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**ASSESSMENT OF HUNTING PRESSURE ON FAR EASTERN CURLEW AND OTHER  
SHOREBIRDS IN RUSSIAN FAR EAST: SUMMARY OF THE FIELDWORK IN 2019-2022**

*(Prepared by BirdsRussia)*

Summary:

This information document was submitted by BirdsRussia. It reports on results of surveys conducted from 2019 to 2022 to assess modern and historic population trends of shorebirds under hunting pressure in regions of the Russian Far East: Kamchatka, Sakhalin, Khabarovsk, Amur, and Magadan. This document summarizes the findings on overall hunting pressure in the Russian Far East for shorebirds and puts special focus on the Far Eastern Curlew (*Numenius madagascariensis*), Spoon-billed Sandpiper (*Calidris pygmaea*), and Whimbrel (*Numenius phaeopus*). This project was made possible thanks to voluntary contributions of the Government of Australia, and facilitated through small-scale funding agreements between BirdsRussia and the CMS Secretariat.



# Assessment of hunting pressure on Far Eastern Curlew and other shorebirds in Russian Far East: summary of the fieldwork in 2019-2022

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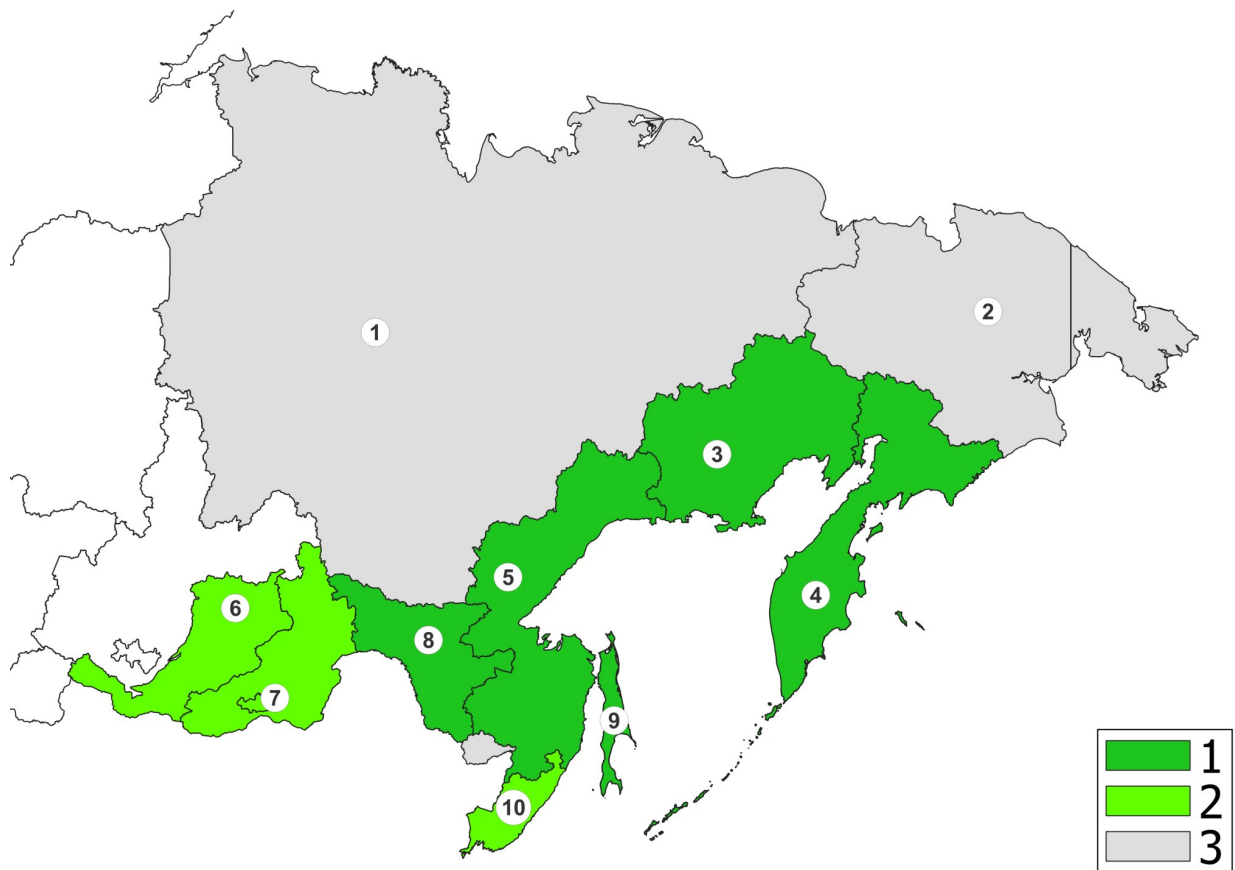
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## 1. INTRODUCTION

The Arctic Migratory Bird Initiative (AMBI) Work Plan objective 3 states to prevent illegal hunting and regulate unsustainable legal harvest of Arctic migratory birds along the East Asian-Australasian Flyway (EAAF). Action 3.1 initiates surveys of hunting pressure on Arctic-breeding shorebirds in stopover areas in the North-East of the Russian Federation, including Chukotka, Kamchatka, Sakhalin and mainland coasts of Sea of Okhotsk. The implementation of these activities was started in 2019 by BirdsRussia and Working Group on Waders on Northern Eurasia. This is the first project focused on the assessment of hunting pressure on Arctic shorebirds in the Russian Federation. The main aim is to reveal the territories of the largest hunting pressure on shorebirds first of all for priority EAAF Partnership species of shorebirds: Far Eastern Curlew (*Numenius madagascariensis*), as well as other threatened species: Curlew Sandpiper (*Calidris ferruginea*), Red Knot (*Calidris canutus*), Great Knot (*Calidris tenuirostris*), Black-tailed Godwit (*Limosa limosa*), and Spoon-billed Sandpiper (*Eurynorhynchus pygmeus*, hereinafter SBS). Special attention is paid as well to Whimbrel (*Numenius phaeopus*) which is the most popular shorebird target species for legal hunting in the Russian Far East.

In 2019 a survey was carried out in Kamchatka (Klokov et al., 2020), in 2020 in Sakhalin (Matsyna et al., 2021), in 2021 in Khabarovsk Region and Amur Region (Matsyna et al., 2023), and in 2022 in Magadan Region (Fig. 1).

Each of these regions occupy vast areas, much of which is devoid of roads and difficult to access. Therefore, in each region we were only able to conduct fieldwork in a few model areas. We selected these areas by studying literature sources, talking to ornithologists who worked in these regions, and by analyzing data from the Russian Ringing Centre of the Academy of Sciences on ring recoveries.



*Figure 1: Regions of the Russian Far East surveyed in 2019-2022 as part of the Shorebird Hunting Impact Assessment Project: 3 – Magadan Region, 4 – Kamchatka Region, 5 – Khabarovsk Region, 8 – Amur Region, 9 – Sakhalin Region;  
Regions proposed for survey in the nearest years: 6 – Republic of Buryatia, 7 – Zabaykalskiy Region and 10 – Primorskiy Region;  
Regions for prospective studies: 1 – Republic of Sakha (Yakutia), 2 – Chukotka Autonomous Okrug.*

## 2. PROJECT GOAL AND OBJECTIVES

An important goal of the project is to identify modern and historic population trends of different species and ecological groups of shorebirds under hunting pressure (both legal and illegal bird harvest) as well as other factors. Thus, the following objectives had to be attained:

1. Identify main shorebird staging sites during migration where they are subject to intensive hunting pressure.
2. Compare the timing of hunting seasons with the timing of migration and stop-overs of different shorebird species, identify the most vulnerable species.
3. Estimate the number of shorebird hunters in different areas of the Russian Far East, including hunters on large-sized, medium-sized and small-sized shorebirds.
4. Inspect model settlements (villages and small towns), including interviews, anonymous questionnaires and direct observation of hunting processes within the project time-frame.
5. Assess the feasibility and attempt to organize online anonymous questionnaire.
6. Give an estimate of an average number of shorebirds harvested by one hunter in different regions of the Russian Far East.
7. Calculate an estimate of shorebird harvest in different regions of the Russian Far using expert assessment and, where possible, extrapolation, in particular to give an approximate estimate for large and small-sized shorebird harvest and for the most important species, if possible.
8. A separate task is to develop and refine the research methods of assessing the hunting pressure on shorebirds in the Far East.

The study focused on the most vulnerable species of shorebirds - Far Eastern Curlew (FEC) and Spoon-billed Sandpiper (SBS) and other AMBI priorities species.

Special attention is paid as well to Whimbrel which is the most popular shorebird target species for legal hunting in the Region.

### 3. METHODOLOGY

Our methodology includes 6 approaches:

1. Analysis of literature, official statistics and data on rings recoveries
2. Detailed interviews with hunters.
3. Anonymous questionnaires.
4. Direct observation of hunting.
5. Consultations with regional expert's ornithologists.
6. Careful review and analysis of all materials received and formulation of our expert opinion on the press of hunting on shorebird species and species groups; if possible a rough estimate of the probable number of birds harvested.

**The analysis of literature, official statistics and data on rings recoveries** was carried out during the preparation of fieldwork to select model villages and develop routes in each region.

According to this methodology the survey in each village includes two steps. First, an in-depth **interview** with 2–3 experts takes place to identify at a qualitative level the general picture of the way how shorebird hunting occurs at this place and how important it is for local hunters. As a result of the interview, we learned about the bigger picture of shorebird hunting in the village.

The second step was the survey using **anonymous questionnaires**, which were filled by hunters themselves. The questionnaire was made as short as possible because each extra question increases the possibility that the hunter would think the questionnaire is too complicated and would not want to waste time completing it.

The main part of hunters does not distinguish species of shorebirds. Therefore, in anonymous questionnaires, we mostly do not use names of shorebird species, but ask hunters to divide the harvested shorebirds into the following groups:

- Whimbrel, which is very popular and well known to Russian Far East hunters,
- other big-sized shorebirds except Whimbrel,
- medium-sized shorebirds,
- small-sized shorebirds.

In addition, we asked to list the species of harvested shorebirds, if the hunter knows them, but only a few of respondents did this.

**Sampling.** Since it was not possible to create a random sample, we used two methods:

- Asked hunters to fill out a questionnaire at the time when they visited the office of the hunting society in order to return a seasonal hunting permit. This method was mainly used the help of employees of the hunting societies. However, it was not possible to use it in all districts.

- The Snowball Method, when each hunter, filling out a questionnaire, gave the contact details of one or more other hunters. This method gives good results in small villages.

