Review meeting on the NEASPEC Project,
"Study on Transborder Movement of Amur Tigers and Leopards using Camera Trapping and Molecular Genetic Analysis"

Camera trap work of Amur leopard in China

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Outline of Presentation

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Introduction

- The Amur leopard is an elusive species, which currently occurs in northeast China and the Russian Far East. It has been listed as critically endangered on the IUCN red list since 1996.

- Camera traps is an effective, non-invasive technique for wildlife surveys, especially for the tiger and leopard, even individual identification can be realized when combining with the extract compare software. And by means of the capture-recapture model, it can be used in estimating the population sizes and distribution.

Introduction

◉ From this study we aimed to get the following information

1.   Where did the Amur leopard occur in China ?

2.   How many individuals lived there ?

3.   How did they distribute ?

method

The distribution and management of the camera traps

- The the camera traps distributed in some patches from the boundary of China and Russia to 270km deep into China .

- With a density of 1 camera trap location in each 10km^2 and 2 cameras in each camera trap location.

- The camera traps were checked up every 3 months.

The distribution and management of the camera traps

The total area monitored by camera traps were about 3000km²

| Province	FB	Year	Number of cameras	Monitor area (Km²)
Jilin	Hunchun	2013	82	400
	Wangqing	2013	99	100
		2013	26	150
		2013	36	240
		2014	36	185
Heilongjiang	Suiyang	2013	28	110
		2014	31	160
	Dongning	2013	33	180
Jilin	Huangniheng	2014	52	290
Heilongjiang	Dongjingcheng	2015	39	280
Jilin	Tiangqiaoling	2013	18	100
		2014	58	300
		2014	34	180
		2015	22	100
Heilongjiang	Muling	2014	40	110

The distribution and management of the camera traps
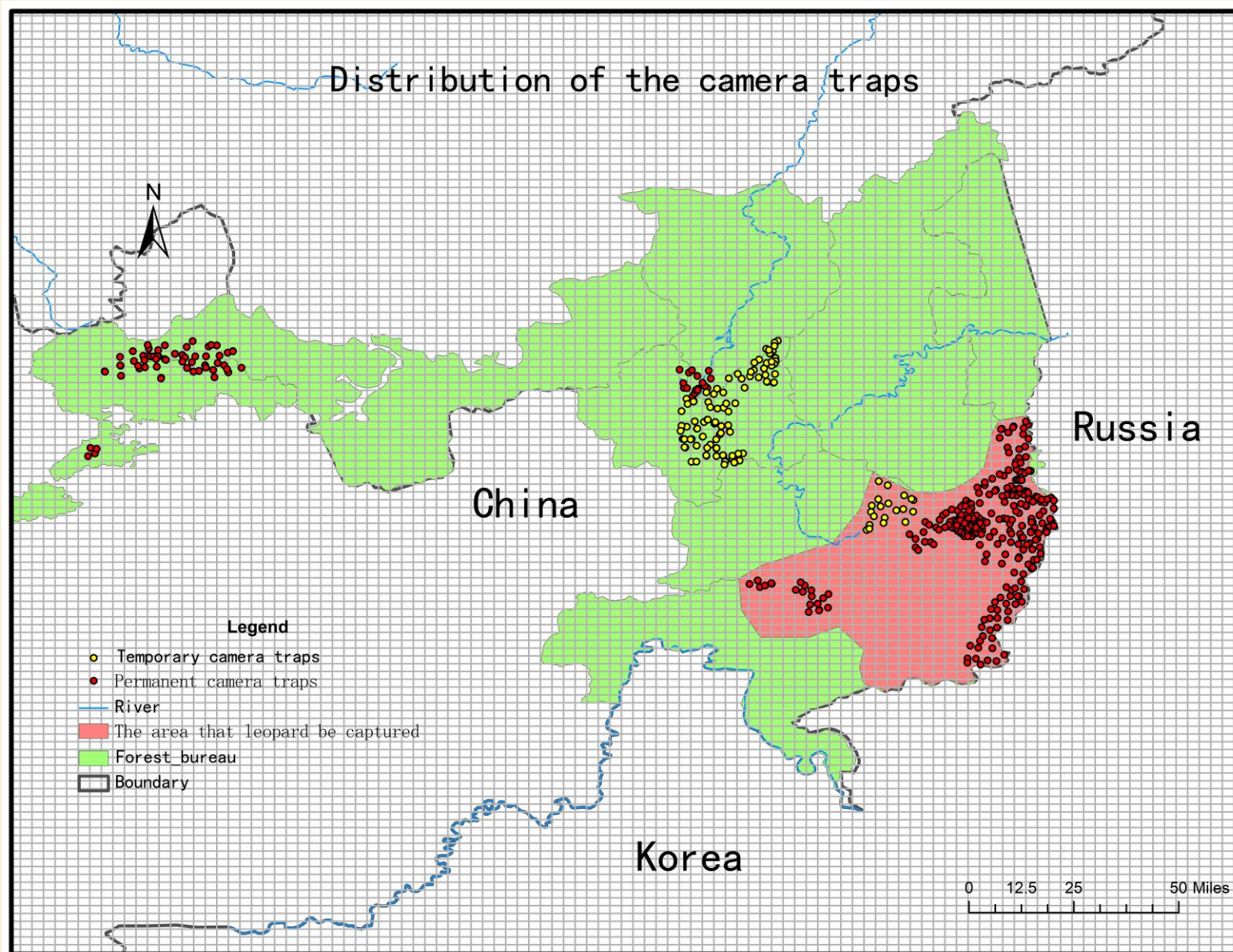
Individual identification

