Khairusova-Belogolovaya estuary wader study expedition.

Final report.

The field season 2016 was held from 30 June till 14th August. In expedition took part 7 persons - 4 volunteers from Australia (Peter Crighton and Robert Bush) and Great Britain (Richard Else and Hazel Watson), specialist from National Institute of Biological Resources (Korea) Hwajung Kim, specialist in ringing birds Alexander Matsyna and Dmitry Dorofeev, coordinator of the project.

Picture 1 Field team 2016 (Hwajung Kim in the left upper corner, Peter Crighton in the left lowe corner. On the left picture from left to right Robert Bush, Alexander Matsyna, Richard Else, Hazel Watson, Dmitry Dorofeev)

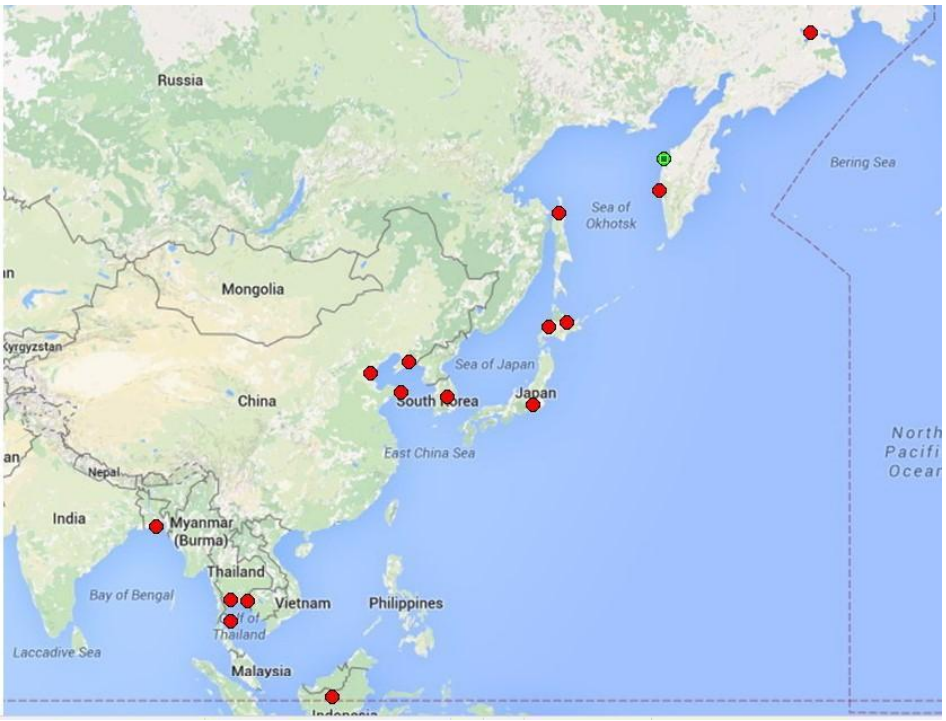
The main activities in the expedition

1) Wader counts
2) Resights of individually marked Great Knots, Black-tailed and Bar-tailed Godwits
3) Catching and ringing Great Knots and Black-tailed and Bar-tailed Godwits
4) Observations on Great Knot feeding behavior
5) Benthos sampling

As in previous year we didn`t make total wader counts on the whole territory. It is too large for regular total counts. We made almost every day counts on the mudflats were we made resights and benthos sampling. During our fieldwork we noted two peaks. First was in the beginning of July, next one in the end of July-beginning of August. Totally we observed up to 20000 Great Knots (beginning of July), 8000 Black-tailed Godwits (end of July-beginning of August) and 5000 Bar-tailed Godwits (beginning of August). First

juvenile Great Knots were observed on 24.07.2016, first juvenile Red Knot on 27.07.2016, first juvenile Black-tailed Godwit on 19.07.2016 and first juvenile Bar-tailed Godwit on 06.08.2016

Our main efforts were focused on resights of individually marked Knots and Godwits. Totally in Resightbook we have 1737 records. Total number of Great Knot resights – 1536. Birds were ringed in 21 ringing cites along whole East Asian-Australasian Flyway. The distribution of ringing sites are presented on Pic 2 (East Asia) and Pic.3 (Australia).




