

Conservation and study of Daurian cranes

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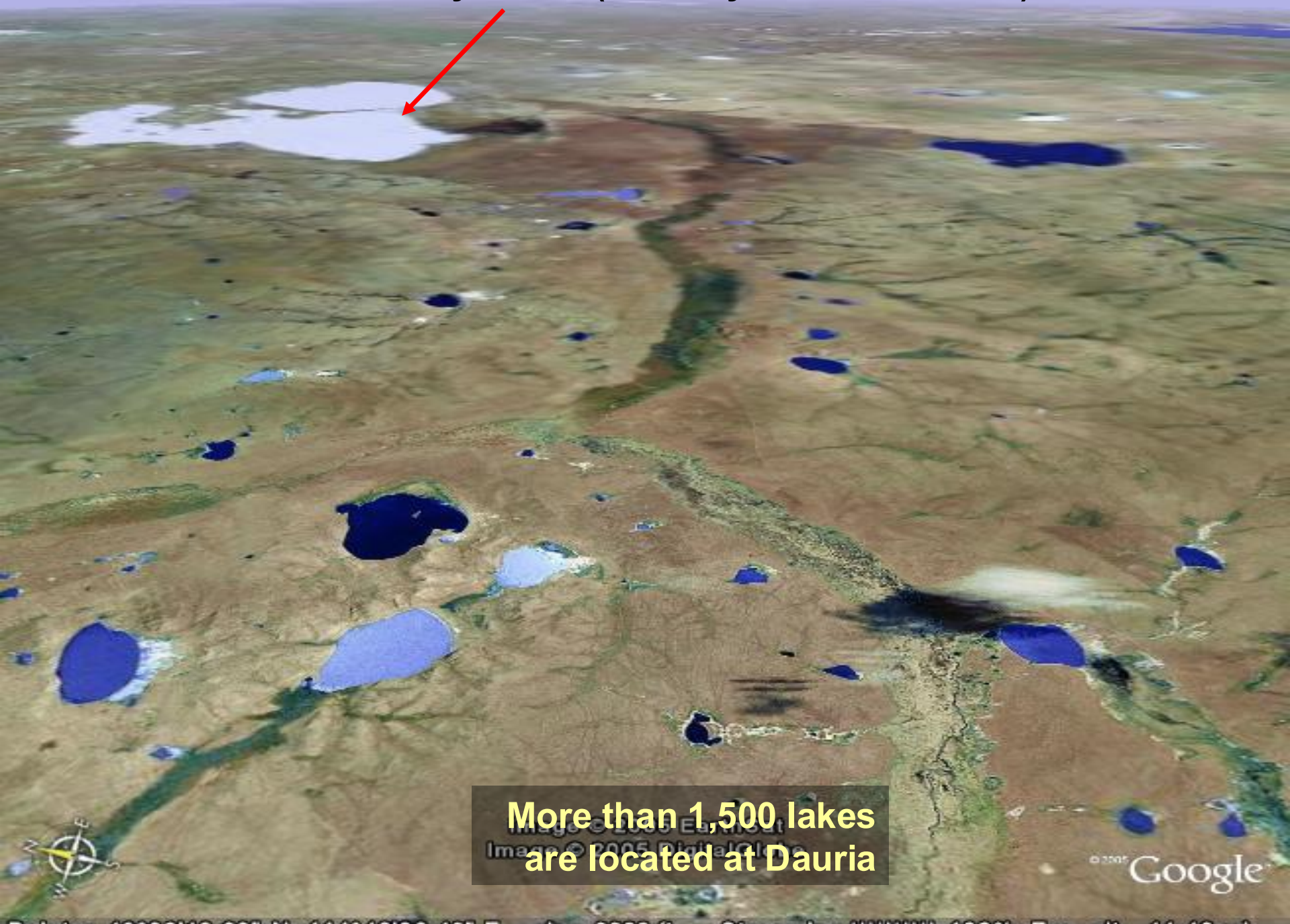
Daursky State Nature Biosphere Reserve

**The Baikal
Lake**

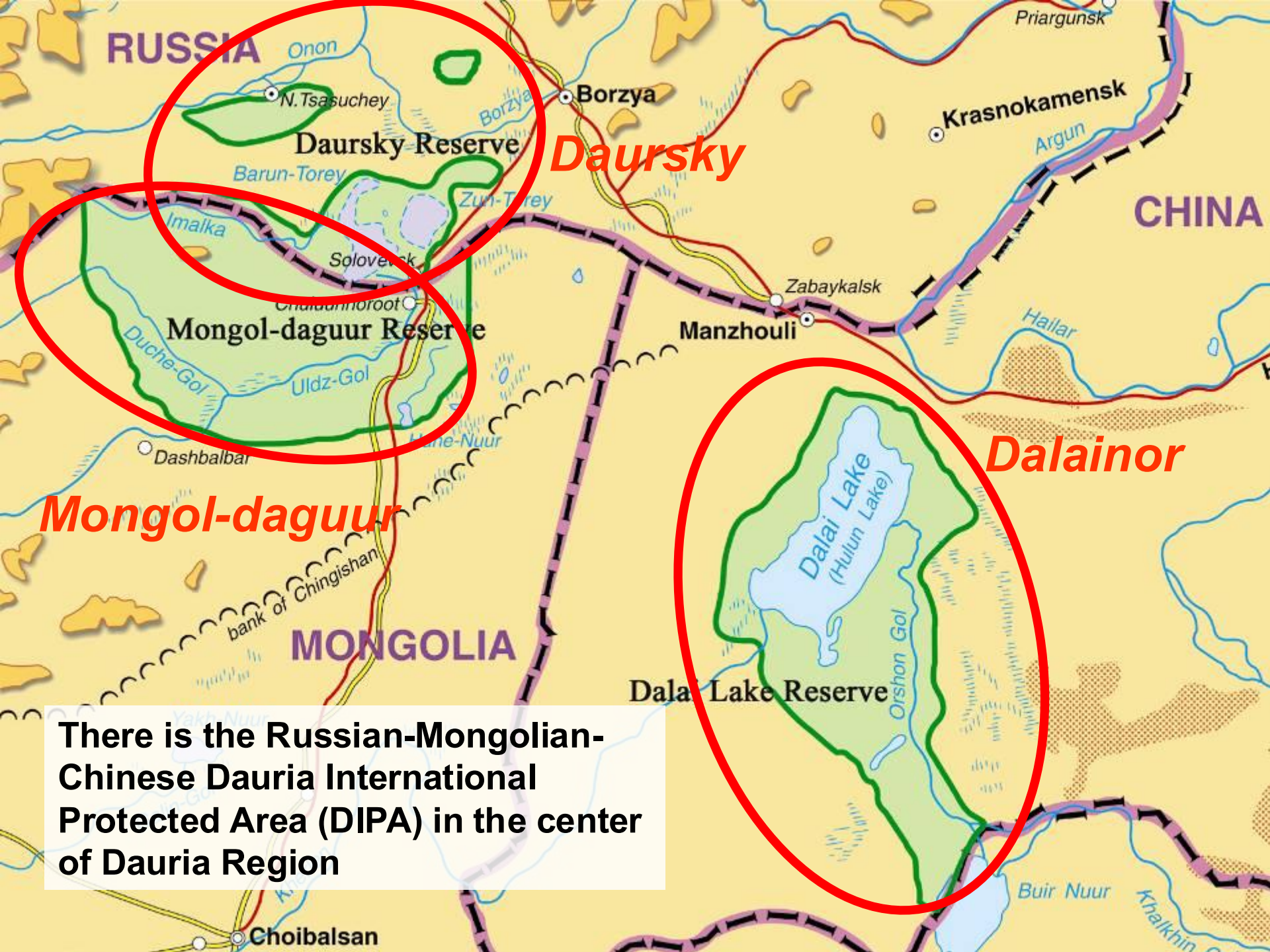
Daurin steppe



Torey Lakes (Daursky Nature Reserve)