- Then we identified the individuals by extract compare software. And displayed them on the map.
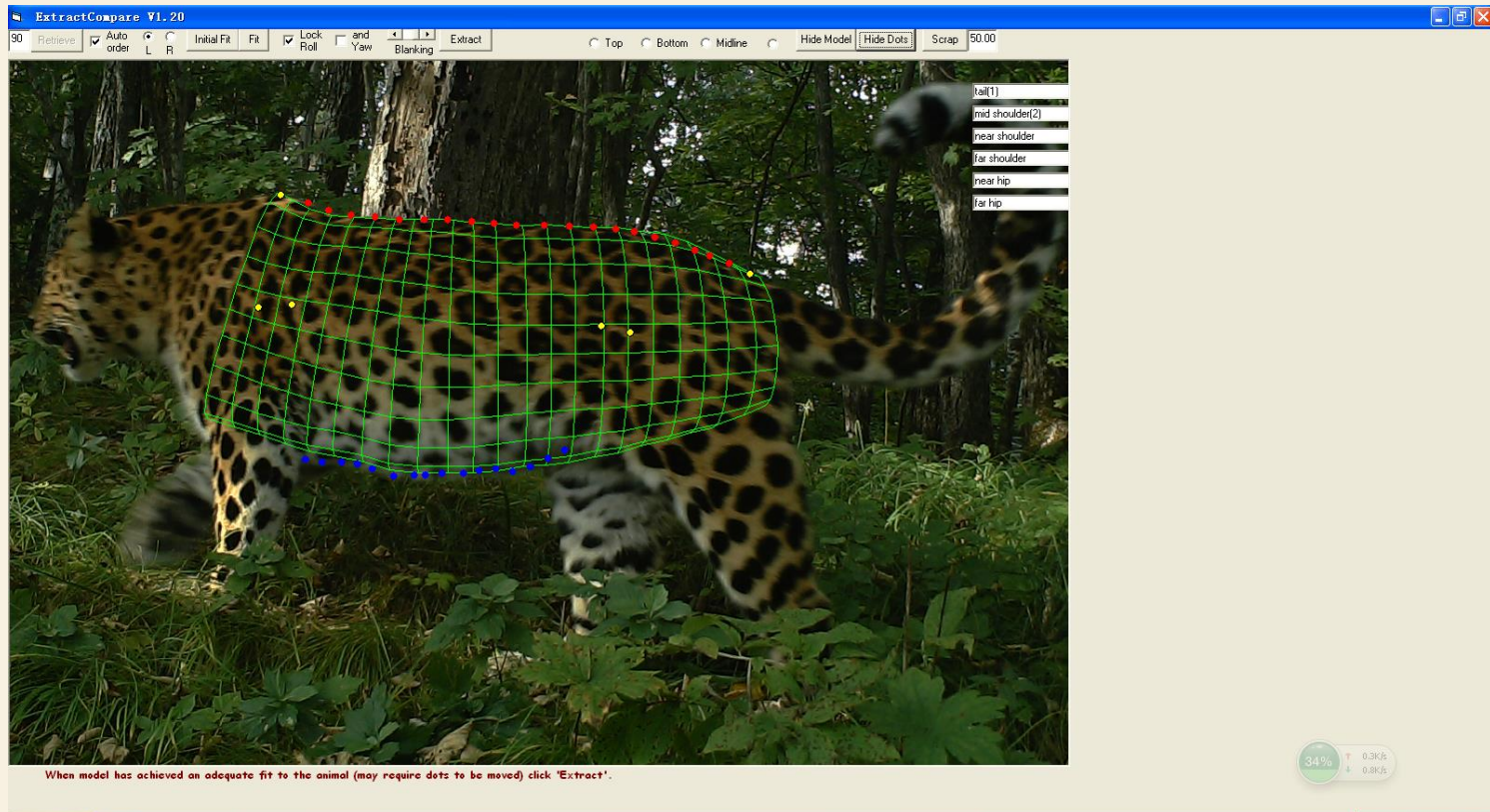
Spatial explicit capture-recapture models

- At last, we builted the spatial explicit capture-recapture models to try to predict the leopard density and distribution ([using the camera trap data in the pink patch](#)). after made a 10km buffer, the total area is about 3000 km^2.

Result

The leopard photos/videos captured and the individuals identified.

- Totally 339 Amur leopard pictures were captured by the camera traps, and 212 of them can be used in individual identification.

- Toally 21 individuals were identified. (2 sides surface pattern of 11 individuals were got, while the others were only got one side)
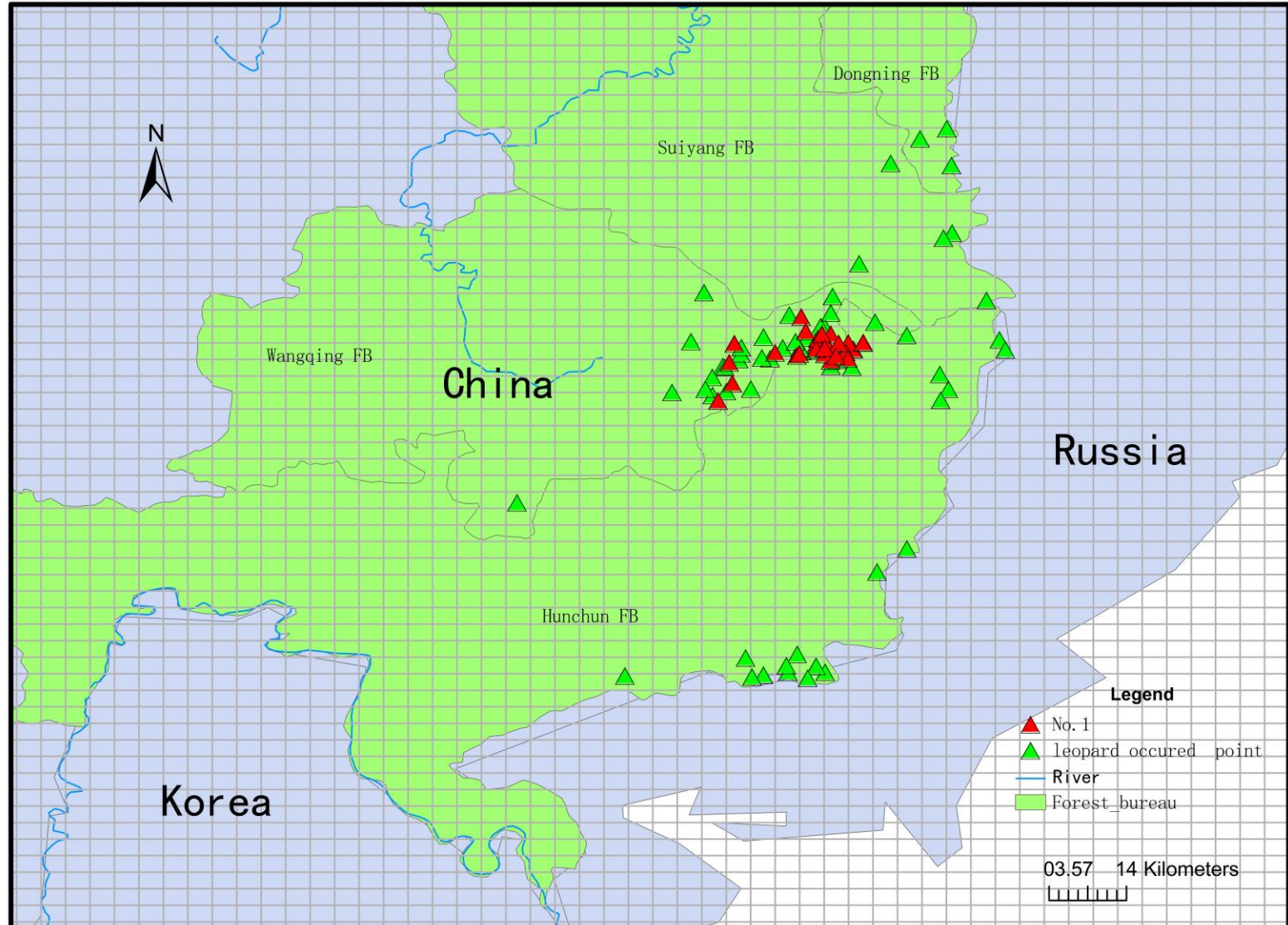
The leopard photos/videos captured and the individuals identified.