Picture 2 Distribution of ringing places in East Asia


Picture 3 Distribution of ringing places in Australia

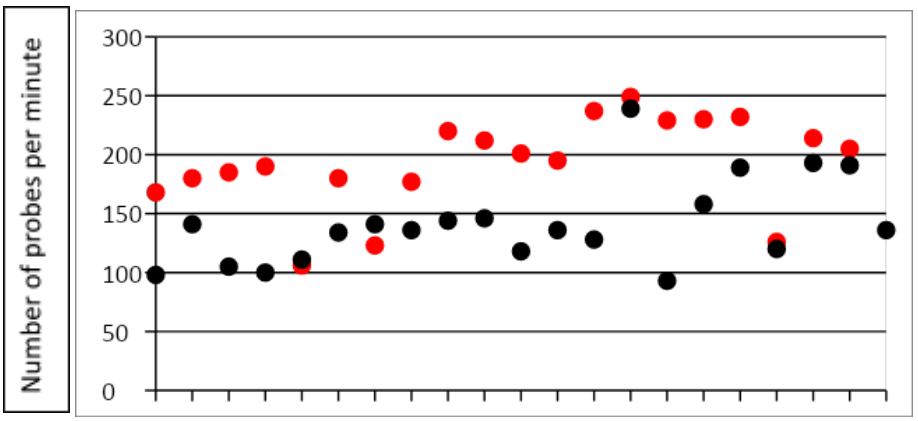
For part of observations we have data of abdominal profile index (API). We are planning that collected data will take us a chance to clear up the duration of the stopover for Great Knots and Black-tailed Godwits.

This year we started catching and ringing waders on the stopover. According to the aim expedition we were focused on ringing Knots and Godwits. All of them we ringed with engraved flags. Totally we marked with engraved flags about 230 Great Knots, 56 Black-tailed and 9 Bar-tailed Godwits. All birds were measured. Also we took blood samples to identify sex. We have preliminary agreement that samples would be proceed in Groningen University (The Netherlands). We already have first resights of our birds from Korea, Japan, Australia, etc (Pic. 4).

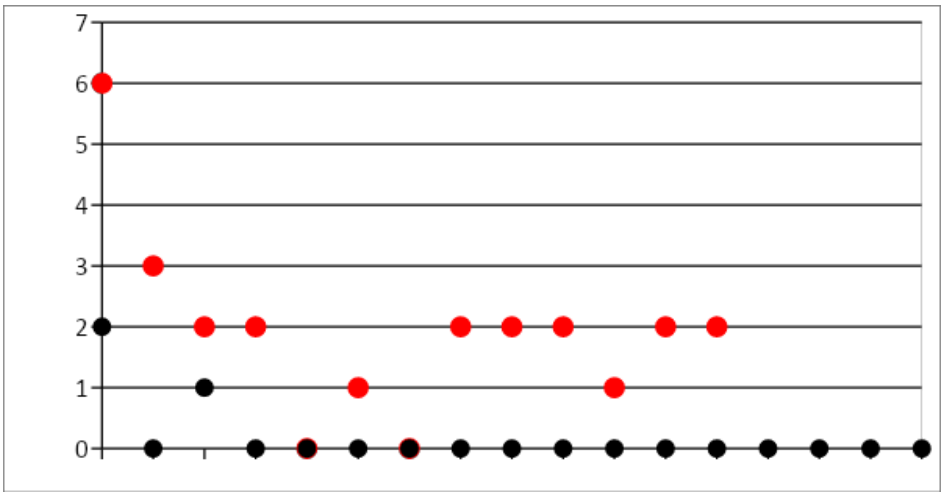
Picture 4 Resights of flagged in Khairusova-Belogolovaya estuary (green dot) Great Knots (red dots), Black-tailed Godwits (blue dots) and Red Knots.