It should be noted that the absence of random sampling does not give grounds for direct extrapolation of the results obtained when processing anonymous questionnaires. These results were used mainly as a basis for our expert assessments along with the information we obtained by other methods. Only in Kamchatka, where the number of questionnaires received was sufficiently large, we used the extrapolation method.

Apart from the survey of hunters in settlements, we conducted a **direct observation of the hunting** process with visual inspection of the hunters' harvest at the model plots. This allowed to identify species and species ratio of shorebirds and other birds harvested there. The advantage of the direct observations of hunters at the model plots was the possibility to observe the hunting process, conduct a significantly higher number of informal interviews with hunters and visually inspect their harvest, which allowed to identify species of harvested shorebirds, which hunters themselves did not know.

Our contacts and **consultation with regional ornithologists**, whose opinions we used as experts' opinions, were of great importance both in planning the entire cycle of work in each region and in obtaining final expert judgements. Some of them were directly involved in field work and are included in the authors of this report.

The use of auxiliary materials – posters (App.4), souvenirs and tables with images of birds – significantly improved the quality of information collection.

The final stage was to develop our **expert opinion on the hunting press** and, if possible, to estimate the number of birds harvested.

Having collected and systematised all the materials, which were quite heterogeneous, we started their careful informal study. In some cases, we did not have a clear picture of how, where and on what scale shorebird hunting was taking place, so we consulted local ornithologists. We tried to get a very rough, but true assessment of how great the danger of unsustainable hunting is, in which places and for which species in the first place.

In conducting our study, we faced two significant methodological difficulties:

First, we had to use different methodological approaches in different regions and even in different areas of the same region, the results of which in many cases do not allow us to formalise them. Secondly, the objects (facts) we observed do not allow us to conduct observations on the basis of a random uniformly distributed sample.

Thus, observation of the hunting process and inspection of birds shot by hunters were possible in small model plots where hunting is most intensive. We learnt about the location of these areas from other ornithologists and local experts. Observations there enabled us to roughly estimate the extent of hunting and the ratio of harvested bird species. However, it is clear that these data cannot be mechanically extended to the vast surrounding areas where hunting is sporadic. We were able to judge how many birds could be harvested in these large



areas based on informal interviews with local experts who know the situation in different areas well, as well as on knowledge of the migratory routes of a particular species.

In regions where hunters regularly obtained hunting permits by visiting the offices of hunting societies or agencies (e.g. Kamchatka), we tried to distribute anonymous questionnaires relatively evenly, but even here, many inactive hunters ignored the questionnaires, so the sample was inevitably bias. The Snowball method also does not produce a random uniformly distributed sample. For this reason, the data we obtained cannot be processed statistically according to standard methods. They should be regarded as indicative estimates, on the basis of which more precise and correct methodologies can be developed in the future, if this proves appropriate.

Section 4 (ESTIMATION OF ANNUAL SHOREBIRD SHOOTING VOLUME IN SURVEYED REGIONS) provides some additional details on how we obtained estimates in different regions.

## 4. RESULTS

### 4.1. REGIONAL ASSESSMENT OF THE VOLUME OF SHOREBIRD SHOOTING IN THE RUSSIAN FAR EAST

#### 4.1.1. Kamchatka Kray

Here, in 2019, the methodology of material collection was tested and perfected. It was based on anonymous questionnaires. The questionnaires were distributed through the hunting organization service. A total of 400 questionnaires were collected. For the first time, the number of harvested shorebirds of two size groups, large/medium and small species, was estimated for this region (Table 1).

*Table 1. Estimation of number of harvested shorebirds in Kamchatka in 2019*

Species/Groups of species	Area of Kamchatka					
	North	West	East	Centre	South	All
Number of hunters	275	343	481	572	3 244	4 915
<b>Average number of shorebirds harvested by one hunter per year</b>						
Whimbrel	2.06	23.21	15.85	0	6.45	8.86
Big- and medium-sized species except Whimbrel	0.52	1.93	0.04	0	0.24	0.53
Small species	1.62	10.07	0.44	0	0.61	2.23
<b>Total number of shorebirds harvested per year</b>						
Whimbrel	566	7 960	7 625	0	20 928	37 078
Big- and medium-sized species except Whimbrel	143	662	18	0	791	1 614
Small species	444	3 454	214	0	1 978	6 090
<b>Total</b>	<b>1 153</b>	<b>12 076</b>	<b>7 857</b>	<b>0</b>	<b>23 697</b>	<b>44 782</b>

The interviews show, that hunters often shoot large shorebirds while hunting the Whimbrel, including Far Eastern Curlews (FEC), Bar-tailed and Black-tailed Godwits. Some hunters do not know the right name of the species, though many of them are quite aware of them.

Thus, significant numbers of FEC may be between shot Whimbrels. Hunters know that this species is protected, but except poaching, some hunters shoot them by mistake. Also young FEC are mistaken with adult Whimbrels as they have shorter bill. This does not justify hunters, since these 2 species differ not only in the size of the beak. Unfortunately, based on these interviews, we cannot estimate the volume of hunting for the Far Eastern Curlew.

According to the anonymous questionnaire survey, in 2019 9.2% of hunters shot big and middle-sized shorebirds in Kamchatka. The average bag per one hunter over Kamchatka was 0.5 birds a year. An estimate of the total number of the harvested shorebirds was 1600. Their

spatial distribution on the whole is similar to the spatial distribution of the Whimbrel bag. On average, there is 1 large shorebird of other species was shot for each 22 Whimbrels, according anonymous questionnaires.

As a result of the fieldwork, it was concluded that it is not possible to evaluate the number of hunted FEC using only interviews and anonymous questionnaires. Hunting for this species was noted in 1% of anonymous questionnaires, but many hunters could not distinguish FEC from the Whimbrel, and other hunters did not want to report information, because they knew that they had shot a prohibited species. Thus, we concluded that other methodology is needed to find out what number of Far Eastern Curlew, as well as Bar-tailed and Black-tailed Godwit is harvested by hunters during Whimbrel hunting. Interview and anonymous questionnaire methods are not suitable for this, but watching hunters during the hunt is required. Therefore, observation of the hunting process in key areas has been included in the survey plan from next year 2020.

Another important point is that FEC in Kamchatka has earlier southward migration periods compared to the Whimbrel and, accordingly, its migration occurs mainly before the beginning of the waders hunting season.

#### *4.1.2. Sakhalin Region*

Sakhalin Region was surveyed in 2020. Sakhalin Island is one of the most populated and developed regions of the Russian Far East and a very important migration area for many shorebird species. There are many hunters here and many places with high concentrations of shorebirds. On Sakhalin we have conducted many interviews and informal discussions with hunters. This allowed us to determine the level of harvesting of different shorebird species more accurately (Table 2). Total amount of shorebird harvested on Sakhalin was even higher than on Kamchatka! Particularly alarming was an unexpectedly high level of harvesting of Far Eastern Curlew. While in Kamchatka hunters shot it mainly due to ignorance and confusion with Whimbrel, on Sakhalin this species is a prestigious trophy for many hunters.

Sakhalin hunters know FEC well and in majority of cases distinguish it from other shorebird species, including Whimbrel, based on appearance, flight features and voice. Local names of Far Eastern Curlew are “morskoy” (marine), “kamchadal” (from Kamchatka region), “vzrosly” (adult) and others. It is usually harvested not by mistake but intentionally as one of the most valuable trophies rated as highly as goose. In other words, it is taken at any possibility. Once we were told of a situation when in poor visibility conditions a shorebird flock of 6 birds, which turned out to be Far Eastern Curlews, was taken at the Arakul river in the Korsakovsky district in the south of Sakhalin. It is the most numerous group of this species among all sightings described to us by hunters. Single birds or groups of 2-3 birds are usually sighted. Many note that although it is significantly inferior taste-wise to Whimbrel and Teals, it is considered a prestigious trophy which everybody dreams of.

**Table 2. Expert assessment of yearly harvest of shorebirds in the Sakhalin Region**

Far Eastern Curlew ( <i>Numenius madagascariensis</i> )	1 100
Whimbrel ( <i>Numenius phaeopus</i> )*	20 000 – 38 800
Black-tailed Godwit ( <i>Limosa limosa</i> )	1 600
Bar-tailed Godwit ( <i>Limosa lapponica</i> )	1 100
Medium-sized shorebirds	11 900
Small-sized shorebirds	20 600
Total	56 300 – 75 100

\* - number of harvested birds varies depending on the Whimbrel population number fluctuation from year to year

According to the survey results, 32.6% of respondents have harvested Far Eastern Curlew in Sakhalin at least once. 17.6% of interviewed in 2020 hunters harvested it in 2019. Another 4.3% of hunters sighted it but did not harvest the birds (or could not harvest even though they were not against it). Based on the survey results, we managed to establish that 6 birds were harvested between 41 surveyed hunters in 2019, which amounted to 0.15 birds per person on average. This average value was further multiplied by the total number of hunters who received bird harvest permit in 2019 (7545 permits). Therefore, according to our estimate, total yearly harvest of this species in the Sakhalin Region can reach 1100 birds. The number may seem large at first but if we take into consideration that anybody who sights it tries to harvest it (App. 1, A).

#### 4.1.3. Khabarovsk Region and Amur Region

**Khabarovsk Region and Amur Region, survey 2021.** Hunting here has a large impact on shorebirds in the areas adjacent to the Sea of Okhotsk. Species such as Great Knot, Red Knot, Bar-tailed Godwit, and others are regularly and in considerable numbers shot there. We also recorded incidental harvesting of the SBS in Okhotsk. Hunters do not distinguish between species of shorebirds and usually shoot in flocks. The Far Eastern Curlew is less harvested here than on Sakhalin. Hunters shot it mainly in central part of Khabarovsk Region and in the valley of Amur River

FEC breeds in many areas of Khabarovsk Region and Amur Region. It is hunted predominantly in the spring and summer. Of course, all shooting of Far Eastern Curlews is illegal. This species is listed in the regional and federal Red Data Books. However, not all hunters are aware of this. The large size and relative accessibility of these birds make them victims of both accidental and deliberate hunting. Birds are shot most often during spring waterfowl hunting. Ducks are usually shot from a shelter and if a large shorebird is within reach of a hunter, he will often shoot it too. In individual interviews, some hunters reported to us that they harvest Far Eastern Curlews every year in spring on an opportunity. Some respondents even shot several Curlews in one season, noting, however, that this was a good luck. In particular, this has been reported in the Solnechny District of Khabarovsk Region at Lake Evoron. In Ulch district birds are shot in spring near rain and snow puddles on country roads. In

Verkhnebureinsky District of Khabarovsk Region they have been shot from a shelter while hunting with a decoy duck for he-ducks. Whimbrels fly close to a shelter and are shot in their breeding habitat.