NO.1   70 times
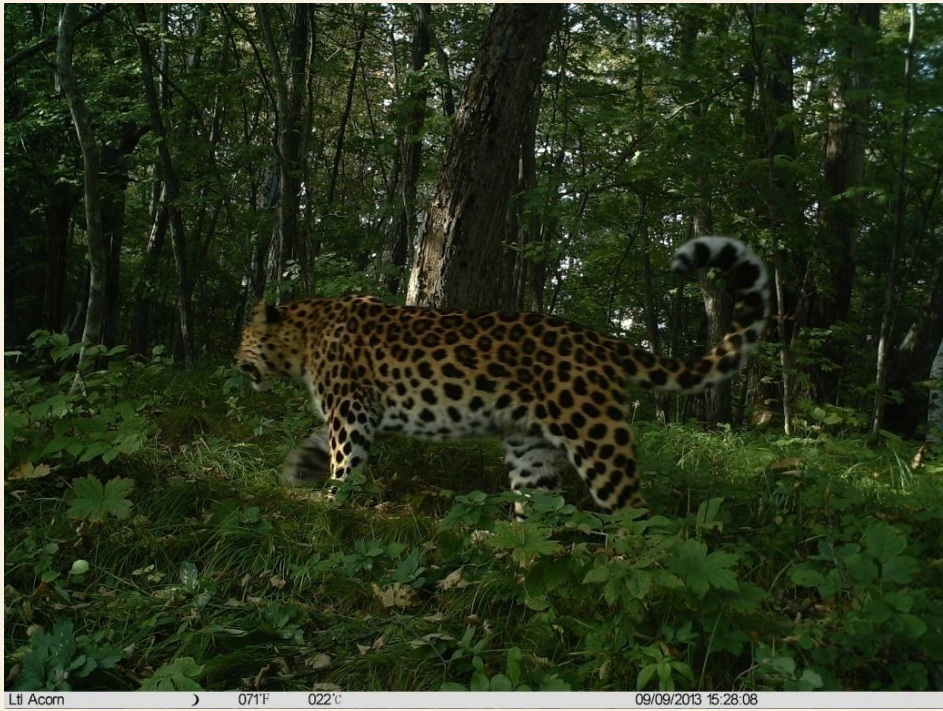
The leopard photos/videos captured and the individuals identified.

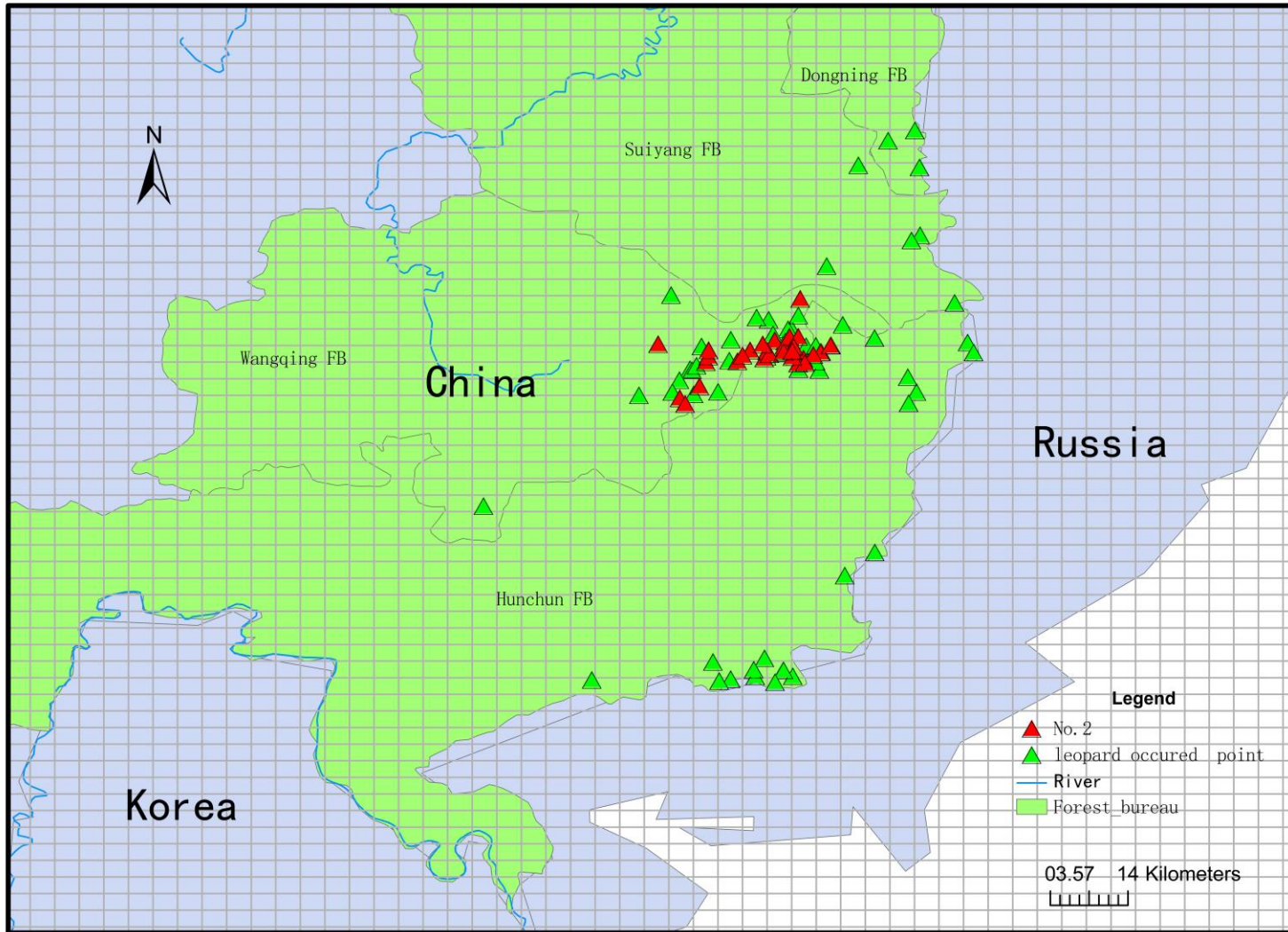The camera traps that Amur leopard occured