The most interesting resight was from Khorr-Al Beida, Dubai (United Arabian Emirates). It is well known that in Persian Gulf winters rather small Great Knot population. And it is known that there never were seen birds with flags from Australia. There is no data about migration routes of these birds. On 28 July 2106 we marked adult Great Knot with black plain and engraved yellow flag EI. Last time bird was seen on 11 August in Khairusova-Belogolovaya estuary. And 20$^{th}$ January Oscar Campbell observed Great Knot EI at Khorr-Al Beida, Dubai (United Arabian Emirates). The direct distance between last two points is about 8300 km. But we hypothesize that this bird migrated along Pacific and Indian ocean coasts and total distance is about 13 000 km.

One of the most interesting and important things was watching of changing in feeding behavior of juvenile Great Knots. Last year we noticed that juvenile birds are feeding in another way that adult birds. Adult birds always feed very active in large dense flocks while juvenile first time feed alone and much more slowly. We calculated number of probes that made adult birds and juvenile per minute. The results are presented on the picture 5. Also adult birds feed more successfully and caught shells more often than juvenile (Picture 6)




Picture 5 Number of probes per minute. Red dots adult birds, black juvenile birds.

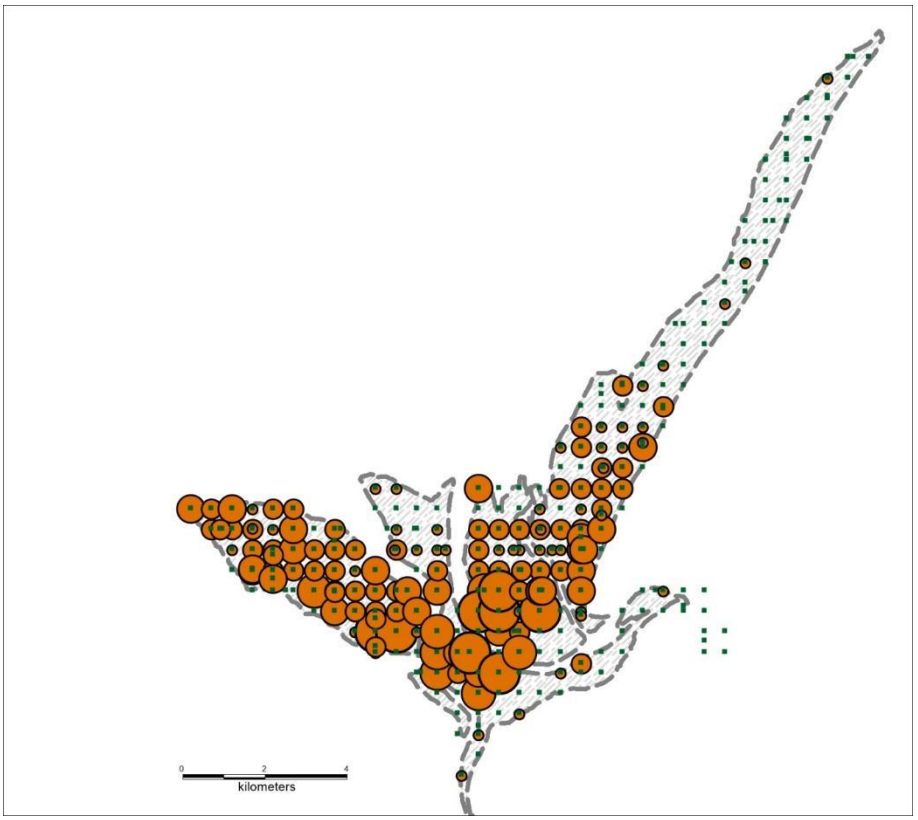



Picture 6 Number of shells caught by Great Knot per minute. Red dots adult birds, black juvenile birds.