There are a number of references to shooting Far Eastern Curlews for ornithological collections in the scientific literature. According to Babenko (2000), Far Eastern Curlews shot on 15 May 1959 near the settlement of Naikhin (Nanai district, Khabarovsk Region) and on 25 May 1959 on the Kharpi River (Amur district, Khabarovsk Region) were kept in the collections of Kiev State University. In the vicinity of Okhotsk, Far Eastern Curlew was hunted on 21 June 1915 (Kharitonov, 1915). Sherbakov (1976) reported shooting of Far Eastern Curlews in Middle Priamur'ye (May 7-15, 1966-1968), in the Bikin river basin (May 5, 1939), on Lake Evoron (2 males and 1 female on June 18, 1993), and females of this species on Lake Chukchagirskoe (May 25, 1980). At present, this practice is not widespread due to the difficulty in obtaining permission to harvest birds included in the Russian Red Data Book. Permission must be obtained in Moscow. The activity of replenishing zoological collections has decreased considerably in recent decades. However, from informal interviews with hunters, we have learned that local taxidermists sometimes make stuffed birds of this species for commercial sale.

Based on the materials we received, an attempt was made to present the intensity of shorebirds hunting in the Khabarovsk Region. The results are presented on Figures 2-5.

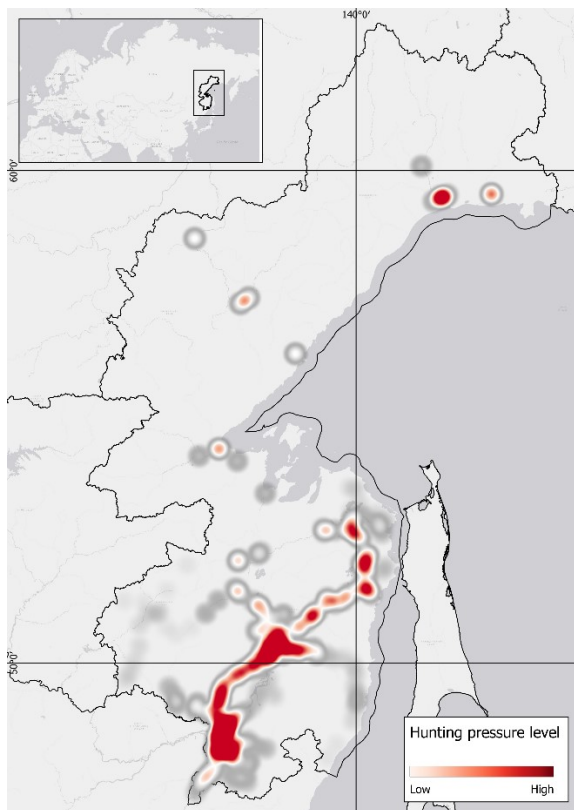


Figure 2. Hunting Pressure level on Far Eastern Curlews in Khabarovsk region

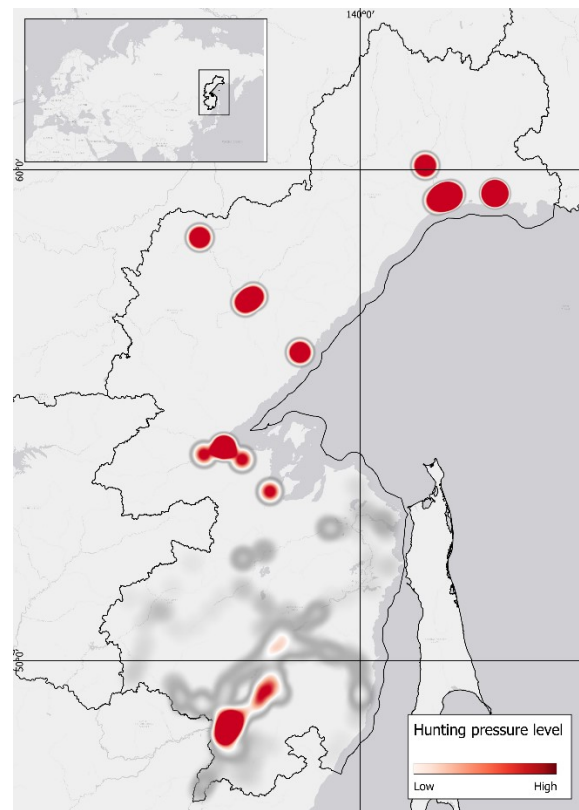


Figure 3. Hunting Pressure level on Whimbrel in Khabarovsk region

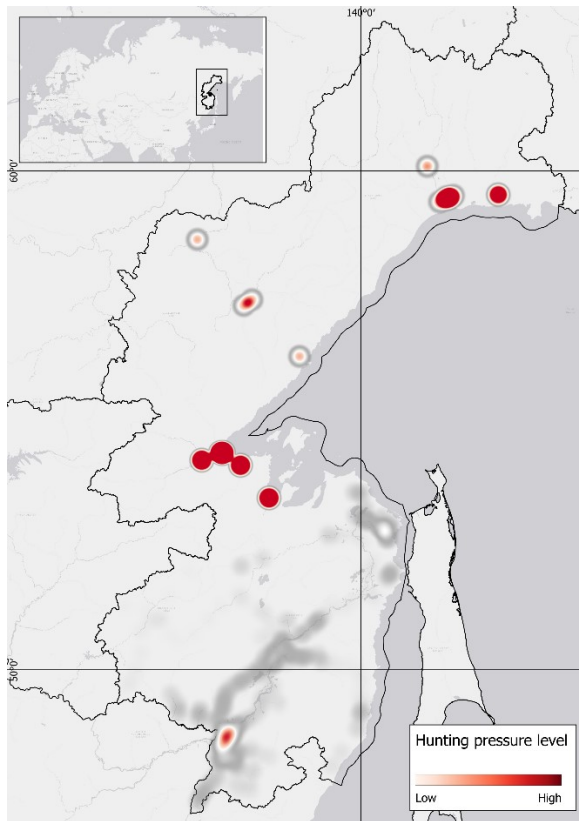


Figure 4. Hunting Pressure level on Medium-sized shorebirds in Khabarovsk region

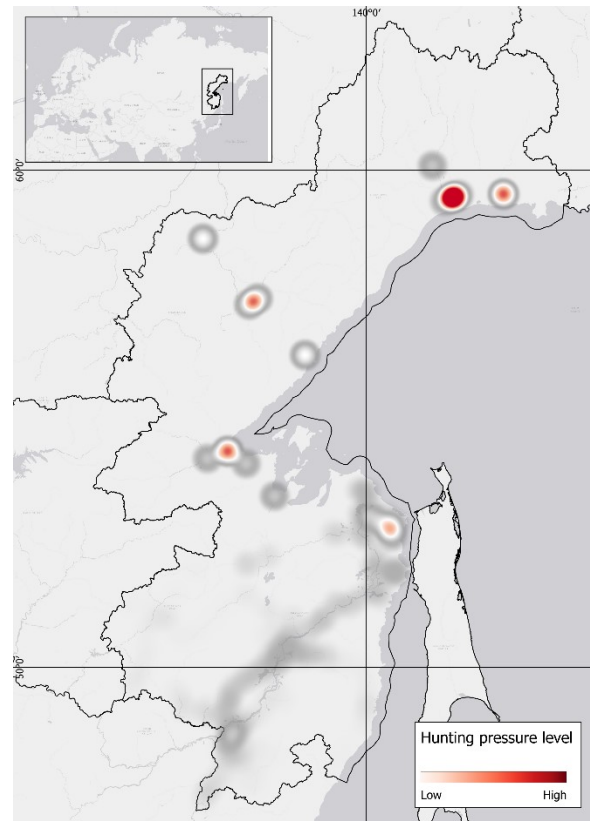


Figure 5. Hunting Pressure level on Small-sized shorebirds in Khabarovsk region

Table 3. Expert assessment of annual shorebird shooting in different parts of Khabarovsk Region

Species/group of species	Group of districts				Total birds
	Maritime districts	Centre of Khabarovsk Region	Amur River basin	Southern districts Total	
Far Eastern Curlew	80	140	280	80	580
Whimbrel	1000	220	300	40	1560
Other large-sized shorebirds	900	210	270	100	1480
Medium-sized shorebirds	16800	1800	3900	870	23370
Small-sized shorebirds	10800	280	1700	80	12860
<b>Total birds</b>	<b>29580</b>	<b>2650</b>	<b>6450</b>	<b>1170</b>	<b>39850</b>

In our estimate of the volume of Far Eastern Curlew shot each year, we assume a maximum possible number of birds shot, and we would be happy if it turned out to be an

overestimate. However, our surveys indicate that the figures obtained are reasonable and may be realistic. The bulk of these birds are harvested in the central part of Khabarovsk Region and the Amur River floodplain (Tables 3, 4). A graphical distribution of the total number of Far Eastern Curlews harvested is presented in Figure 10.

In **Amur Region** shorebird hunting is even less developed as there are no large migratory concentrations of shorebirds. Nevertheless, the Far Eastern Curlew is threatened here as well. This species is most often hunted either in spring, during duck hunting, either by poachers.

In the Amur Region, information on shooting of these birds was also obtained from areas where they nest – in the Bureinsko-Khinganskaya Depression, on the Zeya-Bureinskaya Plain. According to the results of the anonymous questionnaire, 5.9% of hunters harvested Far Eastern Curlews in the last 3 years. The species accounted for 3.4% of the total shorebird shot. Based on this data and information on the number of permits issued for waterfowl and shorebirds in the Amur Region, we made an assumption that up to 200 Far Eastern Curlews may be shot annually. A significant part of them is harvested in the south of the region (i.e. in Oktyabrsky District and its neighboring districts). Since only an anonymous survey was carried out in the Amur Region, a more detailed study including interviews with hunters and observation of the hunting process could change the assessment of the volume of shooting, presumably upwards.

*Table 4. Expert assessment of annual shorebird shooting in of Amur Region*

Species/ group of species	Number of birds harvested per year
Far Eastern Curlew	200
Whimbrel	100
Other large-sized shorebirds	2360
Medium-sized shorebirds	2760
Small-sized shorebirds	150
<b>Total birds (shorebirds)</b>	<b>5570</b>

#### *4.1.4. Magadan Region*

**Magadan Region, survey, 2022.** Work to assess the impact of hunting on shorebird populations in Magadan Region was concentrated in three main areas along the Sea of Okhotsk – Amakhton Bay, Olskoye Lagoon and in the vicinity of the regional centre – Magadan city. Some information was additionally collected during telephone interviews with respondents in remote villages and towns. Detailed interviews with experts provided additional information on some locations where shorebirds were concentrated as well as on shorebird hunting in hard-to-

reach areas of the Sea of Okhotsk, such as Yamsky Firth, Molokchansky and Motykleisky bays, and others.

