетает через залив Счастья

Ну до чего же регион наш необычный! Мало того, что на краю кар-
ты живем, так еще и природа потрясающая. Губят ее пожары, люди
режут на части пиллами и тракторами, а она все еще жива. Да вот только
надолго ли живучести той хватит?

Вроде не так давно (его-то 40-
50 лет назад) цивилизация добра-
лась до многих девственных мест, а
сегодня там уже километры гарей
да пустошей. Но таежные обитате-
ли все равно не ругают свой привыч-
ный уклад: частенько прыгают тиг-
ры, бродят умные хитрые медве-
ди, а уж птиц-то сколько!

Много лет изучает птичью фа-
уну Владимир Пронкевич, канди-
дат биологических наук из ИЭЭП
ДВО РАН. В этом году экспедиция,
руководителем которой он был, от-
правилась изучать птичье населе-
ние Ньюто Амура. Кроме того,
Владимир Валентинович работал
еще по одному направлению: эко-
логическому обследованию аэро-
порта Хабаровск.

**ПЕРНАТЫЕ ПРОТИВ
КРЫЛАТЫХ**

По заказу акционерного об-
щества «Хабаровский аэропорт» мы
работаем уже третий раз, - рас-
сказывает Владимир Пронкевич.
Руководство гражданской авиации
предписывает обязательно прово-
дить эколого-орнитологическое об-
следование в аэропорту. А после
того, как пару лет назад самолеты
стали летать по маршруту в Подмо-
совые, меры контроля за проведе-
нием таких работ усилены. Сейчас
у нас множество заказов с Куриль-
ских островов, Южно-Сахалинска,
Камчатки, Ванно.

Тогда в самолет, спланировав-
ший на кукурузное поле, при взле-
те попалая стая чек, и оба двигателя
вышли из строя. Так что гордая
птица чайка, оказывается, не всег-
да живет в воде, здесь она обрета-
ется на Большой мусорной свалке.

В Хабаровском аэропорту есть
наблюдательные пункты, где уче-
ные подсчитывают птиц, проле-
тающие возле северного и южно-
го торцов взлетной полосы. Пе-
риодически они проводят марш-
рутные учеты как на территории
аэропорта, так и на окружающей.

Серьезной проблемой для аэро-
порта стало Матвеевское клад-
бище, где люди оставляют еду на
могилах родственников. Дурно пах-
нущая, гнилая еда привлекает
воробья, сороки - вот они, любите-
ли промашлять рядом с урнами.
За одно посещение ученые на-
считали там до 300 особей разных
птиц. Эта армада пересекает глис-
саду (маршрут следования самолета
на взлете и при посадке) и соз-
дает помехи серебристой машине.
Так что наличие такого объекта ря-
дом с аэропортом нежелательно,
считают ученые.

К счастью, в последние годы
в Хабаровском аэропорту не на-
блюдается ни одного случая стол-
кновения с птицами. А вот в 2009-
м их было десять. В Ан-2 попала
кряква, оставив большую вмятину,

грачи. Не думайте, что низкорос-
лая кряква не способна к полету -
она может летать на высоте пяти-
шесть километров.

Впрочем, основная масса
столкновений происходит в при-
земном слое, на высоте до ста ме-
тров, - поясняет Владимир Вален-
тинович. - Хотелось бы обследо-
вать все аэропорты, но сил у нас
немного. Вот, например, в Ванно,
например, аэропорт небольшой,
рейсов немного, но сейчас
положено даже вертолетные пла-
щадки обследовать - ведут кака-
нибудь колония птиц поселилась
рядом? В Ванно колония серых
цапель есть.

А вообще-то пернатых в крае
бесчисленное множество, а если
учсть, что многие малые аэро-
порты вроде как возрождаются,
обследованим придется зани-
маться долго.

Как это было в аэропорту Нико-
лаевска-на-Амуре. Когда в 2018-
2019 годах обследовали его, об-
наружили, что в ста метрах от
взлетно-посадочной полосы, в со-
седнем лесочке, поселилась круп-
ная колония бакланов - 800 (!) с-
лицим гнезд. Ни шума не боят-
ся, ни самолетного рыка. Их даже
выстрелями из ракетниц пытался
отпугивать - все без толку. Так что
пришлось выпилить массив леса.
Убрали. И что вы думаете? Почти
100 бакланов перелетели в со-
седний лесок...

Случай курьезный - птицы вы-
ходят на полосу, чувствуют себя
хозяевами. Правда, случаев столк-
новения с бакланами в Никола-
евском аэропорту не было.

А вот ласточка весом 25 грам-
мов в районе Петропавловского
озера пробила фюзеляж небольшо-
го пассажирского вертолета и упала
под ногами управления. Состоя-
ние пилота представляете?

**ВОТ ЭТО
НАХОДКА!**

Помимо обследования аэро-
портов, Владимир Пронкевич уже
третий год занимается исследова-
нием охотского улита.