This is very interesting preliminary results. We are planning to continue this investigation next year. We explain this behavior juvenile birds because they used to feed in tundra zone. They used to feed on different species of insects and don`t know how to catch marine shells and worms. So such birds with low rate of probing and successful hunt are very needed in high densities of benthos invertebrates. This is very important knowledge for understanding significance of estuary for juvenile birds.

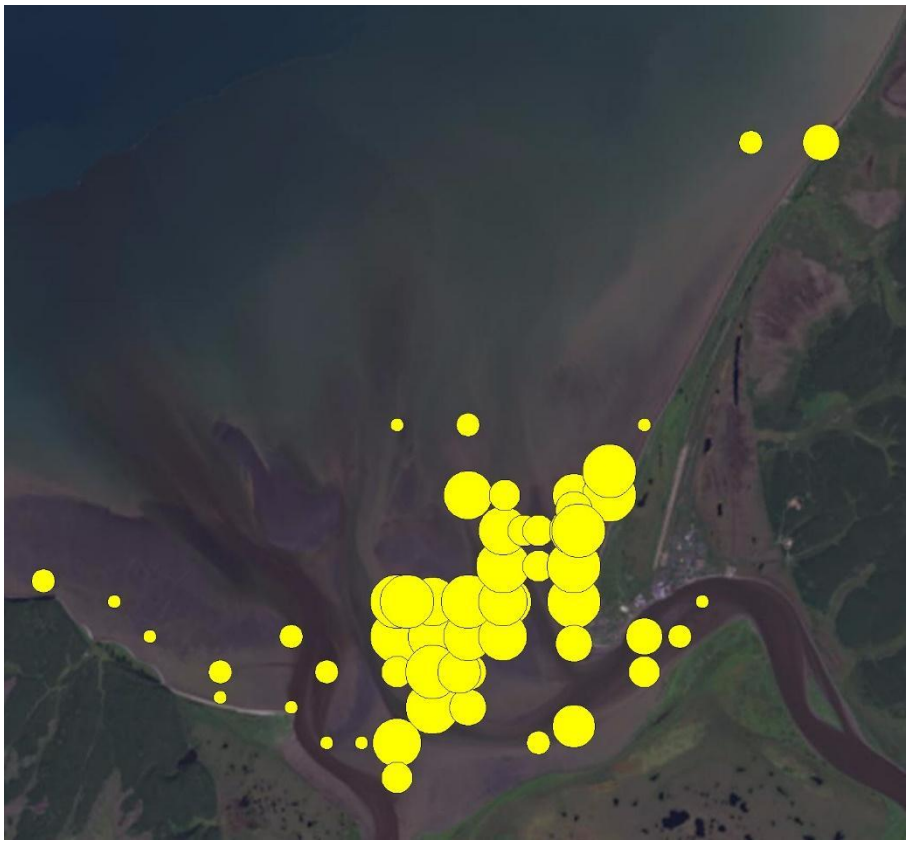
In 2015 year we took about 260 benthos samples on the whole square of the mudflats. This year we limited benthos sampling by model site. Totally we took about 70 benthos samples on the closest mudflats to the camp tent. We didn`t proceed the samples of this year yet because it takes a lot of time. But this autumn we made first maps of distribution of most occasional benthic species in the estuary. We have about ten rather maps but we use only three of them in this report to show first trends in distribution of different invertebrates. The sample greed was 500 meters between samples. Samples were taken and proceeded using traditional benthic survey method of NIOZ Royal Netherlands Institute for Sea Research.

One of the most important invertebrate for Red Knot, Great Knot and Black-tailed Godwit is *Macoma balthica*. It is rather small bivalve but in Khairusova-Belogolova estuary old shells could be up to 30 mm lenth and 25 mm wide. The distribution of *Macoma balthica* is presented on the Picture 7.