The leopard photos/videos captured and the individuals identified.

NO.2   85 times

The leopard photos/videos captured and the individuals identified.

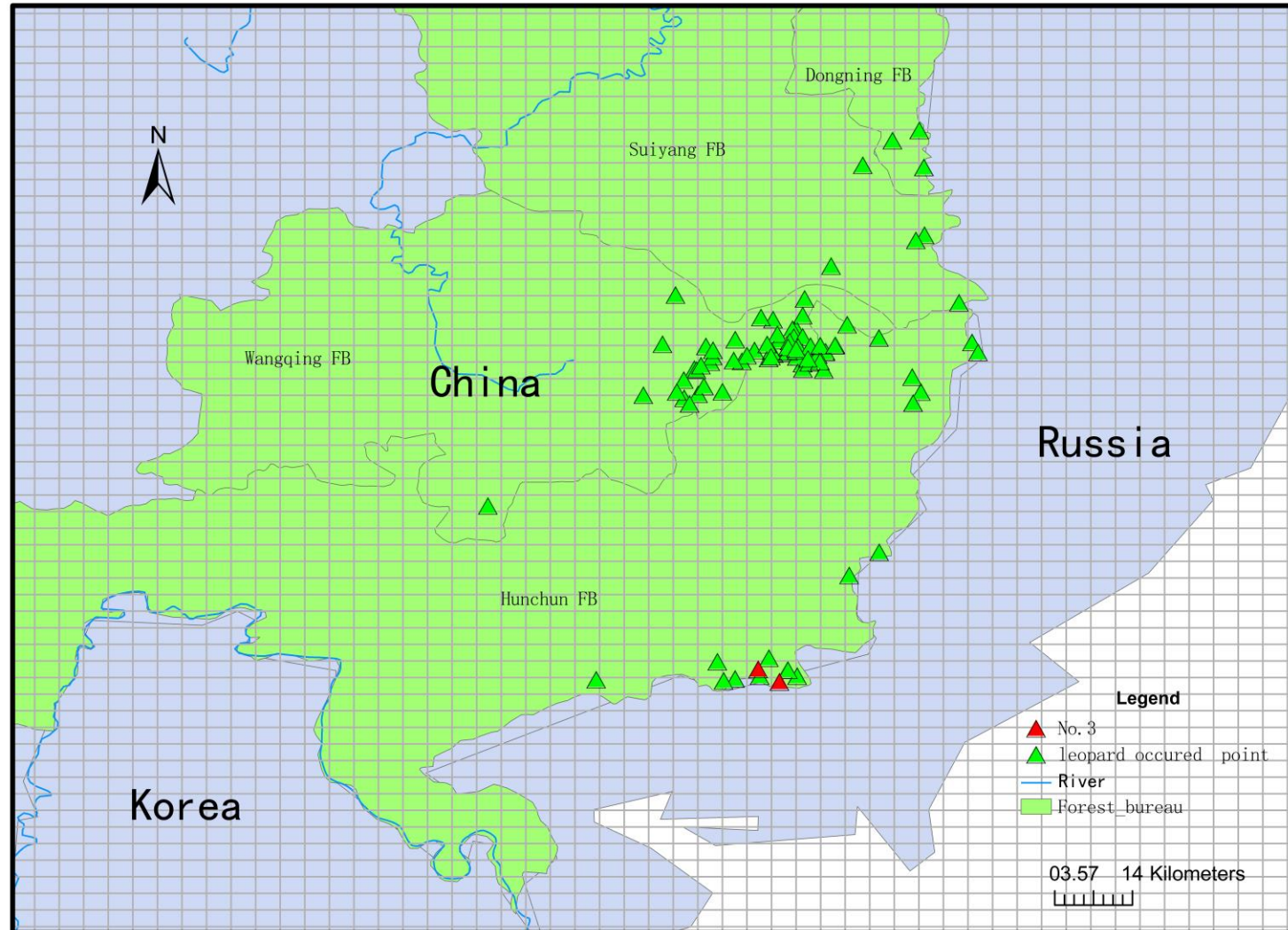The camera traps that Amur leopard occured

The leopard photos/videos captured and the individuals identified.

NO.3　　6 times

The leopard photos/videos captured and the individuals identified.

The camera traps that Amur leopard occured

The leopard photos/videos captured and the individuals identified.