More than 1,500 lakes
are located at Dauria



Daursky

Dalainor

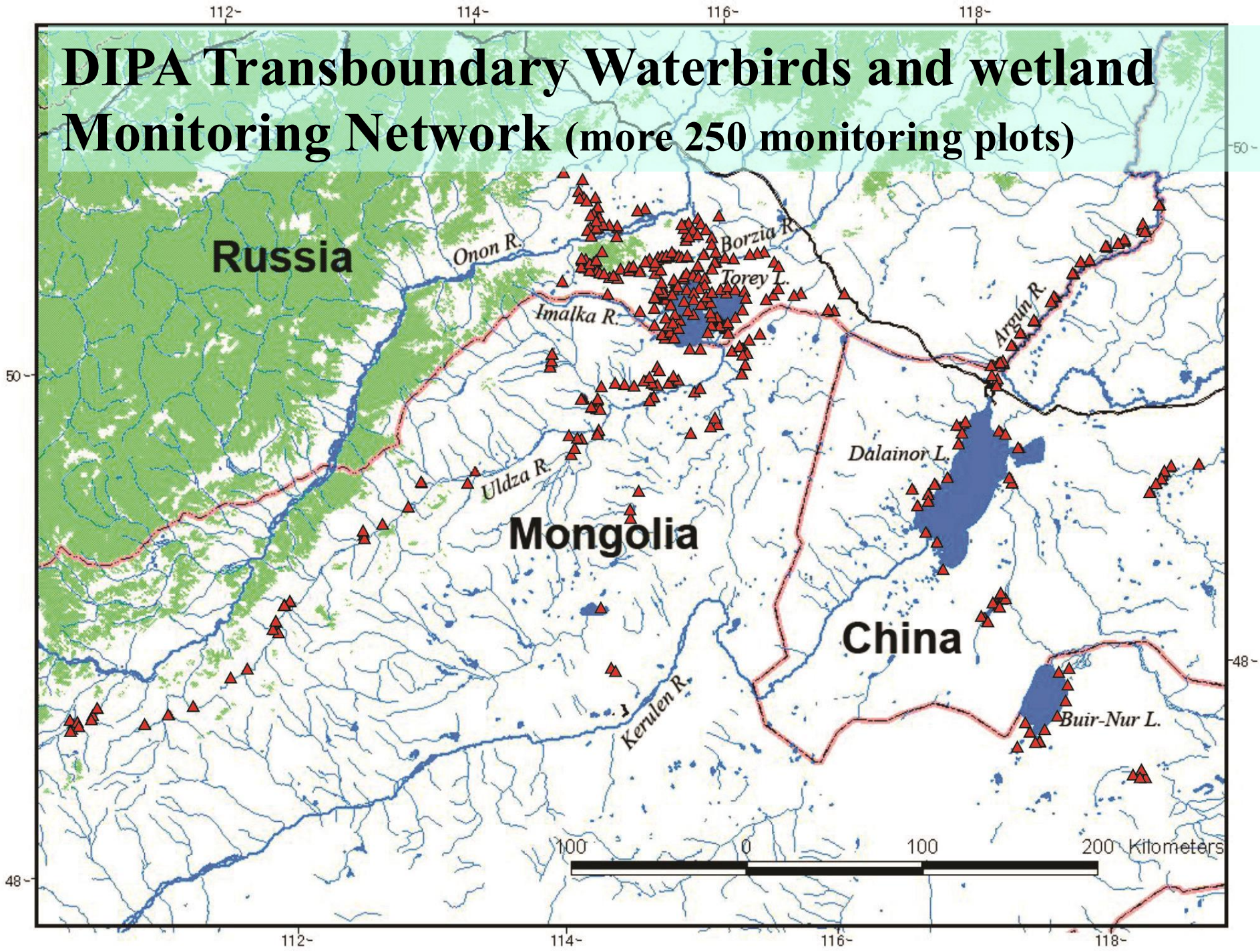
Mongol-daguur

There is the Russian-Mongolian-Chinese Dauria International Protected Area (DIPA) in the center of Dauria Region

Every year we organize international research expeditions



DIPA Transboundary Waterbirds and wetland Monitoring Network (more 250 monitoring plots)





In Russian part of Dauria we study cranes during 1990-2025. Complete census of WnC population in Russian Dauria were made in 1992, 2016, 2019 (census using helicopter, airplane).

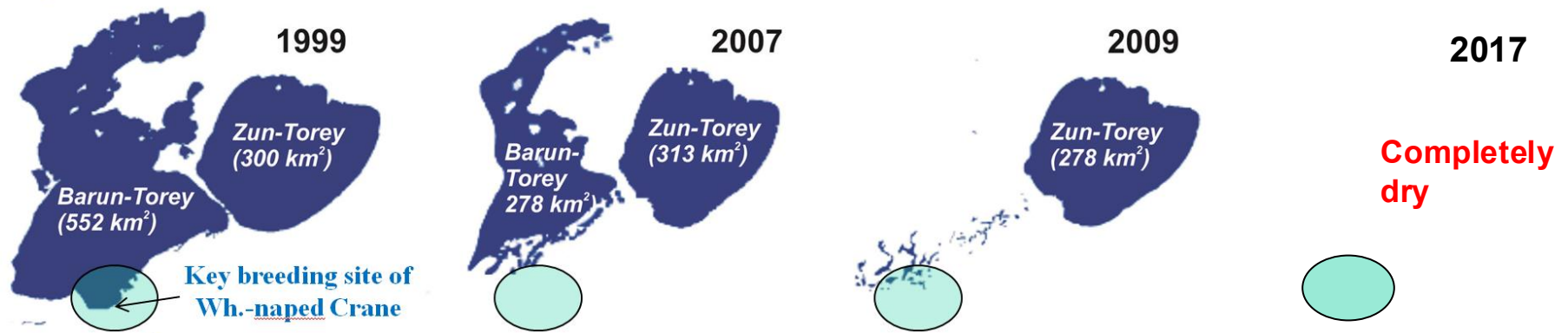
The NEASPEC project duration in Russian Dauria: 2014-2016.

- 1) 2014-2016, study and monitoring of WnC population in the central part of the Russian-Mongolian Dauria Region (in total 10 monitoring on the area about 18,700 km²);
- 2) 2016, whole census of WnC population in Russian Dauria (census using small helicopter on the area about 35,000 km²);



Study migration using transmitters





Precipitations (1950–2020)

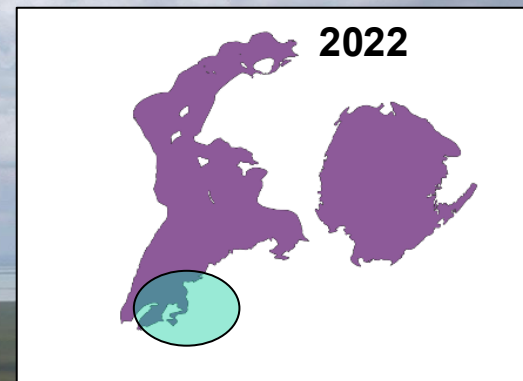
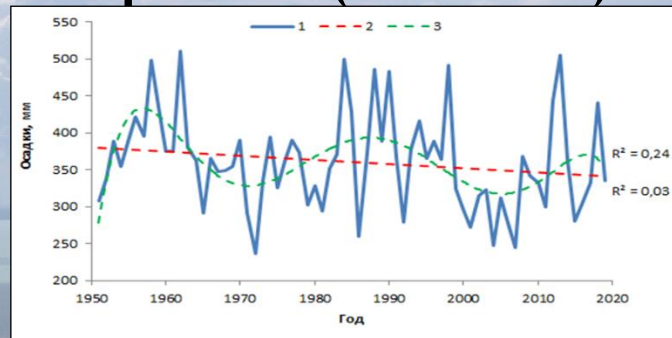


Photo: Torey Lake in 2000 (890 km²)

Wetlands in Dauria depend significantly on long-term climatic cycles (of about 30-years duration) with interchanging of wet (about 15 years duration) and dry (15 years) periods. **Dry (arid) period is 1999-2019**. Since 2017, about 95% of lakes in Dauria are completely dry. There is some increasing of precipitations and area of wetlands since 2018. The climate cycles cause radical transformation of wetland ecosystems and waterbird populations.