In total, we received survey data from 16 communities located in six of the nine administrative districts of Magadan Region and the city of Magadan, as well as from the town of Omolon, which is located on the border of Magadan Region and Chukotka Autonomous Okrug, but administratively belongs to the latter. This community was the most northeastern point of data collection.

More than 75 people, including hunters, as well as employees of the Ministry of Nature Protection of the Magadan Region, Magadan Society of Hunters, researchers of the Institute of Biological Problems of the North, and Magadansky Reserve, who have information about hunting management in the region, seasonal specifics of hunting, the list of harvested species, took part in the surveys. Besides, valuable long-term data on shorebirds and waterfowl harvesting were obtained when studying expositions and museum collections in Tauysk town and Magadan city.

As in Khabarovsk Kray and Amur Region FEC is hunted here mostly in spring and summer, of course illegally. Many hunters do not know that it is included in all regional and federal Red Data Books. During individual talks some hunters informed us that they shoot Far Eastern Curlew every year at breeding grounds. In particular, such hunting was practiced several years ago in the vicinity of Talon settlement (Olskiy district), until the Far Eastern Curlew disappeared from their breeding grounds. Local hunters described to us in detail the method of searching for and hunting of Far Eastern Curlew at nesting sites in June. A thorough knowledge of the ecology and behavioural habits of the species (e.g., distance to fledging, nature of disturbance near clutches, timing of breeding, tendency to colonize, etc.) indicated that a targeted persecution by humans is the reason for absence of this species near human settlements inhabited by hunters. This fact is even more annoying in connection with the situation that on the northern border of the range the Far Eastern Curlew has been associated with human activities to some extent. It settles not only in natural habitats, but also in abandoned agricultural fields, where it is subsequently hunted.

Based on the results of our work, the main site where the Far Eastern Curlew is regularly hunted is the areas adjacent to the Okhotsk Sea coast in the western part of Olsky District (west of the city of Magadan) as well as in areas adjacent to the Olskoye lagoon (around the settlements of Ola, Klepka, Gadlya) (Fig. 6). However, new evidence of breeding of this species in the mainland part of the region (vicinity of the Seymchan settlement, Srednekanskiy district) indicates that it is possible to hunt it here as well, i.e. much wider within the Magadan Region. At least half of the interviewed hunters reported having shot a Far Eastern Curlew during a hunt at least once. Some reported multiple takes of the species and unsuccessful attempts to do so. In fact, hunters (even knowing the conservation status of the Far Eastern Curlew) still make efforts to hunt it, considering it an important trophy. At the same time, all hunters, without exception, confidently distinguish it from the Whimbrel, usually using for it a local name emphasizing its special position: “royal”, “kuvyk” (sounding similar to the voice of the Curlew).



Taking into account a rather high level of Far Eastern Curlew harvesting in the Magadan Region (with an overall low number of the species on the border of the breeding range), it is necessary to organize a special information campaign on the necessity to protect this species. This work should be conducted jointly with the regional agencies organizing and controlling hunting. Unfortunately, a significant part of their employees are not aware not only about the size of penalties for hunting rare and protected species, but also about the list of shorebird species prohibited for hunting.



Figure 6. Most likely areas for Far Eastern Curlew in Magadan Region illegal hunt (indicated by shading)

## 4.2. ESTIMATION OF THE ANNUAL SHOREBIRDS SHOOTING VOLUME OF SOME SPECIES AND SIZE GROUPS

The rate of annual hunting on some species and size groups of shorebirds is presented in Appendix 1 (A, B, C, D, E).

### 4.2.1. Big-sized shorebirds (except Far Eastern Curlew and Whimbrel)

We estimate the shorebird harvest of this size group in the surveyed regions of the Far East at 5,000 – 11,000 individuals per year. The role of the Amur region is unexpectedly high due to the significant hunting on woodcock here (Fig. 7).

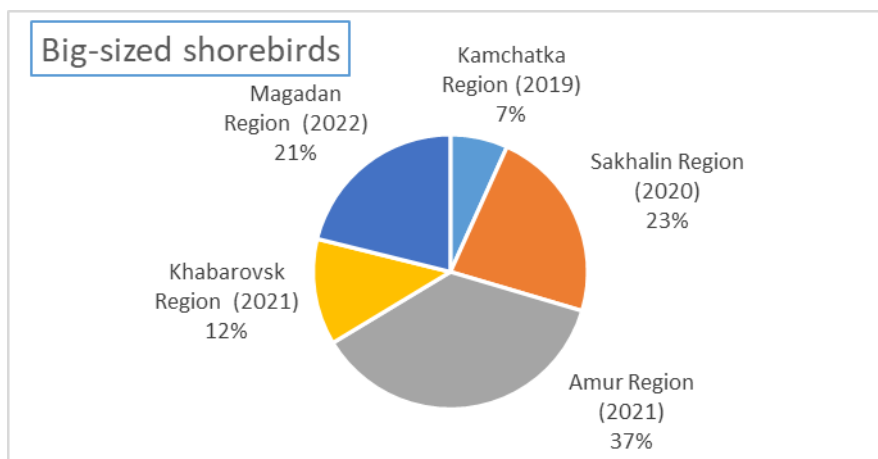


Figure 7. Distribution of large-sized shorebirds (with the exception of the Far Eastern curlew and the Whimbrel) in the bag of hunters of the Far East (expert assessment).

### 4.2.2. Medium-sized shorebirds

Medium-sized shorebirds are harvested in significant numbers by a small number of hunters in places of mass concentrations of birds on flyways. Hunting on medium-sized shorebirds in the region we estimated at 20,000 – 45,000 birds per year (Fig. 8).

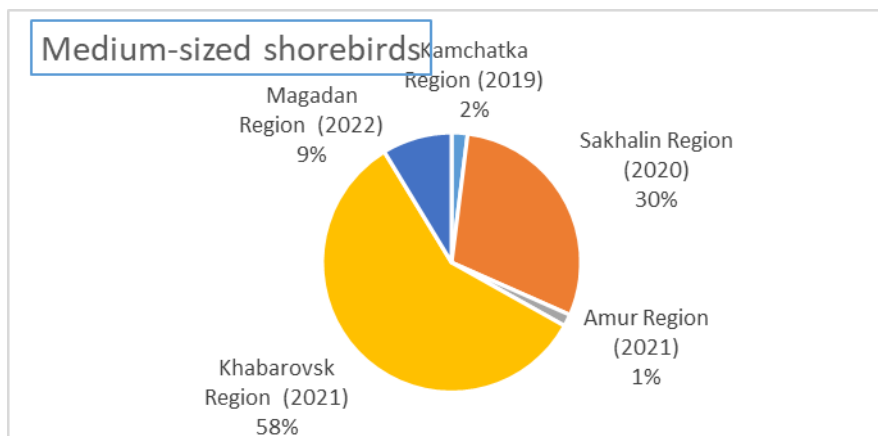


Figure 8. Distribution of medium-sized in the bag of hunters of the Far East (expert assessment).

#### 4.2.3. Small-sized shorebirds

We estimate the regional small-sized shorebird harvest at 18,000–35,000 birds per year. As a rule, this happens while hunting other birds. The role of Sakhalin is high due to the fact that a significant number of hunters are concentrated here, as well as a large proportion of coastal habitats important for migratory shorebirds (Fig. 9).

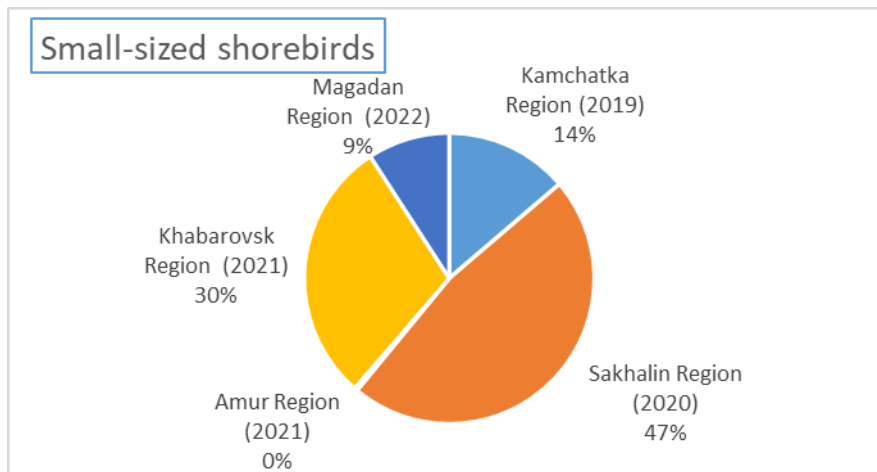


Figure 9. Distribution of small-sized shorebirds in the bag of hunters of the Far East (expert assessment).

#### 4.2.4. Far Eastern Curlew

For four regions of the Far East, the harvest of Far Eastern curlew is estimated at 1,000 – 2,000 birds per year (Fig. 10). We have not yet been able to obtain information about the harvest of this species in Kamchatka. More research needed.

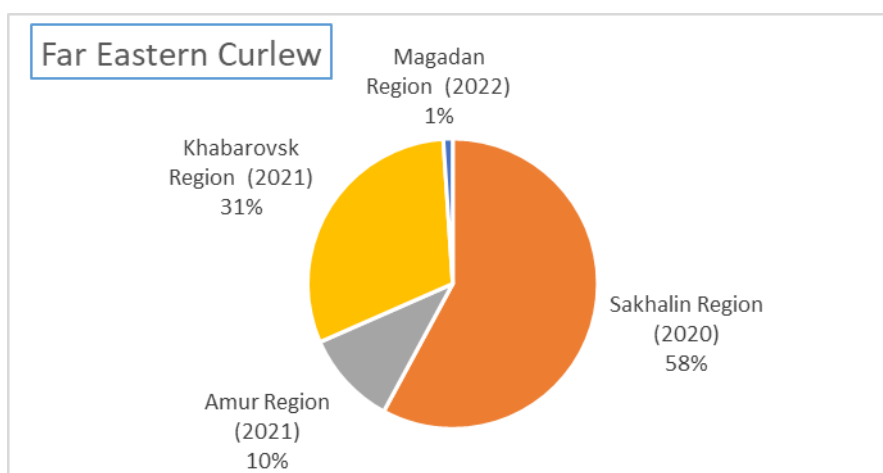


Figure 10. Distribution of the Far Eastern curlew in the bag of hunters of the Far East (expert assessment).