NO.4   12 times

The leopard photos/videos captured and the individuals identified.
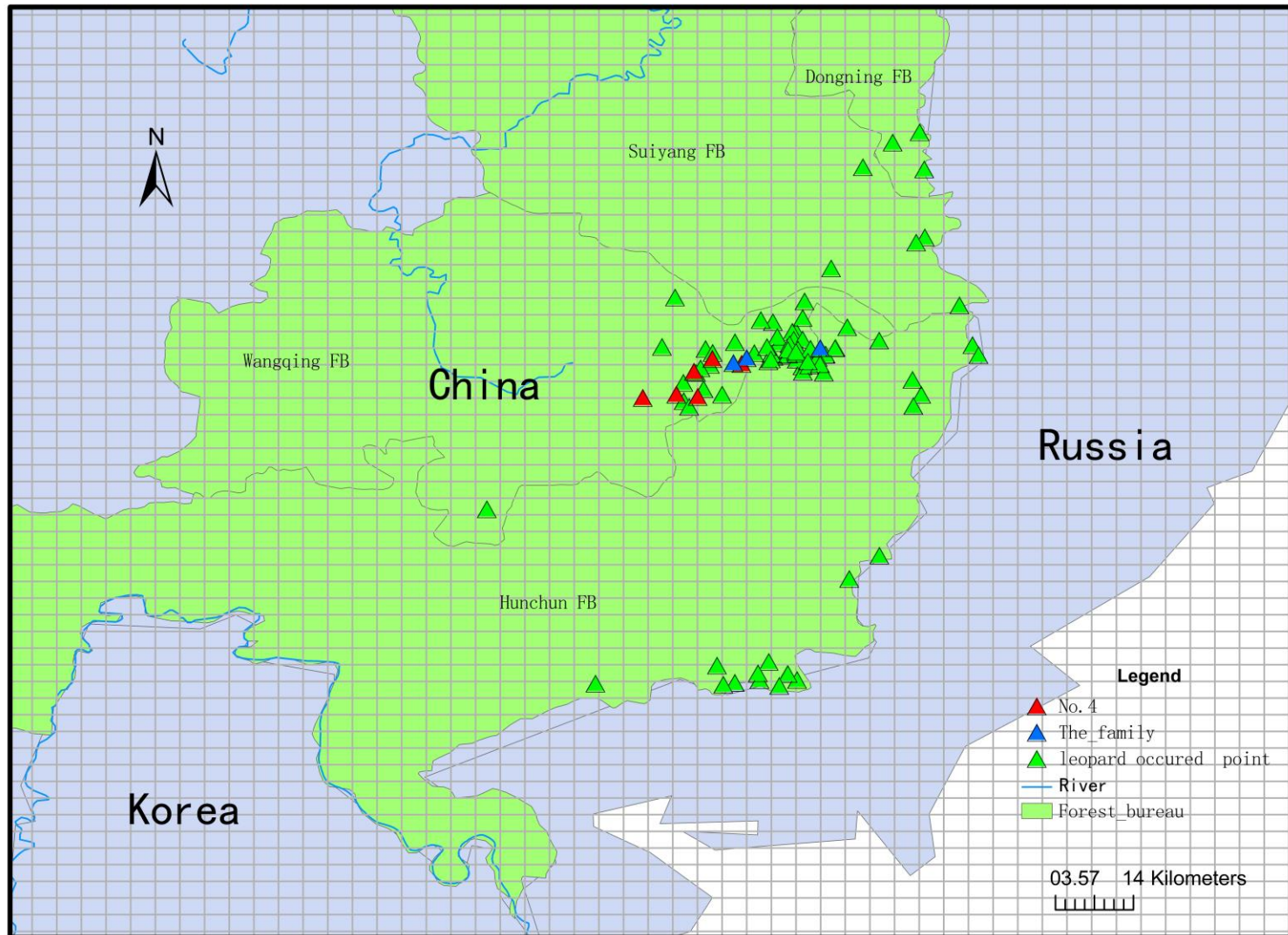

The faminly (no.4 and no.5, no.6)

The leopard photos/videos captured and the individuals identified.
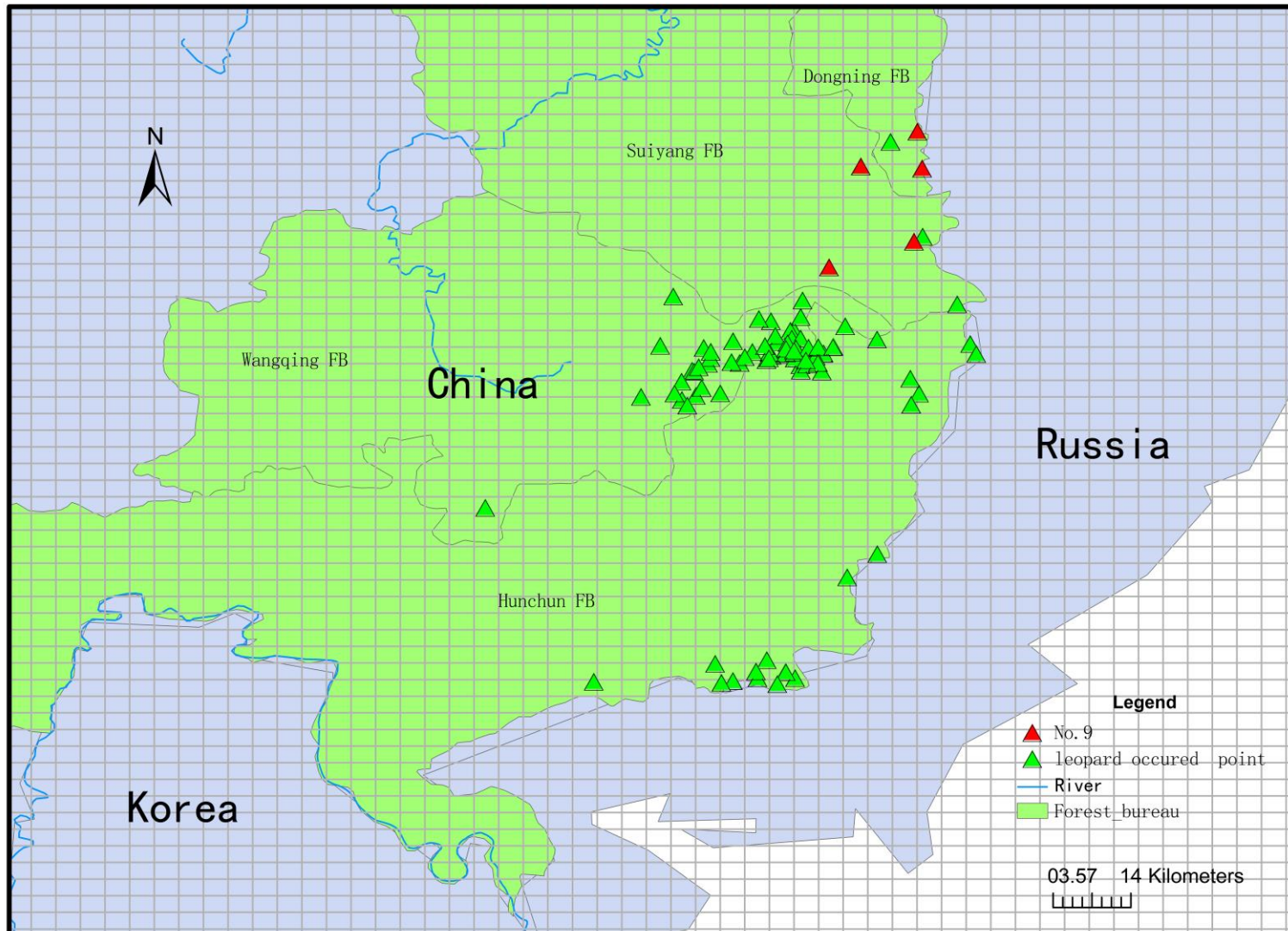