Succession on the Torey Lakes

2025

2016

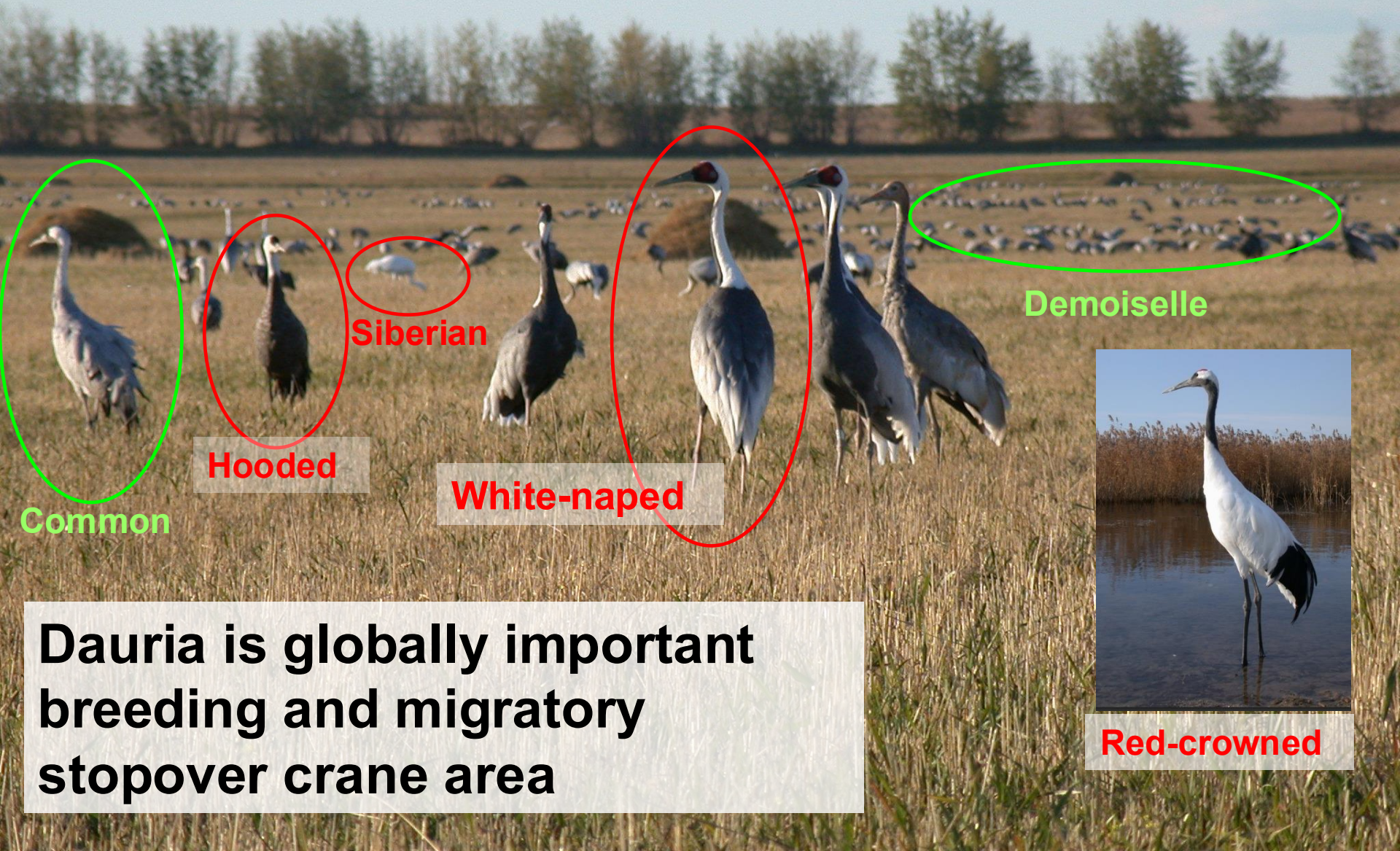
2011

2008

1990

6 species of cranes inhabited in Dauria.

4 of them are globally threatened (IUCN Red List)



**Dauria is globally important
breeding and migratory
stopover crane area**



Red-crowned

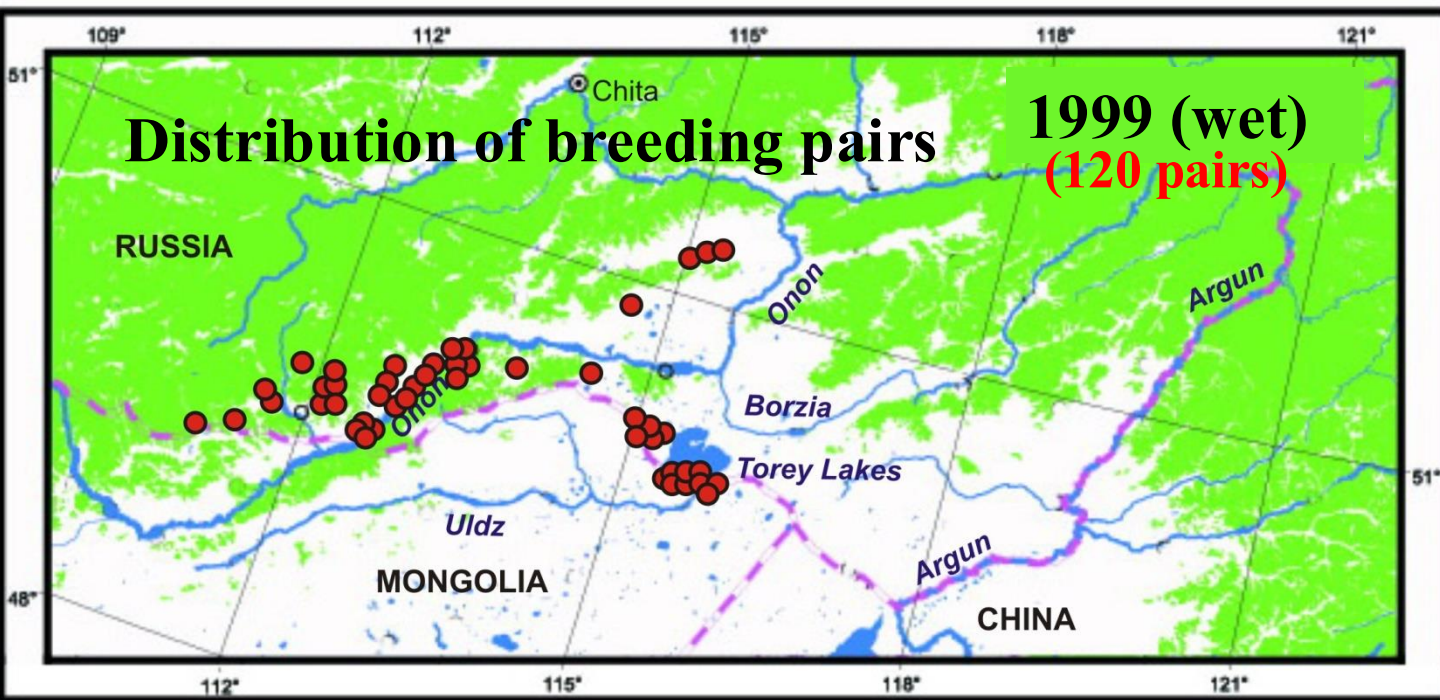
White-naped Crane



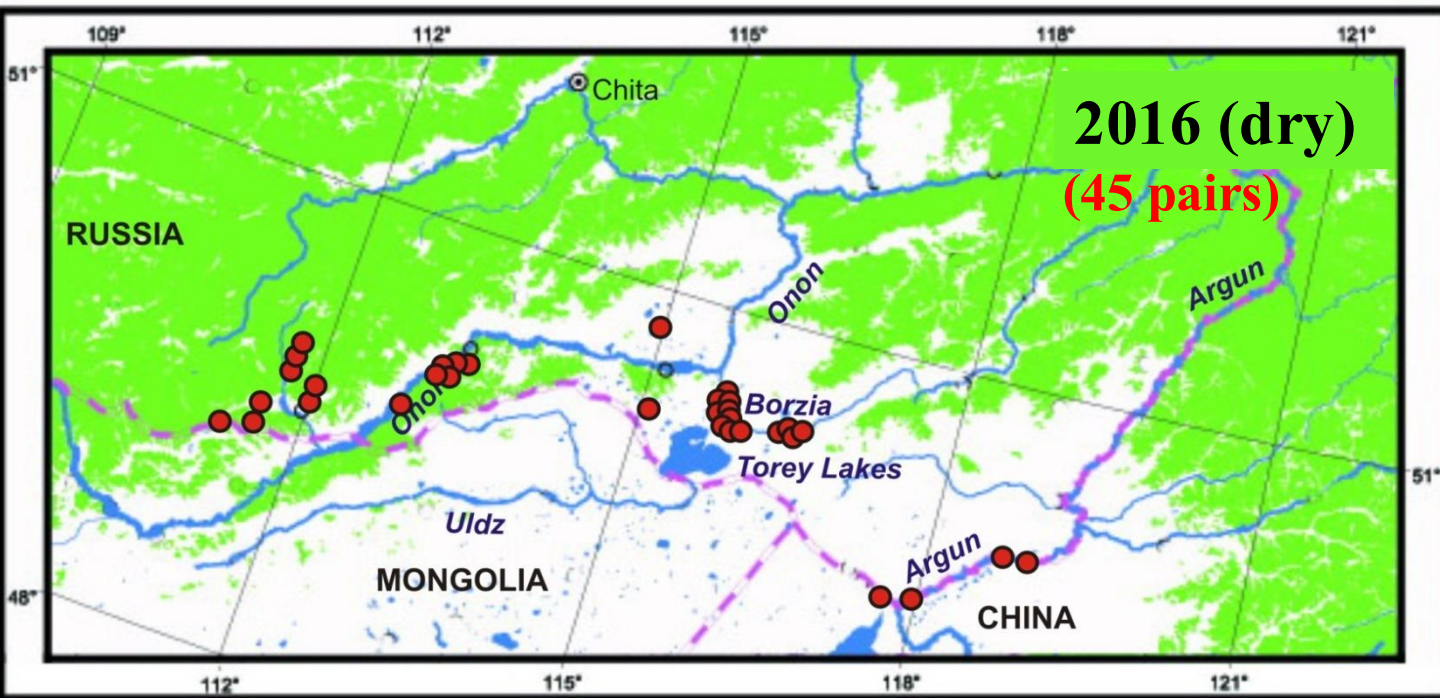
Dauria is key breeding area of western flyway population of White-naped Crane. The Russian part of Dauria supports 100% of breeding sites of western population of WnC within Russia.