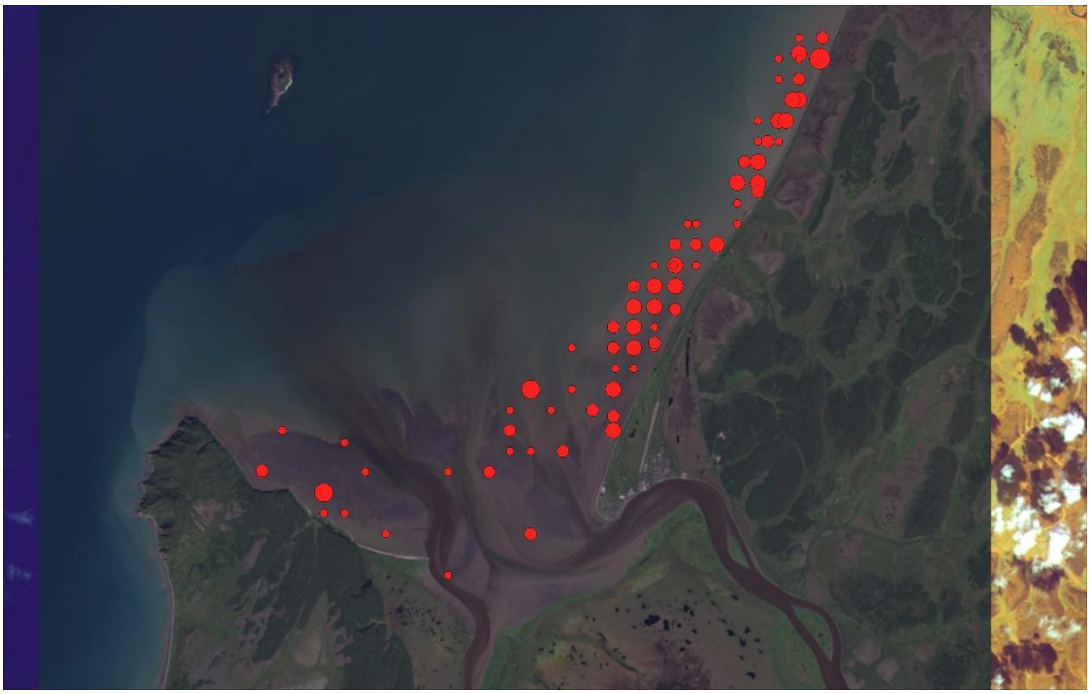

Picture 7. Distribution of *Macoma balthica* in Khairusova-Belogolovaya estuary (individuals per sample).

We can see that this species prefers the closest to the river mouths part of the estuary that are rich with different nutrients that are in river waters. And this species is not afraid of low rates of salinity. In this region the difference between high and low tides is about 5 meters during summer season.