The camera traps that Amur leopard occured

The leopard photos/videos captured and the individuals identified.
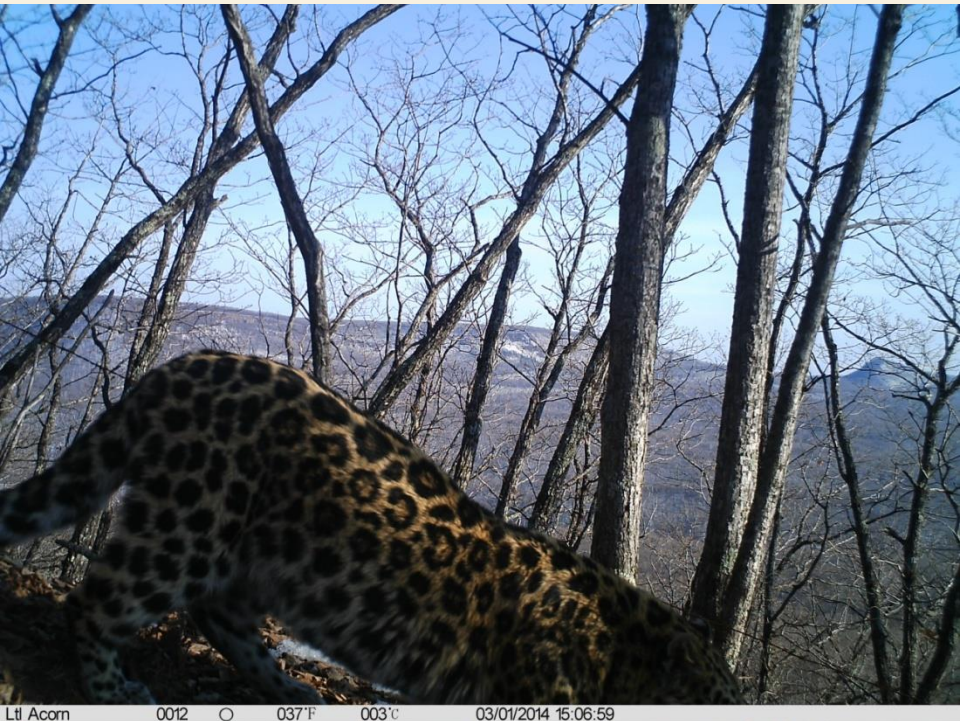
NO.9   7 times

The leopard photos/videos captured and the individuals identified.

The camera traps that Amur leopard occured

The leopard photos/videos captured and the individuals identified.

NO.7   2 times

The leopard photos/videos captured and the individuals identified.

NO.8   3 times

The leopard photos/videos captured and the individuals identified.