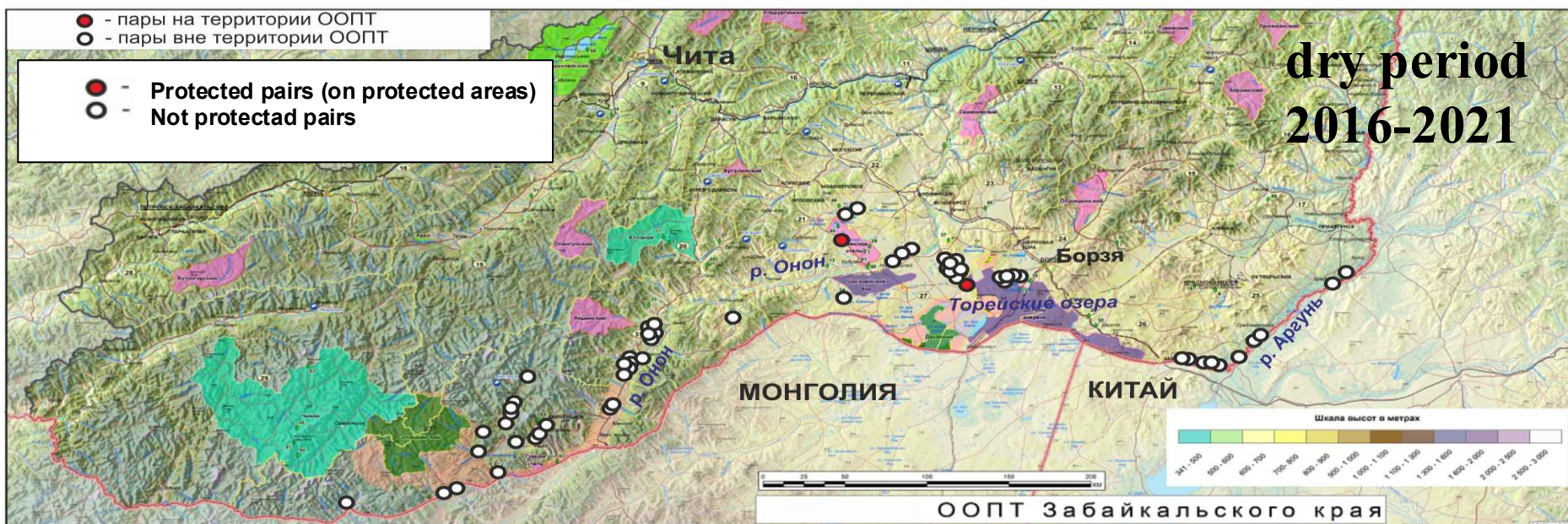
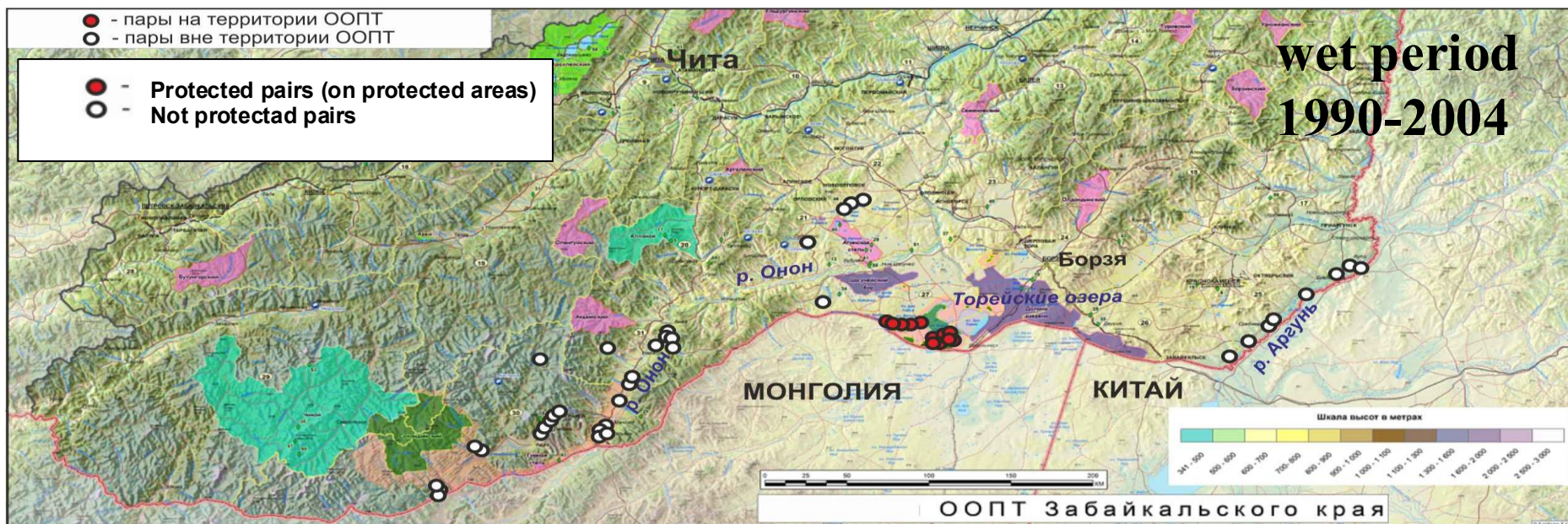
Population status: progressive decline since the beginning of the 2000s: about 120 pairs were in 1999, but about 45 pairs in 2016. Slow increasing since 2018: about 116 pairs in 2024.





During 1995-2016, population was declined thrice: about 120 territorial pairs were in 1995, but only about 45 pairs remained in 2016.





Distribution of WnC nesting pairs in the wet period 1990-2004 (upper figure) and in the dry period 2016-2021 (lower figure).

About 13% of WnC nesting pairs were on protected natural areas in Russian Dauria during the humid climate period (1990-2004, but **only 4% pairs** in the dry period (2016-2021).

On average, during the full climate cycle, only 9.5% of of WnC nesting pairs are protected.

During the wet period, all protected nesting pairs were located on the Tory lakes on the territory of the Daursky Nature Reserve.

Thus, the existing network of nature protected areas provides very little protection for WnC during the humid climate periods and almost no protection during dry climate periods .



Breeding success

2016

- successful
- not successful

2019

Dry 2000-2019 is very unfavorable period.
2016 is the most unfavorable year .

- Only 36% of territorial pairs had chicks in 2016;
- 65% of territorial pairs had chicks in 2019.

Why population and breeding success decline during arid climate periods?

Main natural threat for WnC and many other waterbird species: limit of habitats (wetlands) and limit of forage resources. About 95% of wetlands were completely dry during arid climate period.



No significant anthropogenic threats in Daursky NR. But, there are many anthropogenic threats outside of protected areas.



1) often spring floodplain grassfires: annually, about 30-50% of crane breeding habitats burns.



2) Spring hunting is very serious threat in Russia for many species of waterbirds including WnC. Cranes are not game species, but spring hunting creates intensive disturbance for breeding cranes. Hunting season is in May 1, when the main part of crane pairs are already incubate eggs. On the hunting areas, up to 60% of breeding pairs can lost clutches because of hunting disturbance.

3) Disturbance from humans and livestock is especially high during dry climate periods. There is significant lack of sources of water and pastures during dry years. Therefore, a lot of cattle concentrate near few remained wetlands outside of nature protected areas. Birds try to breed there (because they have not alternative) but breeding success is very low.



Horses are the most dangerous, because they prefer to feed and rest near the water.



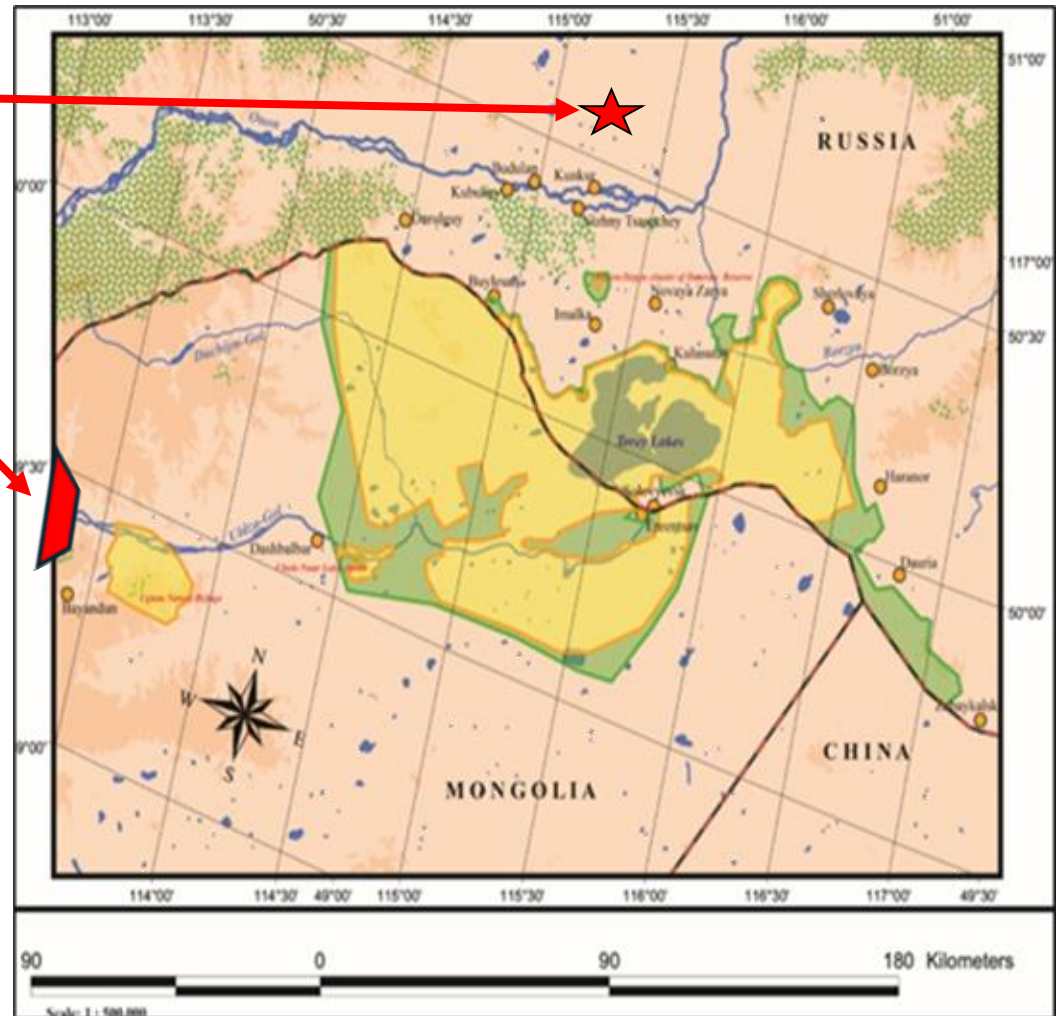
Other anthropogenic threats in Dauria:

- 4) Illegal hunting in Russian Dauria for using cranes for food.
Illegal shooting of cranes by farmers because of crop depredation by cranes.
- 5) Electric power lines collision.
- 6) Lost of habitats due to mining development (especially gold mining in the Onon River basin).
- 7) Changes in hydrology and loss of suitable habitat due to water control projects.