The most dangerous areas for the Far East Curlew are indicated in the figure 11.

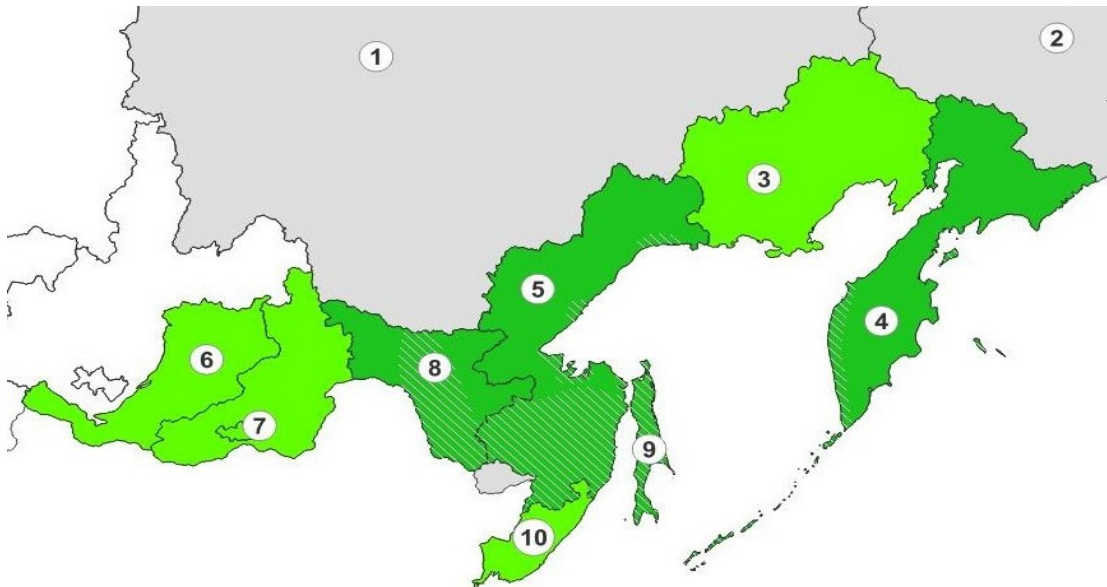


Figure 11. Areas of the highest probability of shooting on Far Eastern Curlew during the breeding and migration periods (highlighted by shading: 1 – Yakutia Republic; 2 – Chukotka Autonomous Okrug; 3 – Magadan Region; 4 – Kamchatka Region; 5 - Khabarovsk Region; 6 – Buriatia Republic; 7 – Zabaikalsky Region; 8 - Amur Region; Sakhalin Region; 10 – Primorsky Krai)

#### 4.2.5. Whimbrel

This species experiences the greatest pressure from hunting. Sakhalin and Kamchatka remain the main areas where hunting for it is very active. The total harvest of Whimbrel in the region is estimated at 40,000 – 80,000 birds per year (Fig. 12).

In all regions, with the exception of Kamchatka, there has been a long-term and significant decline in the level of harvest of this species. Many hunters report that its numbers have decreased tenfold over the past 20-30 years. There are no objective results of surveys of the dynamics of the Whimbrel population.

We believe that populations of this species migrating through Sakhalin experience disproportionate pressure from hunting. This is especially noticeable against the background of the global transformation of Whimbrel habitats in the north of Sakhalin as a result of the development of coastal oil and gas fields.

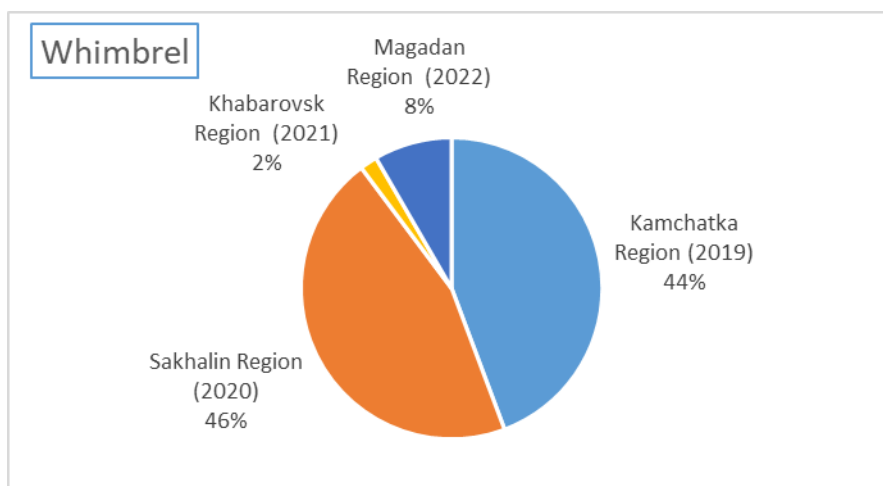


Figure 12. Distribution of the Whimbrel in the bag of hunters of the Far East

## 5. POPULATION AND RANGE STATUS OF THE FAR EASTERN CURLEW (*NUMENIUS MADAGASCARIENSIS*) IN THE SOUTH FAR EAST OF THE RUSSIAN FEDERATION

### 5.1. Nesting range structure and abundance

Chronologically, nesting of Far Eastern Curlew was firstly described in Primorsky Region (near Lake Khanka and in the lower reaches of the Bolshoi Ussurka River), then in Khabarovsk Region and Amur Region. The most detailed data on the Far Eastern Curlew range in the late 20<sup>th</sup> and early 21<sup>st</sup> centuries are presented in Antonov (2011; 2016) and Sleptsov (2019). Based on these data, 33 breeding areas with a total area of about 150 thousand sq. km were mapped (Fig. 14). Six clusters of Far Eastern Curlew nesting pockets were identified (so-called population-geographical nuclei), including Priamurskoe, located in the Amur River basin from Lake Khanka in the south to the Verkhnezeiskoe Plain and the Evoron-Chukchagirskaia Lowland in the north. A total of 18 elementary breeding grounds of Far Eastern Curlew were identified in the Amur basin. The Amurian breeding area is more extensive than other clusters and occupies the southernmost part of the known breeding range of the species.

Let us review the history of studies and the present state of the elementary breeding grounds of the Far Eastern Curlew breeding core area in this area (Table 5).

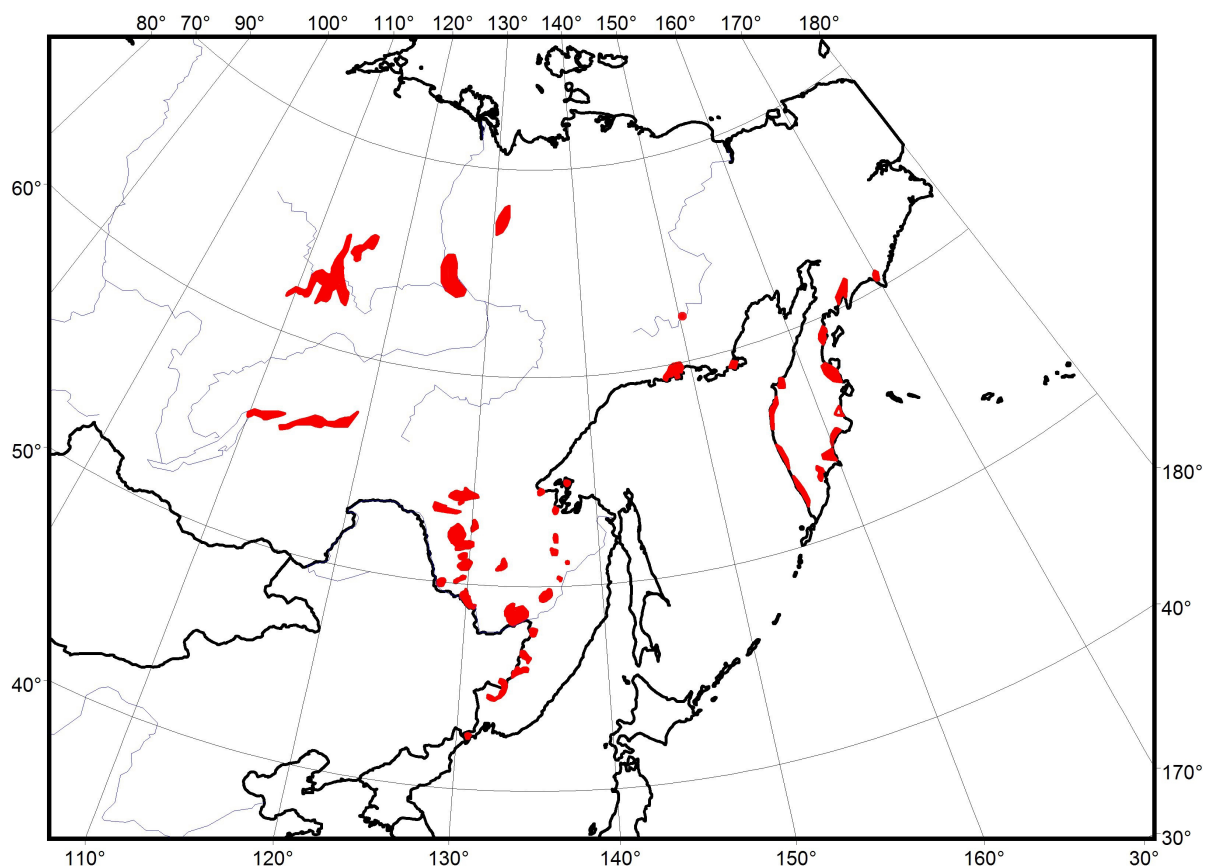


Figure 14. Breeding range of Far Eastern Curlew *Numenius madagascariensis* (Antonov, 2011, 2016; Sleptsov, 2019)

K.A. Vorobyev (1954) supposed the nesting of Far Eastern Curlew in the area of Possiet Bay in the south of Primorsky Region, but no one has confirmed this nesting after this author.

The breeding area in the lowlands of Lake Khanka has a long history of studies. The first nest was found here in 1928 (Shulpin, 1936). In the mid-1970s, about 50 pairs were breeding in the Lake Khanka Lowland (Gluschenko, 1982).

The nesting of Far Eastern Curlew in the lower reaches of the Bolshaya Ussurka River was reported by E. P. Spangenberg (1965). The status of this breeding area is currently unknown.

Nesting on the Bikin River was discovered by B.K. Shibnev, and Far Eastern Curlew was common there in the middle of the 20<sup>th</sup> century (Shibnev, 1976). Later, in the 1970s, B.B. Pukinsky (2003) stated a sharp decrease in the number of the local breeding group there.

Mention of Far Eastern Curlew nesting in the lower reaches of the Khor river is mentioned only in the work of L.M. Shulpin (1936), the current status is unknown.