NO.10   2 times

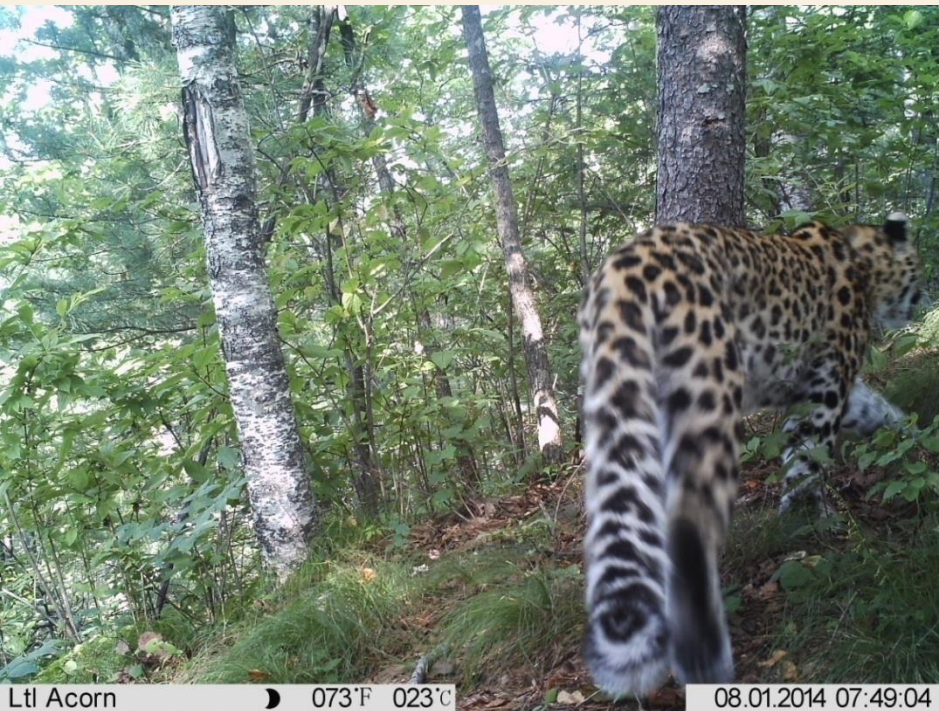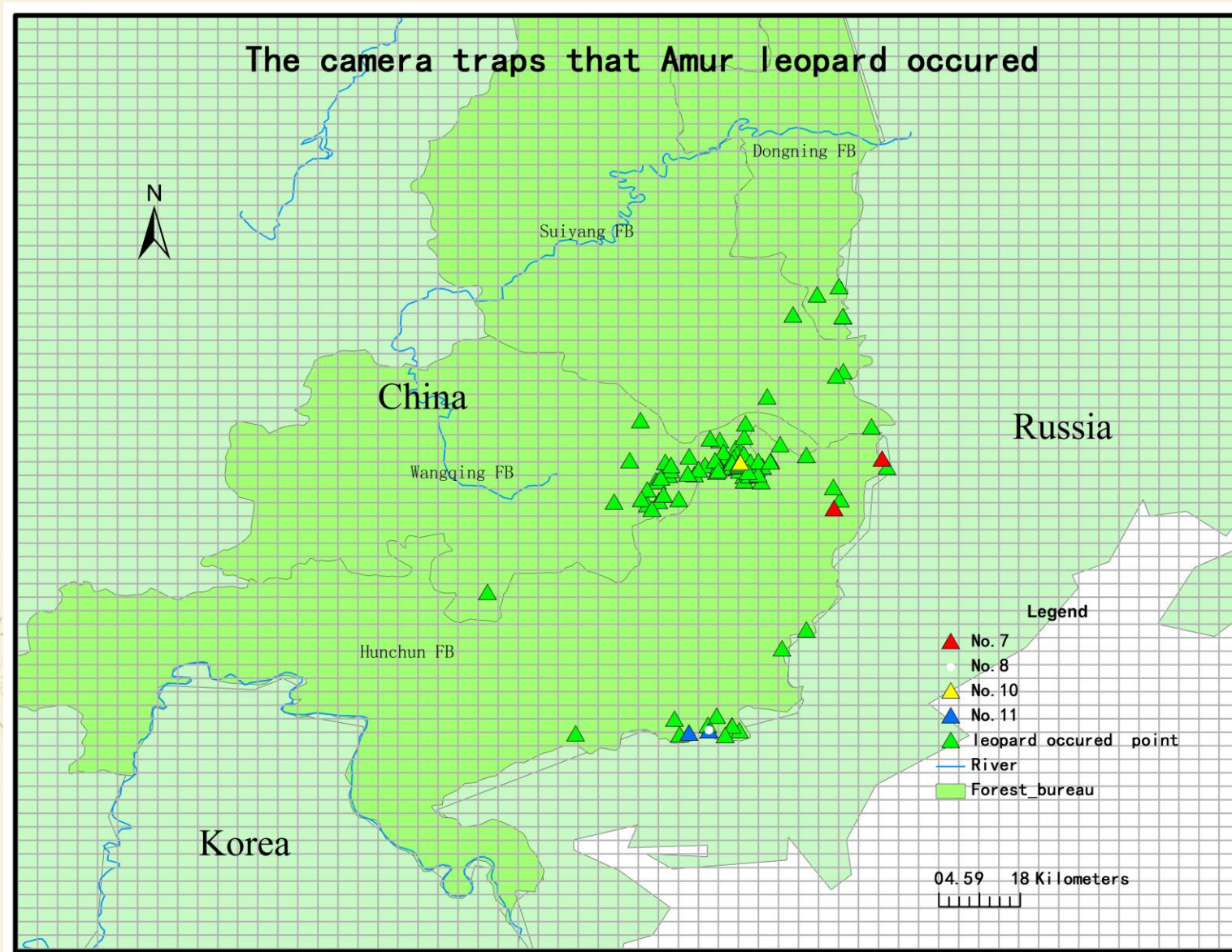# The leopard photos/videos captured and the individuals identified.

NO.11   3 times

The leopard photos/videos captured and the individuals identified.

The camera traps that Amur leopard occured

Dongning FB

Suiyang FB

N

China

Russia

Wangqing FB

Hunchun FB

Korea

Legend

▲ No. 7
○ No. 8
▲ No. 10
▲ No. 11
▲ leopard occured point
— River
▨ Forest_bureau

04.59   18 Kilometers

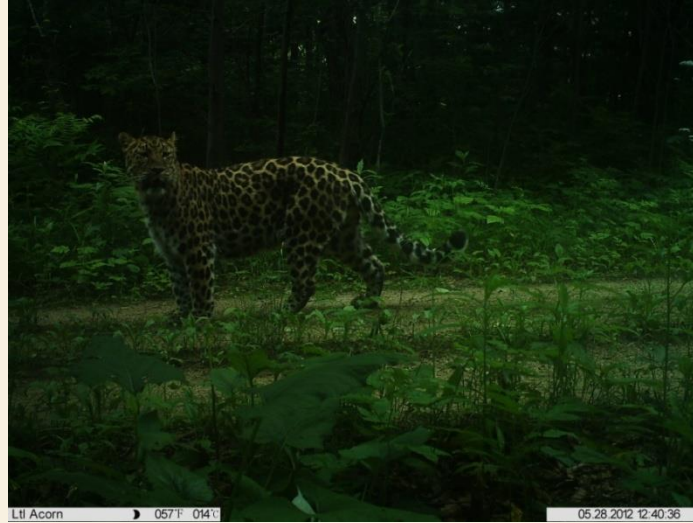# The leopard photos/videos captured and the individuals identified.

The following 10 individuals were only one side surface pattern were captured and recapture times were few, so they were showed together.