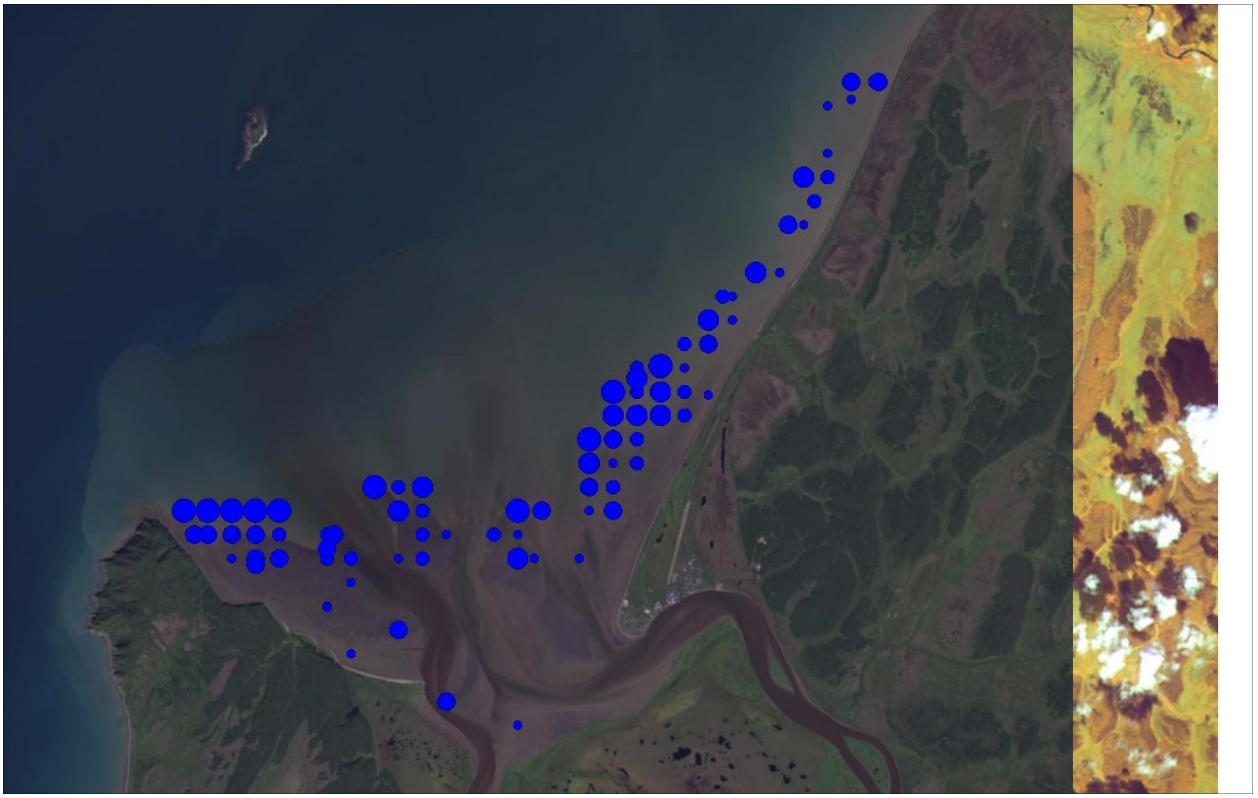


Picture 8. Distribution of *Marenzelleria sp.* in Khairusova-Belogolovaya estuary (individuals per sample).

Rather small Polychaetas *Marenzelleria sp*. in large numbers were found only in the part of the estuary that is close to Khairusova river mouth with clay and loamy silt mudflats (Picture 8). Another Polychaeta species *Arenicola marina* is strongly associated with medium part of the estuary with sandflats and rather constant salinity (Picture 9). But the most marine worms are species from genius *Scolelepis* – we found them only in marine part with sandflats (Picture 10)



Picture 9. Distribution of *Arenicola marina* in Khairusova-Belogolovaya estuary(individuals per sample).



Picture 10. Distribution of *Scolelepis sp.* in Khairusova-Belogolovaya estuary(individuals per sample).

The preliminary results of our expedition were presented on the annual meeting of the International Wader Study Group on the 10th September. On the 20th September

preliminary results were presented on the seminar in All-Russian Institute for Nature Protection (Russia).

On the 29th September results of the expedition were presented at the National Institute of Biological Resources, (Korea). On the 22nd February we are going to make large presentation on the Ornithological seminar at Biological Department of Moscow State University. In the end of February we are planning to visit NIOZ (the Netherlands) for proceeding data and writing one more paper.

This summer we are going to organize one more expedition to Khairusova-Belogolovaya estuary and finish our first stage of the investigations in study area.

We are very grateful for OBC for supporting our project. It is very important for us especially while we have not very stable economic situation in our country. And it is really interesting to work when you know that your investigations are interesting not only for small group of ornithologists in Russia.

Best regards

Dmitry Dorofeev