В этом году мы опять рабо-
тали в заливе Счастья Николаев-
ского района. Участников экспеди-
ции было семеро - наши специали-
сты, ученые из Приморья, местные
жители, - продолжает Пронкевич.
Охотский улит - это очень редкий
кулик, в мире его осталось всего
600 особей, гнездится он только в
Хабаровском крае и на Северном
Сахалине. И еще мы исследовали
близкородственный для охотско-
го улита вид - кулика травника.

Этот вид многочисленнее, по-
этому на нем обычно отрабаты-
вают методику исследования: в
гнезда ставят датчики измерения
температуры, фотоповушки. Трав-

ника найти непросто, хотя гнезда
его находятся на земле - маскиру-
ется уело. Тем не менее в этом
году около тридцати гнезд трав-
ника нашли.

Главной же находкой Пронке-
вич считает гнездо улита, которое
впервые в мире нашли на земле.
Обычно они на лиственных гнз-
дах устраивают - за все время ис-
следования охотского улита в 70-х
годах прошлого века на Сахалине
нашли четыре жилых гнезда на ли-
ственныхках. А в прошлом году наши
специалисты нашли одно такое на
дереве, одно на земле и несколь-
ко стрых гнезд.

Еще одна наша задача - про-
вести менение охотского улита, - го-
ворит ученый. - Для этого на пал-
ку надо повесить флажок с номе-
ром, и тогда можно отследить путь
птички. Да, отловить его трудно,
но имеются специальные спосо-
бы: сидят улит на бревне или пал-
ку, а пловушка и заклонится... Этот
способ придумали мы - раньше ку-
ликов так никто не ловил. И под-
готовили статью в зарубежный
журнал об этом новом эффектив-
ном способе.

**КУЛИКА ИЩТЕ
В... ШАНХАЕ**

Такое менение является очень
результативным: в прошлом году
четыре помеченных в нашем крае
куликов сфотографировали в...
Шанхае. Они там отдохнули и по-
летели на Мянму. То есть три ты-
сячи километров до Шанхая про-
ше две - ничего себе, перелеты
для крошечной редкой птички ве-
сом в 170 граммов!

В этом году один помечен-
ный улит опять же обнаружен в
районе Шанхая, другой - в Ю-
жной Корее. Откуда это известно?

Так австрало-азиатское партне-
рство работает как надо - ученые
региона информируют коллег
орнитологов вовремя.

В прошлом году пометили
восемь куликов на контрольном
участке, в этом два, и это потому,
что все остальные оказались уже
перемечены... Ох, мало осталось
охотских улитов!

Эту мененую группировку мы
создали специально для того, что-
бы следить за ее демографически-
ми показателями, - объясняет Вла-
димию Пронкевичу. - По кром де-
лания генетический анализ. В пер-
вые же сутки после рождения птен-
цы прыгают с дерева, вместе
с родителями уходят на примор-
ские пуга. Кто их там выхаживает?
Вот после анализа это станет ясно.

На следующий год ученые по-
сле планируют работать в заливе
Счастья, еще один домик постро-
ить в западной его части. Залив -
средоточие безбрежного разно-
образия птиц и животных. Есть
нерпа, полно рыбы, много мед-
ведей, но для птиц это - самый ми-
рового значения: через него про-
ходит пути сотен тысяч пернатых.

Например, стоя на одном ме-
сте, Владимир Валентинович в
бинокль увидел до ста тысяч ку-
ликов! То есть территория око-
ло трех километров он смог про-
смотреть и чуть со счета не сбл-
жался, а протяженность залива сорок
километров.

Мировое значение для остано-
вок птиц-мигрантов - вот что та-
кое залив Счастья. Кормятся они
на приливно-отливной зоне бере-
режья, предпочитают мелких бес-
позвоночных, накапливая жир для
глобальных перелетов. Стартуя
отсюда, улетают эти стаи куликов
на Желтое море, там еще подко-
пят жирка, и полетели далее, в ту-
манную и трудную неизвестность.

Наталья ПЛАТОШКИНА.



Владимир Пронкевич (второй слева) с коллегами много лет изучают птичью фауну

Собрали
данные пред
в этих город
Владимир
видеокаме
документы
заодно, не
дево, о кот
Како
Комсомо
Та э
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десять пере
детей, а с
июмент
ло, а мне
завать по
всем это
Сбив
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ДТП недели

Рекорд по... поврежденности

3. Photoappendix



Figure 1 – Basecamp near the mouth of Zimmick River.



Figure 2 – Banded Adult Nordmann's Greenshank.



Figure 3 – Common Redshank chick.



Figure 4 – Adult Nordmann's Greenshank.



Figure 5 – Nordmann's Greenshank nest on the ground.



Figure 6 - Nordmann's Greenshank nest on the ground.



Figure 7 – Nordmann's Greenshank chick.



Figure 8 – Nordmann's Greenshank nest from previous years.



Figure 9 Banding of Adult Common Redshank.