The leopard photos/videos captured and the individuals identified.
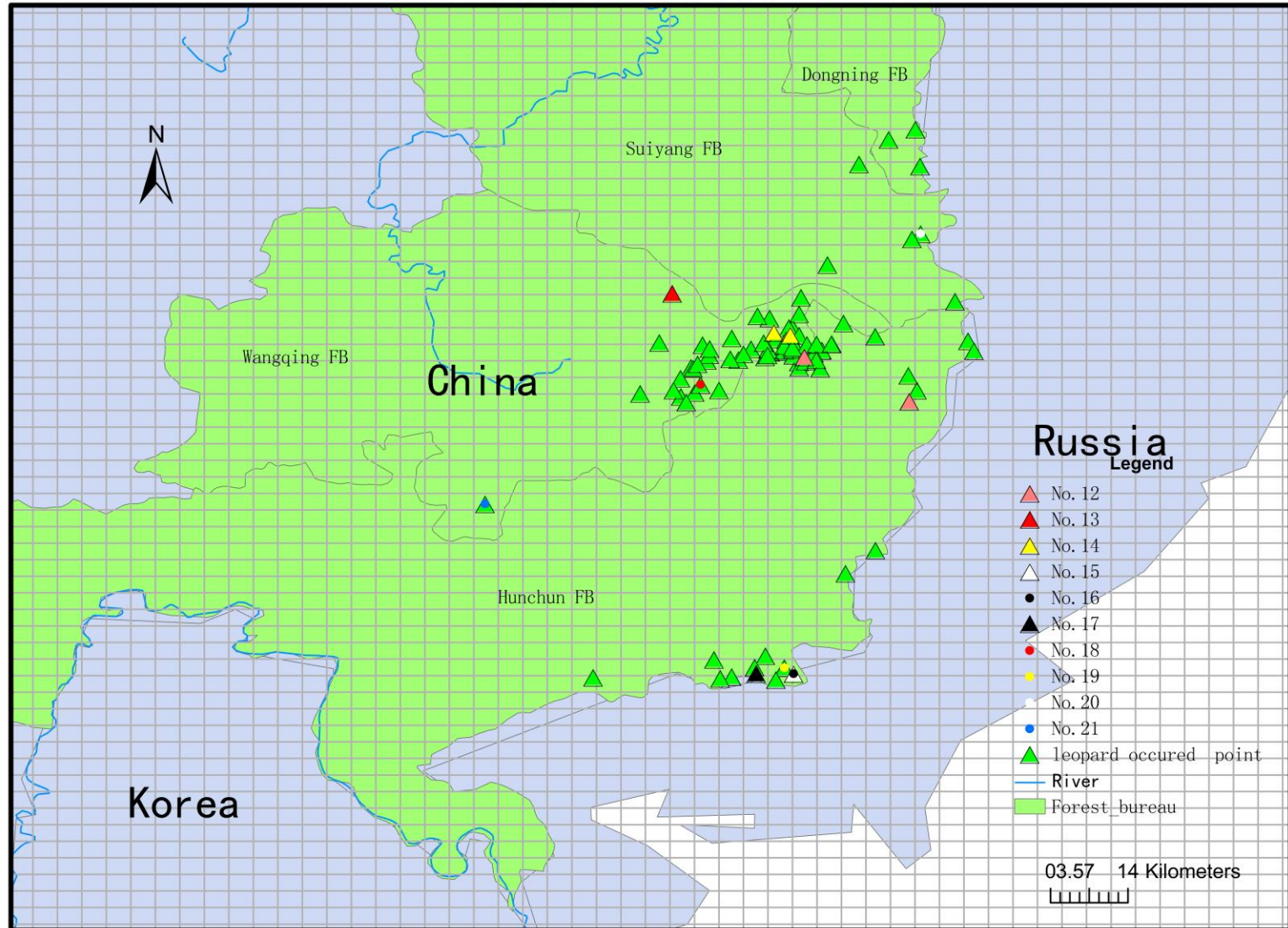
# The leopard photos/videos captured and the individuals identified.

The leopard photos/videos captured and the individuals identified.

The camera traps that Amur leopard occured

Population density and distribution

Parameter	Mean	SD	5%	95%
ψ	5.758	1.161	3.377	7.845
σ	0.002	0.002	0.001	0.007
β	1.615	0.498	0.475	2.433
p0	0.338	0.100	0.160	0.540
N	16.575	3.989	10	24
D	0.620	0.149	0.374	0.897
p1	0.002	0.002	0.001	0.007
p2	0.770	0.150	0.422	0.927

Legend
Value
High : 0.0183878
Low : 0
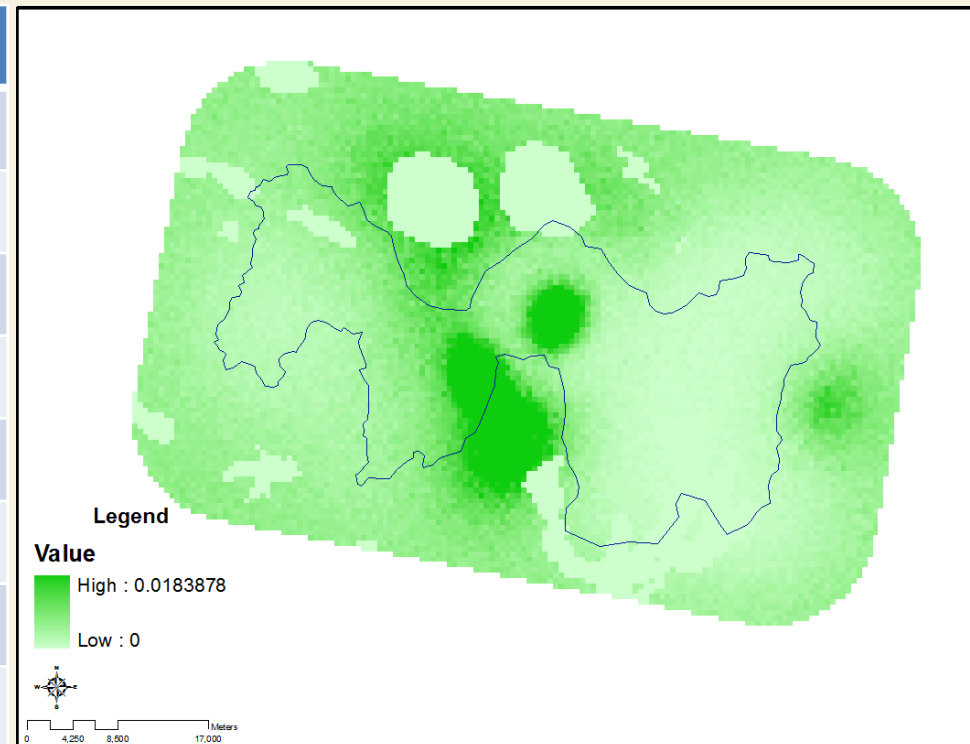
From the SECR,The Amur leopard density was 0.62 (0.37–0.90) individuals/100 km2 in this area. The total number of leopard individuals was 16.58 (10–24) individuals.

Mentioned in "Spatial distribution drivers of Amur leopard density in northeast China" received by biological conservation, and has been published online.

Summary

- 339 photos or videos, 212 were useful for individual identification. 18 individuals identified from right side pattern and 14 individuals identified from left side pattern.

- All the leopard image data was got from the area of 1700km^2, near the boundary. But from the area inside China, we also collected the information of the leopard occured.

- Other monitoring methods should be used .

- Monitor area need be enlarged (some individuals captured few times).

- international cooperation is in need.

THANK YOU FOR YOUR ATTENTION