C. B. Winter (1980) discovered the Far Eastern Curlew breeding area in the Bureinsko-Khinganskaya Lowland in the mid-1970s. The density of nesting birds in this area is decreasing, but as a whole by the abundance of nesting pairs this area occupies one of the key positions. It is the only locality from which we already know more than 10 documented nest finds (Antonov, 2009). It should be taken into account that this record number of found nests is probably due to the large number of ecological studies of the Far Eastern Curlew in the area.

A significant breeding area of the Far Eastern Curlew is located in the north of the Zeya-Bureya Plain in the basins of the Tom, Ulma, and other rivers with their tributaries (Antonov et al., 2016). However, we do not have data on its abundance (nor absolute, either relative) from this region.

Several large nesting pockets have been described in the Upper Zeya River basin. Most of them exist and maintain a significant density of birds up to the present time.

The nesting conditions of the Far Eastern Curlew in the Verkhnezeiskoe Plain have now deteriorated due to flooding of most of the suitable nesting sites by the waters of the Zeya Reservoir. Nevertheless, successful nesting there by Far Eastern Curlew has been documented (Antonov et al., 2015). For example, 5 nesting pairs were found in Dutkan Bay and adjacent marshes of the Bol'shaia Palpaga River floodplain in the last decade of June 2014 – birds were at brood at the time of the survey. Nesting is also probable in the Khaimkan *mariae* (larch peatmoss bog open woodland) and in the Gulik River valley near the Zeisky Nature Reserve, where mating birds and pairs were observed on 21-23 May 2014 and 10 May 2015 (Antonov et al., 2015). In 2021, Far Eastern Curlews were nesting near the village of Bomnak, and they had not been observed here before (data from interviews with local hunters).

According to Voronov (1983), Far Eastern Curlew is a sparse or rare migrating and probably nesting species in the middle reaches of the Zeya River. It has been known to appear there in spring since 5 May. It has also been recorded in summer in the Dep River basin from source to mouth, among other an actively disturbing male was observed on 18 June 2015. A pre-breeding flock of 14 females (judging by beak length) was observed at the mouth of the Dep River on 16 June 2015.

In the Middle Amur Plain in the Evreyskaya Autonomous Region, Far Eastern Curlew nests in larch peatmoss bog open woodland, but there are few specific data on numbers. In the Bolon Lake basin in Khabarovsk Region, Far Eastern Curlew has been recorded since the middle of the last century (Kistyakovskiy, Smogorzhevskiy, 1973), but its nesting was not confirmed until much later (Antonov, 2004). The number of nesting birds in this area has decreased significantly over the past 20 years by 30-94% (Antonov 1999; Antonov 2004; Pukinsky 2003; Roslyakov 1990; Winter 1980).

Further down the Amur River valley, Far Eastern Curlew nesting is known in the interfluvies of Bol'shaya and Mal'aya Khurbinok Rivers and in the basin of the Gorin River, on lakes Evoron and Udyl, on Oljikan River and also (presumably) up to the mainland coast of Tugur Bay (Tugur River estuary) and Bol'shoi Shantar Island (Babenko, 2000; Pronkevich, Voronov, 1996; Roslyakov, 1990; Koblik et al, 2001; Pronkevich, 1998).

**Table 5. Population number of Far Eastern Curlew in the Amur River basin according to published data (sources – see table 1)**

Name of breeding area	Region	Location	Year of count	Number of nesting pairs (according to the source)	Nesting rate (pairs number per 10 km <sup>2</sup> )
Bolon	Khabarovsk Region	vicinity of the village of Djuen on Bolon Lake	2000	15 pairs / 100 sq km	1.5 pairs
In	Evreiskaia Avtonomnaia Region	In River	2002	3 pairs / 10 sq km	3 pairs
Bikin	Khabarovsk Region	Interfluvies of Bikin and Alchana Rivers	1970s	3-4 pairs / 10 sq km	3-4 pairs
Arhara	Amur Region	Bureinsko-Khinganskaia Lowland	1999	1- 1.5 pairs / 1 sq km	15 pairs
Khurba	Khabarovsk Region	Interfluvies of Bol'shaia and Malaya Khurbinok Rivers	Year unknown	2 pairs / 1 sq km	20 pairs
Arhara	Amur Region	Bureinsko-Khinganskaia Lowland	1975-78		17-33 pairs
Bolon	Khabarovsk Region	Bolon lake	1980s	2-3 pairs / 1 sq km	20-30 pairs
Evoron	Khabarovsk Region	Evoron lake	Year unknown	4 pairs / 1 sq km	40 pairs
Selemdkha	Amur Region	Ziesko-Selemdzhinskaia Plane	Year unknown	2 birds / per 10 km of route length	
Zeia	Amur Region	Verkhnezeiskaya Plane	Year unknown	5 birds / per 10 km of route length	
Nora	Amur Region	Burunda River	Year unknown	1-9 birds per 10 km of river	

## 5.2. Seasonal migration

During spring migration in the Ussuri River floodplain (south of Khabarovsk Region) in 2005, Far Eastern Curlew was observed from 12 April (Pronkevich, 2011). The maximum intensity of migration was observed on 5 May, when two flocks of 40 and 50 Far Eastern Curlews were observed. A total of 209 birds were recorded during the period of observations from 1 April to 11 May. Far Eastern Curlew migrates to Bologna Lake at the beginning of the third decade of April. Migration is by broad front, in small groups of 8-10 birds at a height of 150-200 m. Sometimes they form clusters up to 150-200 individuals (Roslyakov, 1990). On Lake Evoron in spring Far Eastern Curlew appear on the same dates (Pronkevich and Voronov, 1996). During the summer, non-breeding Far Eastern Curlews occur within the breeding range. For example, flocks of 5-7 Far Eastern Curlews stayed until early August in the Bureinsko-Khinganskaya depression (Winter, 1980). In the summer of 1978 flocks of several dozens of Far Eastern Curlews were recorded on Lake Bolon (Mishchenko, Smirenskii, 1981). A flock of 23 Far Eastern Curlews flying southward was observed on 10 June 1976 near Malyshevo settlement, Khabarovsk Region (Valchuk, 1997). Since mid-June there has been a permanent migration of single and failed breeding birds. In central Sikhote-Alin, autumn migration is from early to mid-3<sup>rd</sup> decade of September (Rakhilin, 1973c). As well, Far Eastern Curlews are known to be shot in Khabarovsk Region (Malyshevo village) and in October (Roslyakov, 1990).



## 6. CONCLUSION

As the interviews show, hunters while hunting the Whimbrel often do shoot large shorebirds, including Far Eastern Curlews, Bar-tailed and Black-tailed Godwits. Some hunters do not know the right name of the species, though many of them are aware of them. Here we should distinguish between “proper poaching”, when hunters do it on purpose – they shoot all large shorebirds that have come close to them (the case common for some districts in Sakhalin Island), and "accidental poaching", when hunters shoot Far Eastern Curlews by mistake. The main reason for the error is the fact that young Curlews have a shorter bill than adult ones (similar to the Whimbrel’s bill), and hunters confuse these two species.

We found that the majority of hunters in relation to the Far Eastern Curlew fall into two groups. The first ones are unaware of the bird's protection status and hunt birds either accidentally or incidentally. The latter group regularly and deliberately takes them, often ignoring the hunting ban and having no fear of liability.

The total number of harvested Far Eastern Curlew in all surveyed regions of the Far East, according to our estimates, may amount to more than 2 000 birds per year (Table 6). In Kamchatka and partly on Sakhalin, hunters shoot it mostly occasionally when hunting Whimbrel during their southward migration. In Khabarovsk Region and Amur Region, it is harvested mainly in spring, in breeding grounds.

**Table 6. Estimation of number of yearly harvested Far Eastern Curlew (*Numenius madagascariensis*) in different region of Russian Far East**

Region	Estimation of number of harvested birds
Kamchatka	No data
Sakhalin	1 100
Khabarovsk Region	580
Amur Region	200
Magadan Region	20
Primorskiy Region	No data

Our project enabled us to obtain, for the first time, information on the scale of shorebird hunting in the Russian Far East. This is their great value. For a number of areas, such as the coast of the Sea of Okhotsk in Khabarovsk Region and the coast of Western Sakhalin, additional research is needed as our level of knowledge about these areas remains insufficient. We envisage, if circumstances permit, to continue surveys in the remaining regions of the Far East: the Rimouski Region, Zabaykal’ye and also Yakutia.

## 7. ACKNOWLEDGMENTS

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Russian Bird Ringing Centre provided data on shorebirds ring recoveries. The regional Wildlife Protection Agencies of Kamchatskiy and Khabarovskiy Regions, Amur, Magadan and Sakhalin Regions, and many regional and local Societies of Hunters and Fishermen provided logistics help and data on the number of hunters and hunting permits issued.

We acknowledge employees of these agencies and societies, as well as the experts and consultants who provided valuable information on the population, distribution and hunting of shorebirds in Russian Far East.