**Projects of gold mining
(Russia)
and dam construction on
the Uldz River (Mongolia)
were started in 2020.**

**These projects are located
outside of the Daursky NR
and DIPA, but they will
cause great damage to the
biodiversity of Dauria
(particularly to population
of White-naped Crane)**



The main conclusions:

- 1) Existing many years duration dry climate period (2000-2016) is critically unfavorable for the western breeding population of WnC because of significant reduce of wetlands, significant reduce of of forage resources, significant increasing of disturbance and many other anthropogenic threats.
- 2) During 1995-2016, WnC population number in Russian Dauria was reduced thrice; breeding success of remained pairs was reduced twice too;
- 3) More than 90% of WnC breeding habitats are not protected;





Wh.-n. Crane



Swan Goose

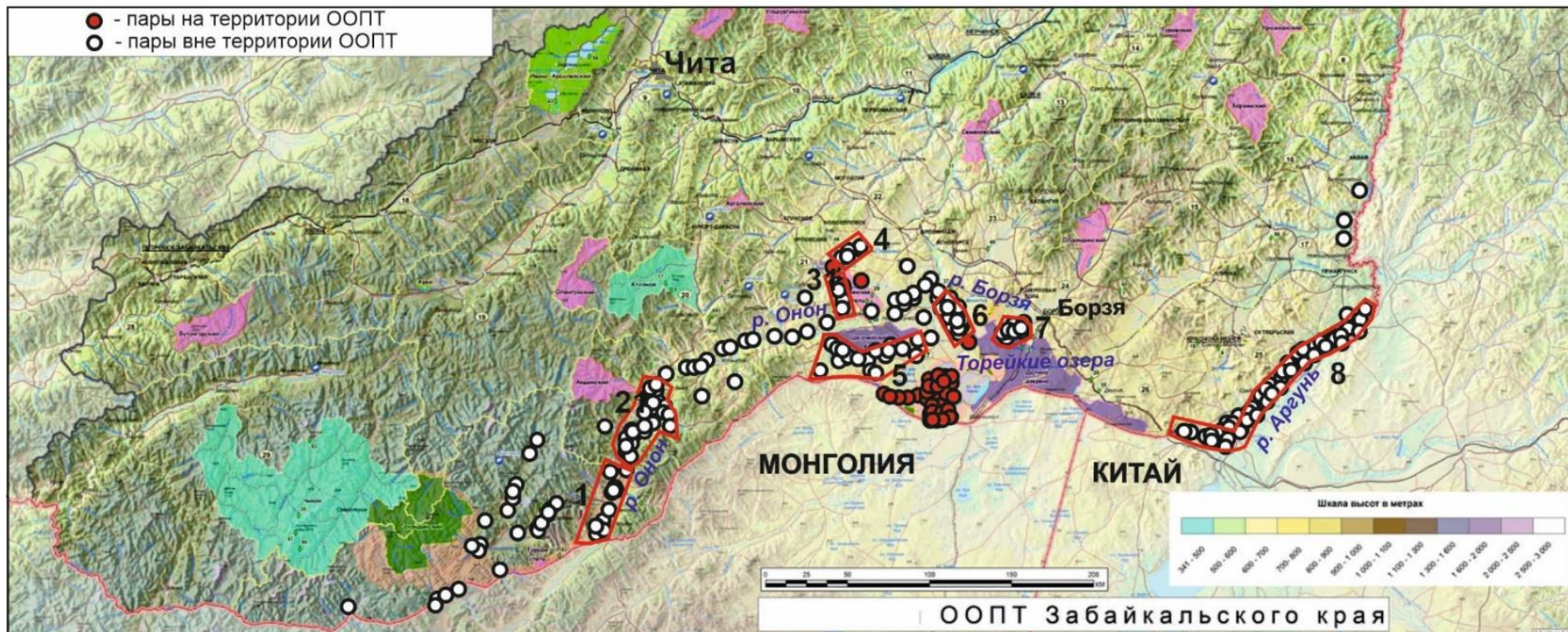


Red-cr. Crane



Great Bustard

Recommendations for establishment of new nature protected areas for complex protection of WnC and many other rare species of birds



- 2) Ecological education of local people;**
- 3) Improve prevention and stopping of grass fires;**
- 4) Study and monitoring WnC population** (status, number, distribution, breeding success, migration, ecology, threats, limiting factors). **Using transmitters.**
- 5) Work for reduction of crop depredation** by cranes (for reduction of illegal shooting of cranes by farmers).
- 6) Study and prevention of collision cranes on the electric power lines.**



Hooded Crane



Dauria is an important area of summer habitation of non-breeding, mostly immature, birds (flocks are up to 300 birds on the Torey lakes) and the key migratory stopover and gathering site (up to 1,100 birds on the Torey lakes).

The number of population in Dauria fluctuates depending on climatic changes.