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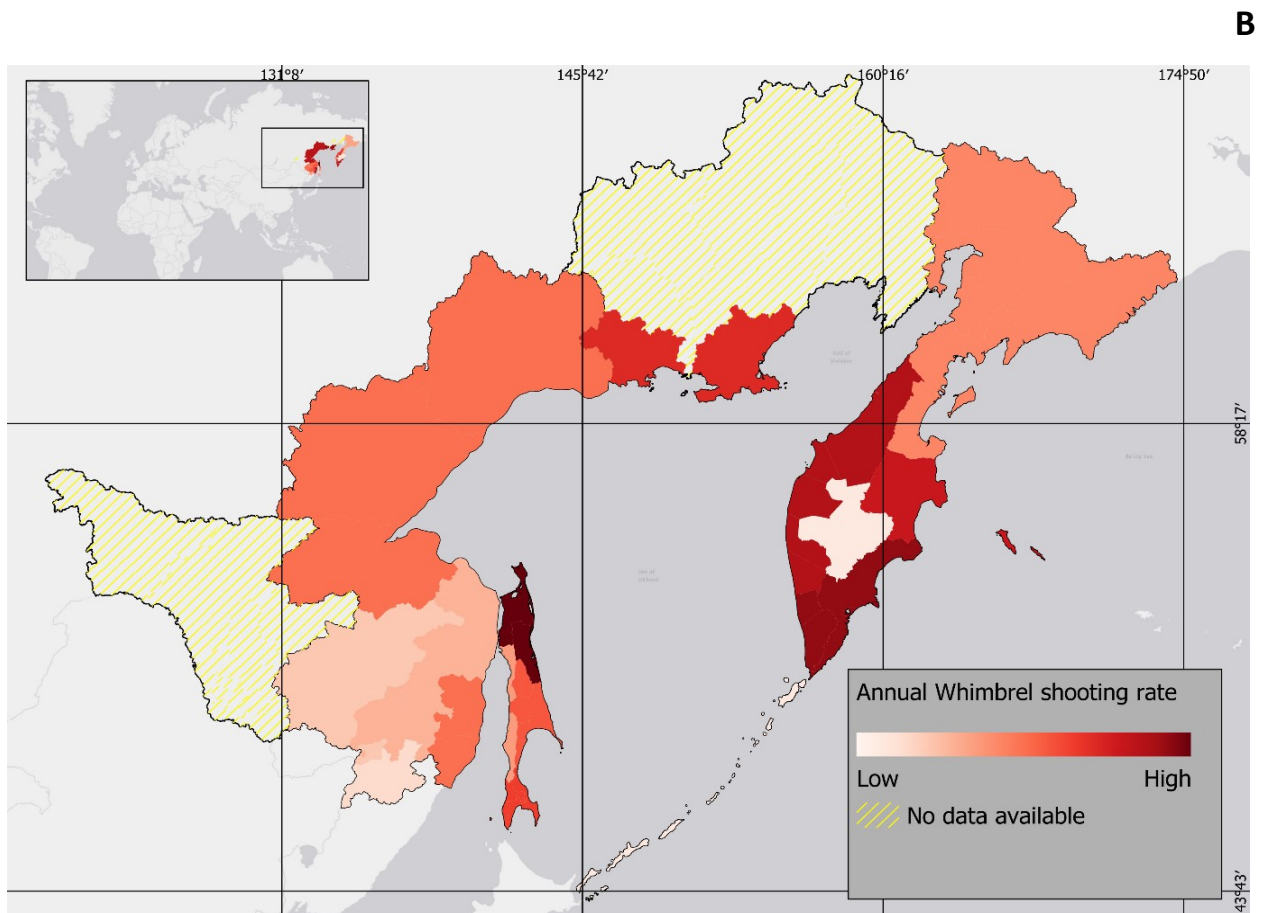
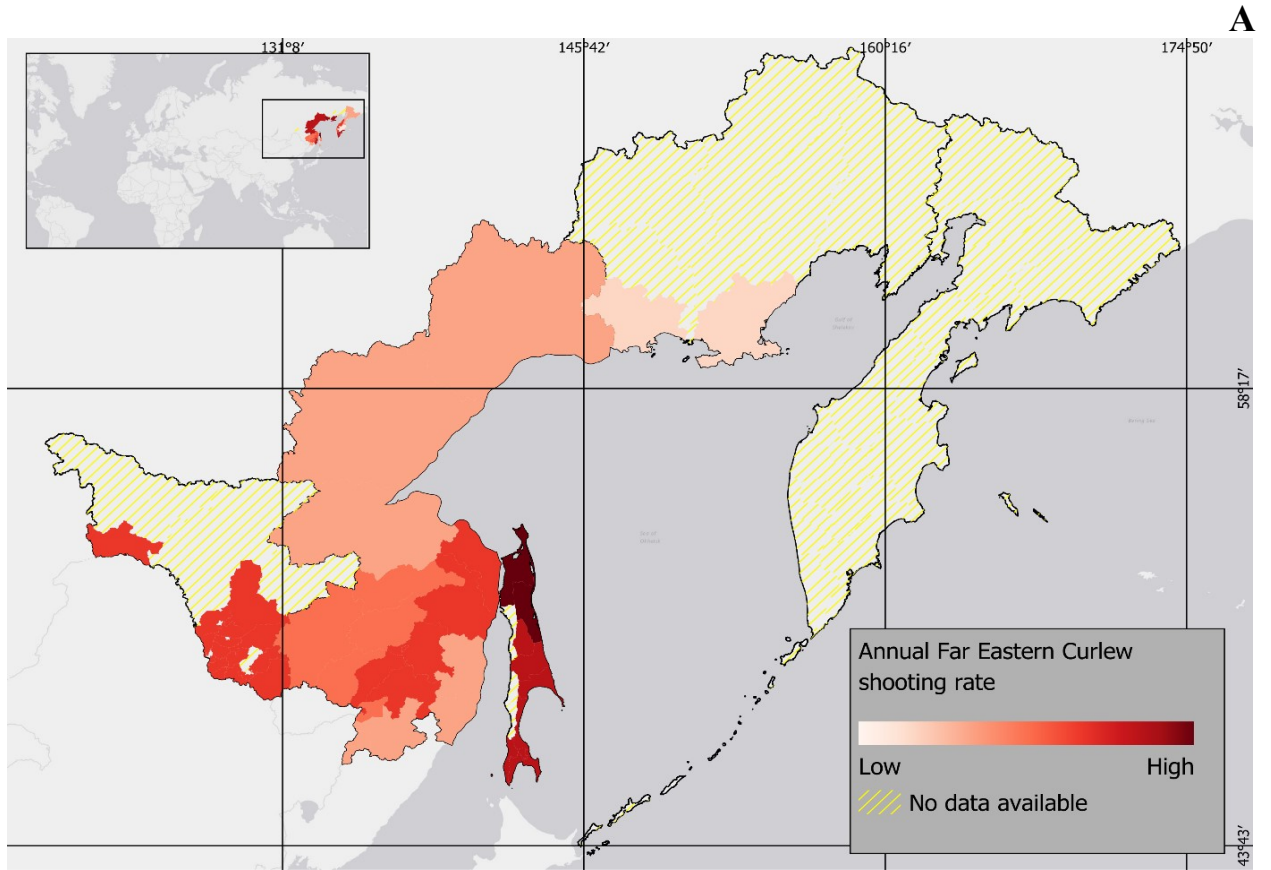
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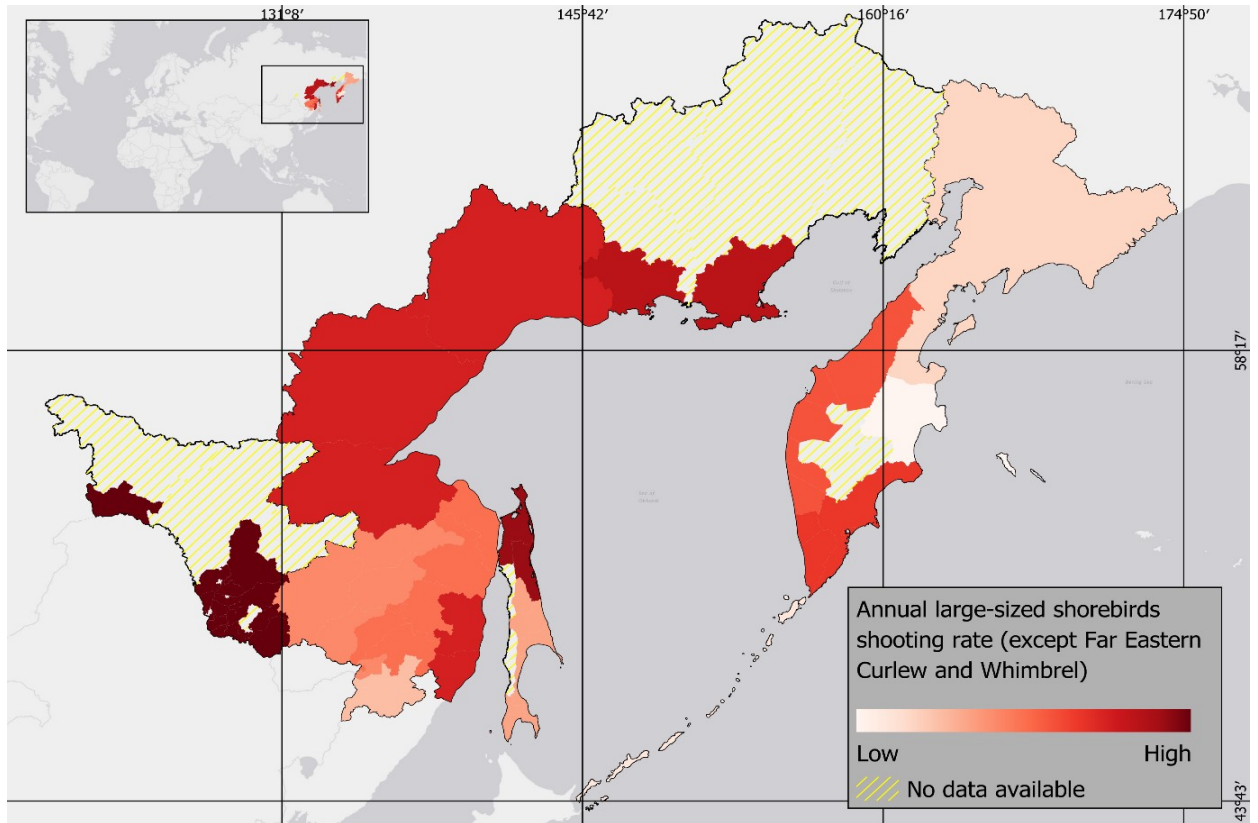
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**APPENDIX 1**