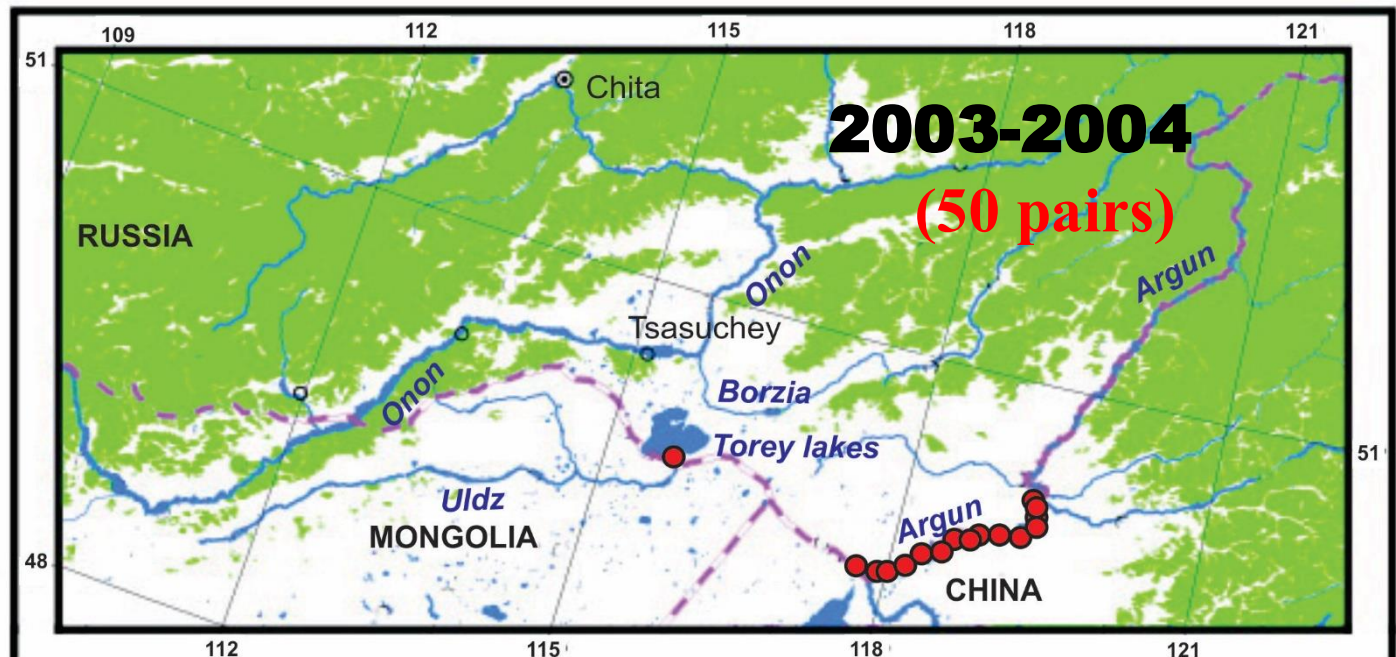
Red-crowned Crane



Dauria is breeding area of western flyway population this species

Distribution of Red-crowned Crane

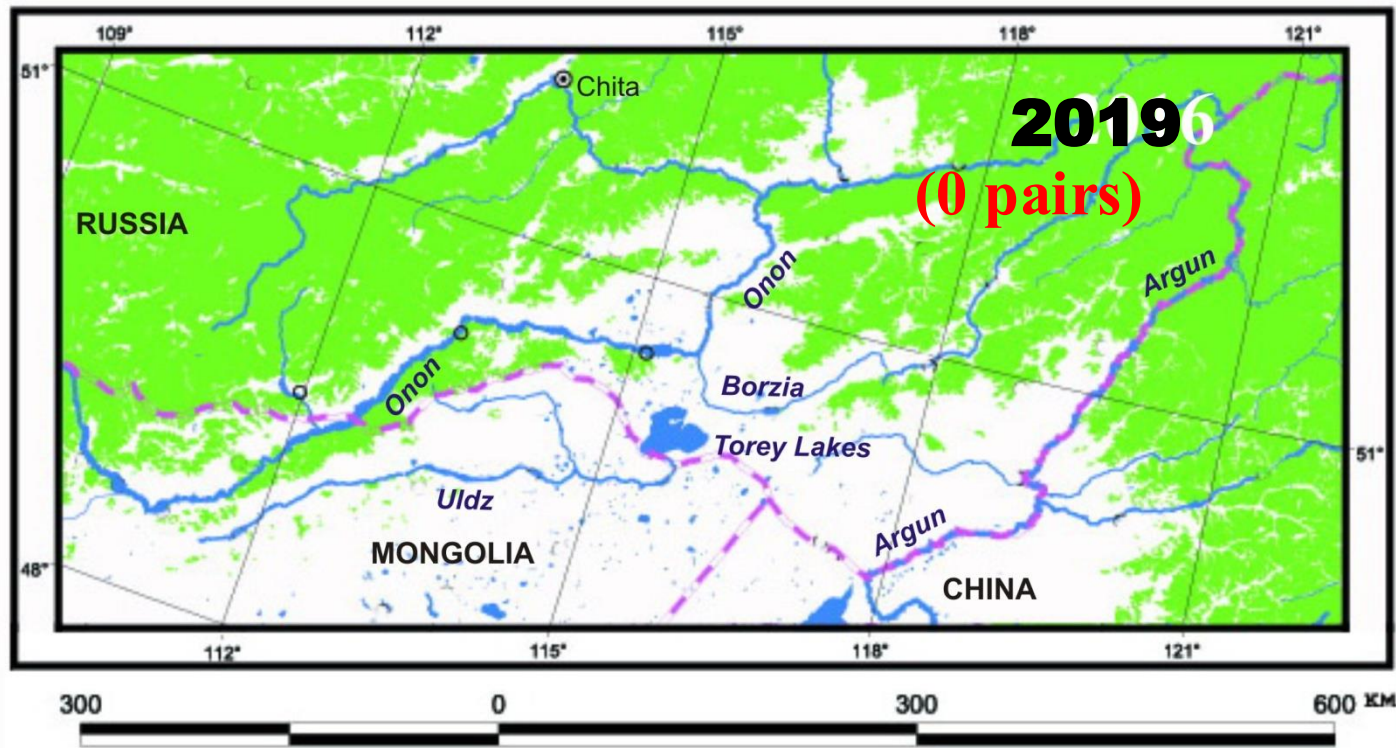
About 95% wetlands were dried up to 2017



2004



2017





2004 г.



2007 г.



2019 г.



2021 г.

Siberian Crane

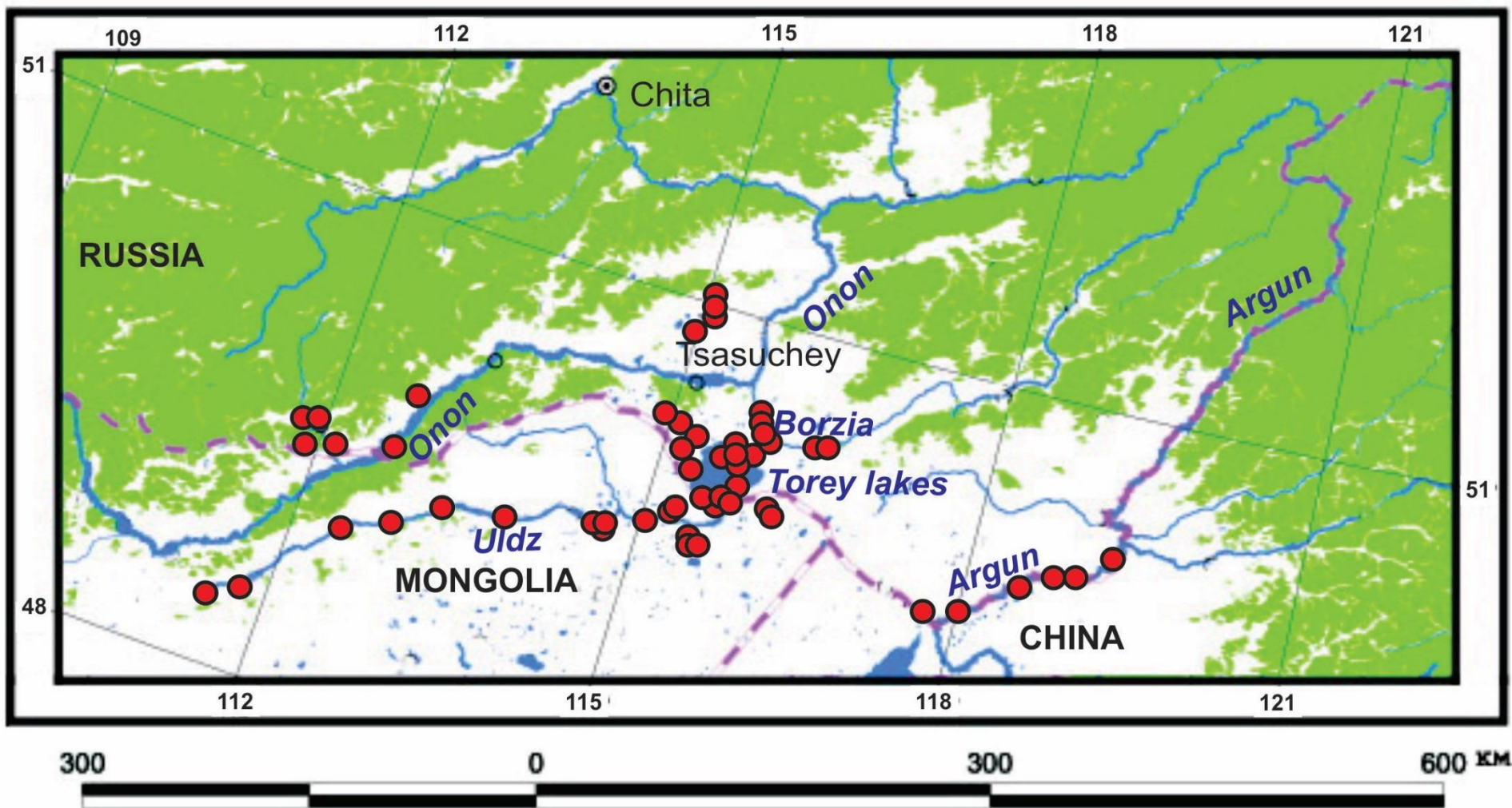


**Dauria is important
summering area of not-
breeding birds (mainly 1-3
year old impuberal birds)**

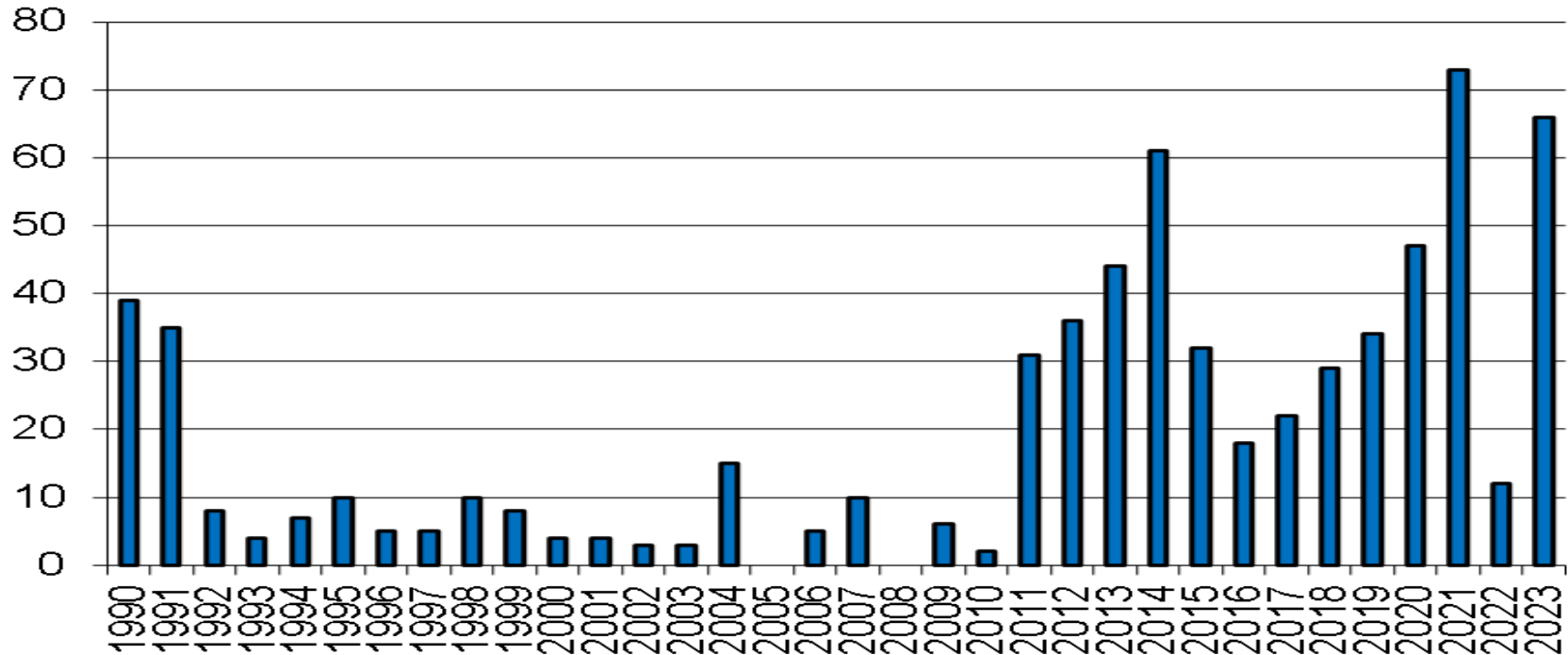




Main summering sites of Siberian Cranes in Dauria.