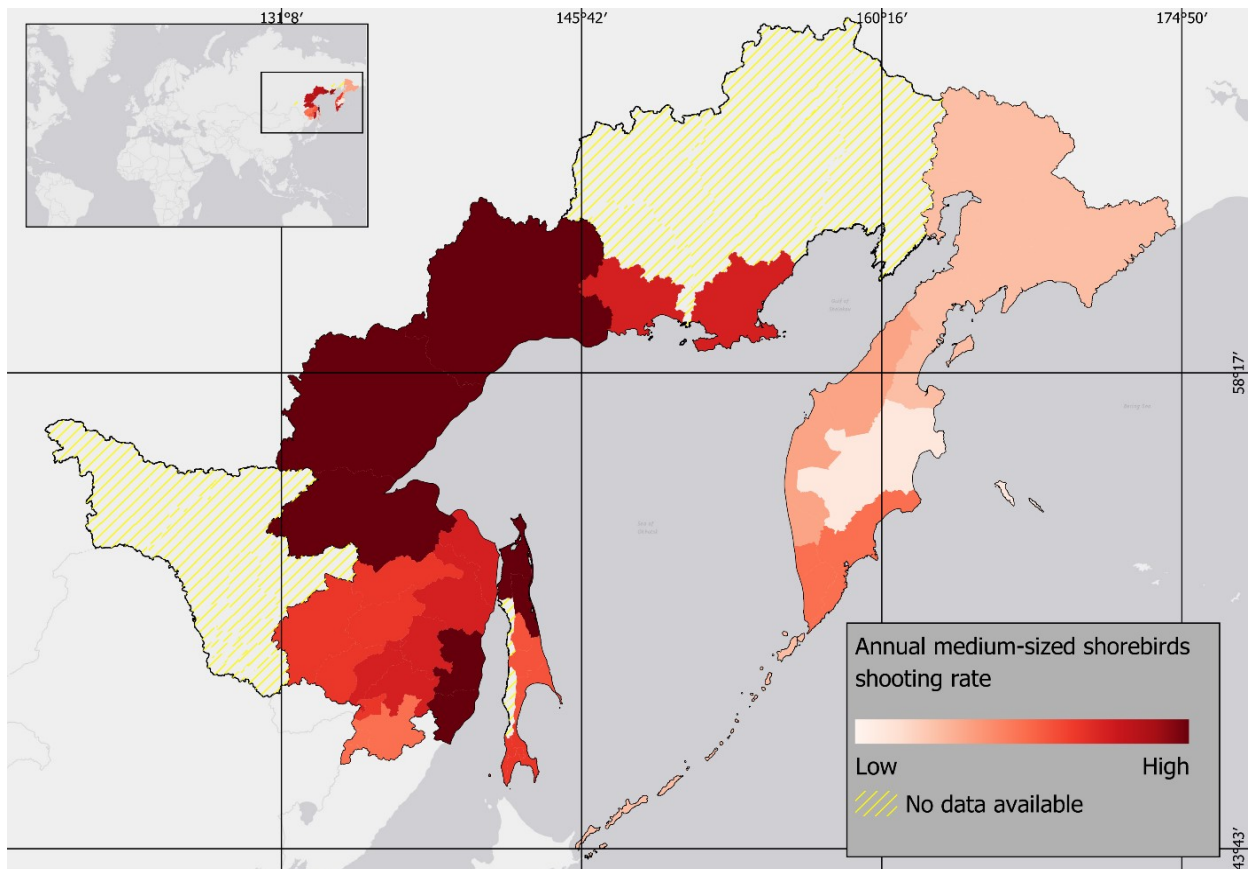
**THE RATE OF ANNUAL HUNTING ON SHOREBIRDS**



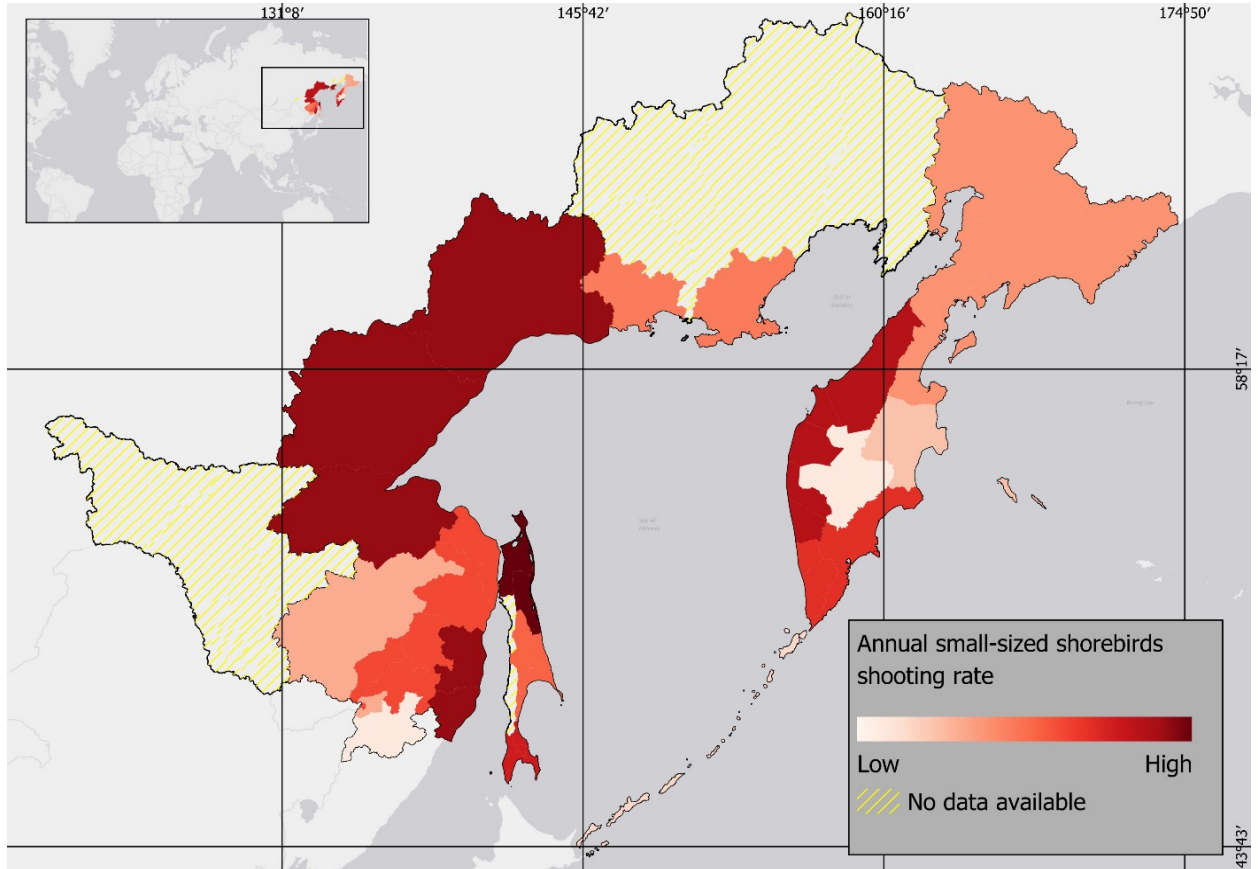
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E



**APPENDIX 2**

**FAR EASTERN CURLEW IN THE AMUR REGION**



Photo 1. Far Eastern Curlew after returning to breeding grounds in mid-April, Amur Region. Photo by A. Antonov



Photo 2. A pair of Far Eastern Curlews in the breeding biotope, Amur Region. Photo by A. Antonov





Photo 3. Far Eastern Curlew in the breeding biotope, Amur Region. Photo by A.Antonov



Photo 4. Far Eastern Curlew nesting biotope in the Amur Region. Photo by A.Antonov



Photo 5. Hatchlings in Far Eastern Curlew nest. Photo by A. Antonov



Photo 6. Ruined egg-laying of Far Eastern Curlew, Amur Region. Photo by A. Antonov

**APPENDIX 3**

**FIELD WORK**



Figure 1. Harvest inspection at the model plot at the Piltun bay, Sakhalin, 2020.



Figure 2. Harvest inspection at the Piltun bay, Sakhalin. A rack specially prepared to hang harvest. They can fit hundreds of birds, 2020.



Figure 3. Shorebird counts at the Piltun bay, 2020.



Figure 4. Different all-terrain vehicles are used in hunting in Sakhalin. Most of them, such as this one, can go on water, equipped with a system of autonomous heating, could be used for sleeping or waiting for bad weather to pass during hunting or even to hunt. Hunters are self-sustainable for many days or weeks.



Figure 5. Two thirds of surveyed hunters consider Whimbrel meat a delicacy and value it higher than all other game species, 2020.



Figure 6. Shorebirds are often hunted by novice hunters, like this boy who shot two Spotted Redshank in northern Sakhalin.



Figure 7. Great Knots carcasses (at least 53 birds) from more than 700 shorebirds shot in Schastya Bay (Khabarovsk Region) during one short hunt.



Figure 8. The beak of the Far Eastern Curlew in the collection of trophies of a hunter in the Magadan region, 2022.



Figure 9, 10. Many Kamchatka hunters shoot dozens of Whibrels in one hunting trip, 2019.



Figure 11. Survey of a hunter in the village of Yansky, Olsky district, Magadan region.



Figure 12. Harvest inspection at the Yana River, Magadan Region, 2022.



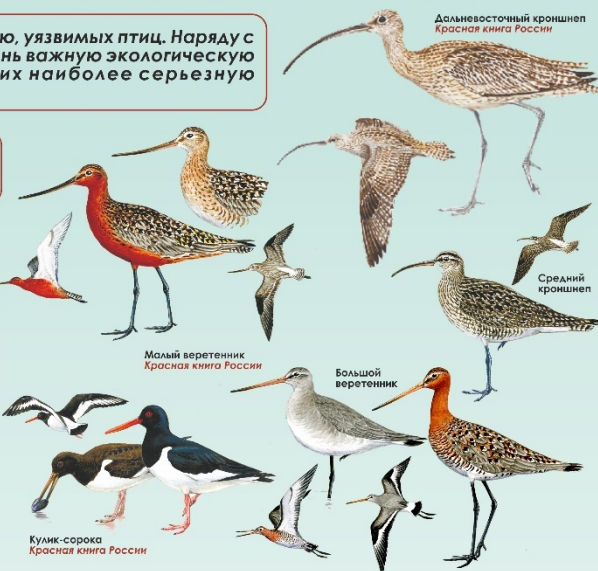
APPENDIX 4 HANDOUTS. POSTER: SHOREBIRDS OF THE RUSSIAN FAR EAST

# КУЛИКИ ДАЛЬНЕГО ВОСТОКА

## НАЦИОНАЛЬНОЕ ДОСТОЯНИЕ РОССИИ

**Кулики** – одни из самых загадочных и, к сожалению, уязвимых птиц. Наряду с водоплавающими они составляют заметную и очень важную экологическую группу пернатых, традиционно испытывающих наиболее серьезную антропогенную нагрузку.

На Дальнем Востоке России обитает более 60 видов куликов. Большинство из них редкие и охраняемые. Многие виды – эндемики России! Они гнездятся только у нас в стране и больше нигде в мире.



Миграционные пути куликов соединяют многие регионы мира, расположенные в северном и южном полушарии. Перемещаясь по ним птицы могут совершать сверхдальние «броски», преодолевая за несколько часов или даже суток расстояние в тысячи километров. После такого беспосадочного перелета птицам нужно быстро и эффективно восстановить силы и сделать это можно только в безопасных местах, богатых кормом.



**ВНИМАНИЕ**

Совершая дальние перелеты, кулики разных видов часто объединяются вместе, образуя смешанные стаи, в которых одновременно встречаются представители как вполне обычных, так и редчайших, строго охраняемых видов.

Каждый охотник обязан знать и различать в природе разрешенных и запрещенных к добыче птиц. Ни в коем случае нельзя стрелять по стаям куликов, видовой принадлежность которых вам неизвестна. Не соблюдая это простое правило, вы рискуете не только нарушить требования действующего законодательства, но и нанести ощутимый вред природе России.



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**Размеры штрафов**

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