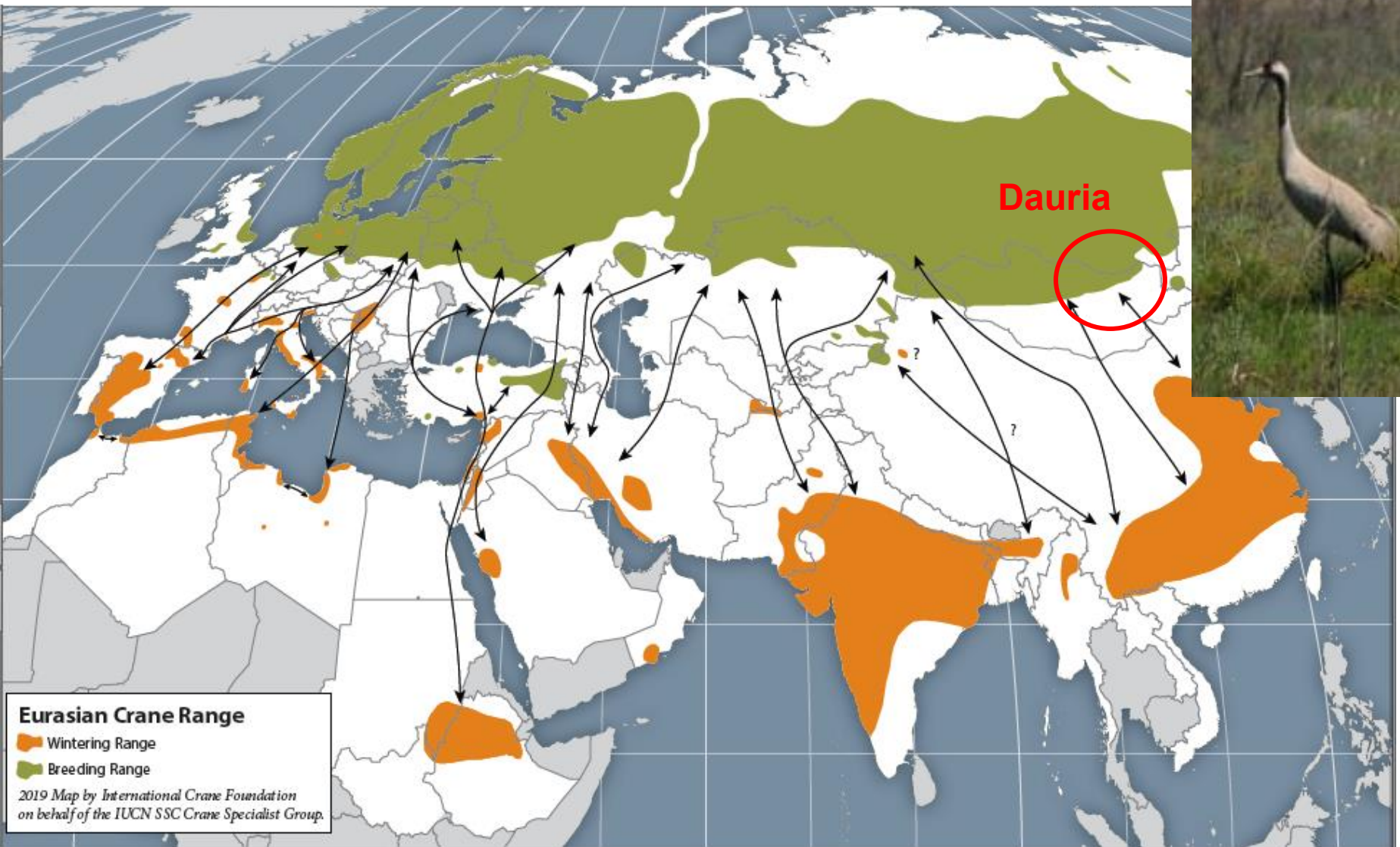
Dynamics of Siberian Crane population in Dauria



Increasing of population number is not connected with climate change and indicates increasing of global population.



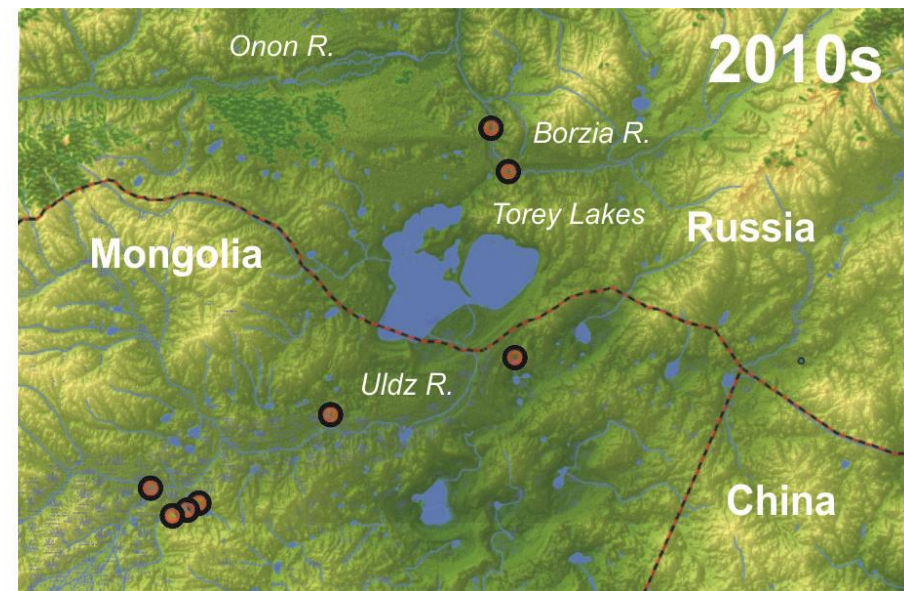
Eurasian Crane



Dauria is breeding area of this species. Dauria is located near the south-eastern border of breeding area of global population.

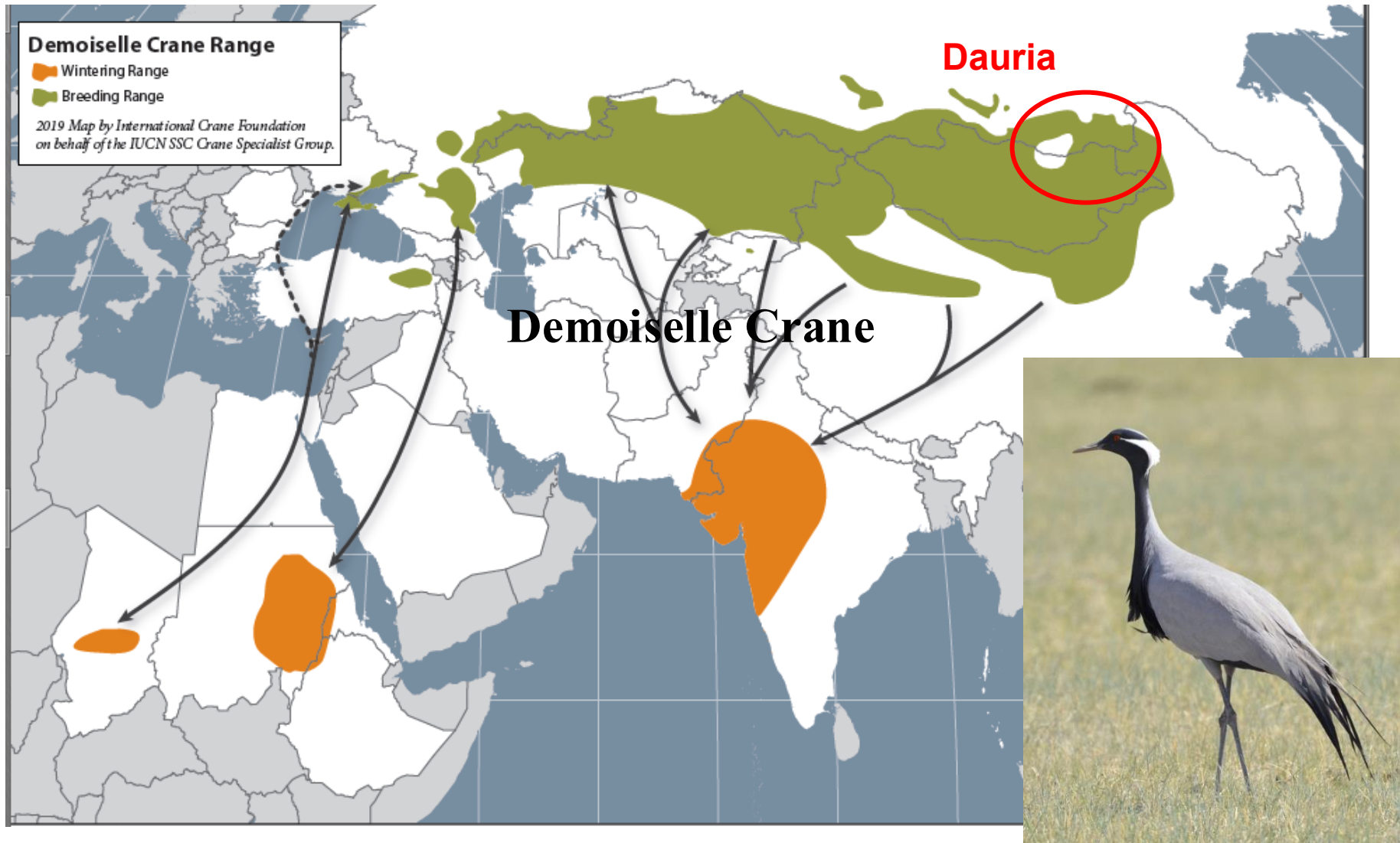
Eurasian Crane

Daurian steppe breeding population is slowly increasing (3 pairs in 1990s, 8 pairs in 2010s, 11 pairs in 2017). It indicates increasing of global population.



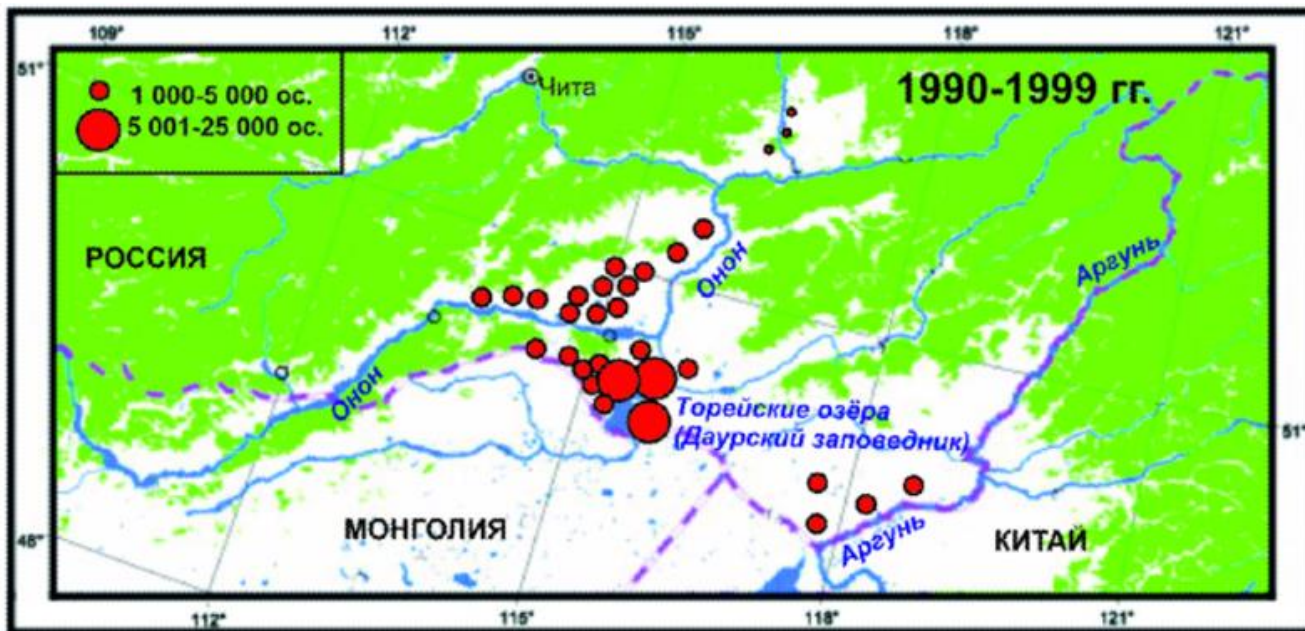
Demoiselle Crane

Dauria is one of the key breeding and stopover sites in the world.

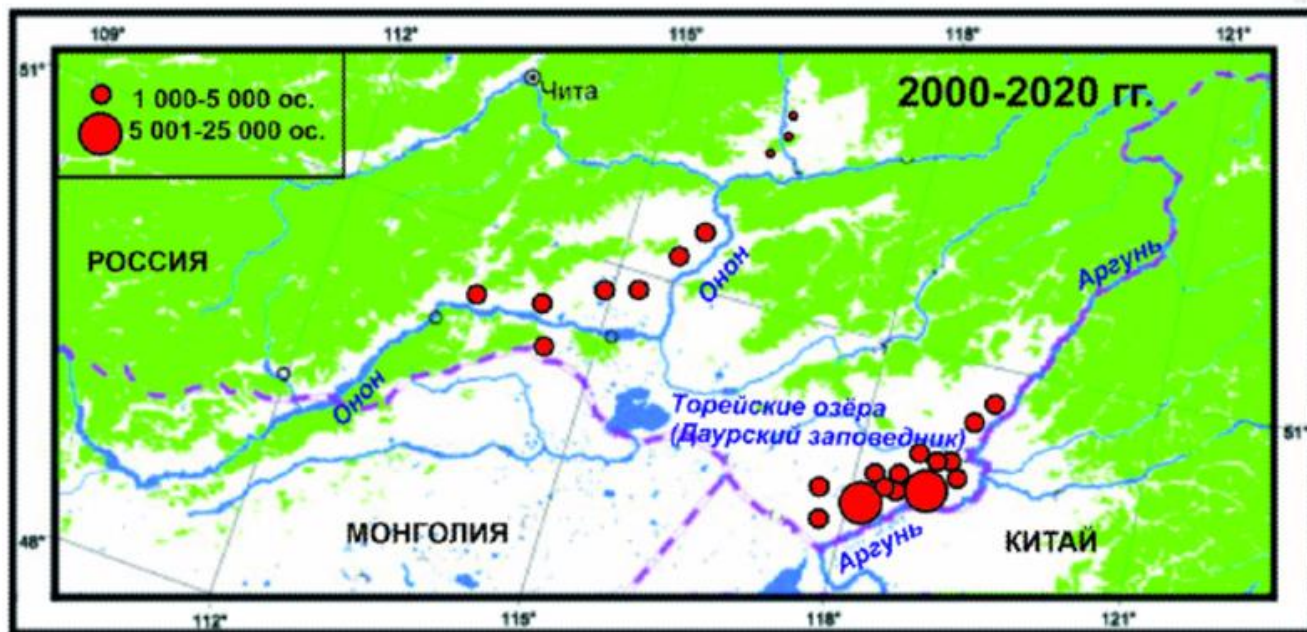


Up to 42,000 birds gathered on the Torey Lakes in autumn migratory period in wet 1990s; about 3,000 birds in dry 2000-2019.





Autumn
gathering
places





Demoiselle Crane

Breeding population is vulnerable – it declining during 2000-2025: 22,000-27,000 cranes were estimated 1990s, 6,000-10,000 cranes in 2019-2025.



Crop fields in Dauria attract during autumn about 70,000 staging cranes

Cranes make significant damage to wheat crop (up to 70% at some fields)



Foxtail Grass (*Setaria viridis*) is common weed on crop fields. It is also often abundant in yang fallow lands.



Cranes prefer the Foxtail Grass more than good crop of wheat. Seeds of the grass represent about 50% of the food in un-harvested fields (up to 90% in fields where this weed is common). Cranes visit also not worked fallow lands to feed on the grass.



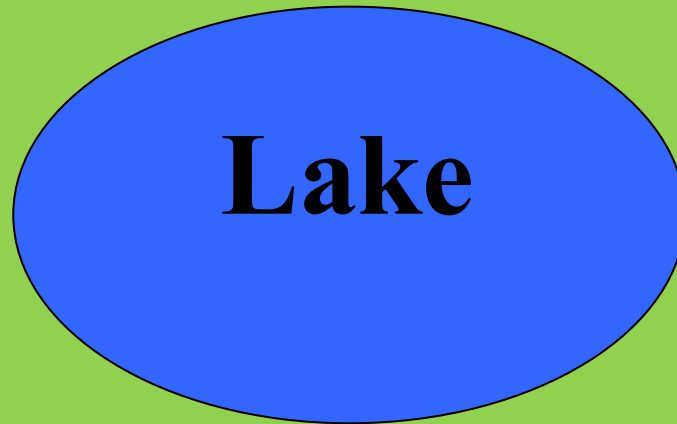
Wheat is main food of gathering cranes



Wheat is favorite food and common cultivated plant in the region.



Millet is most favorite food but it is a very rarely cultivated plant in the region.



Lake

Roosting site

Lure field

Crop field

We recommended to locate lure fields between roosting site and crop fields.

Lure fields as long and narrow bands are preferable.

Lure fields can be small (about 5-10 ha).

Since 2001, some farmers began to develop lure millet field with very good results. Lure millet fields attracted cranes and they stayed out of adjacent wheat fields until harvest (and many birds - even after harvest).

**Diet of cranes before harvest: about 90% millet and 10% wheat.
Diet of cranes after beginning of harvest: about 65% millet and 35% wheat (waste grain).**



Thank you for your attention!

