RRRCN

Steppe Eagle

Population trends in Southern Siberia

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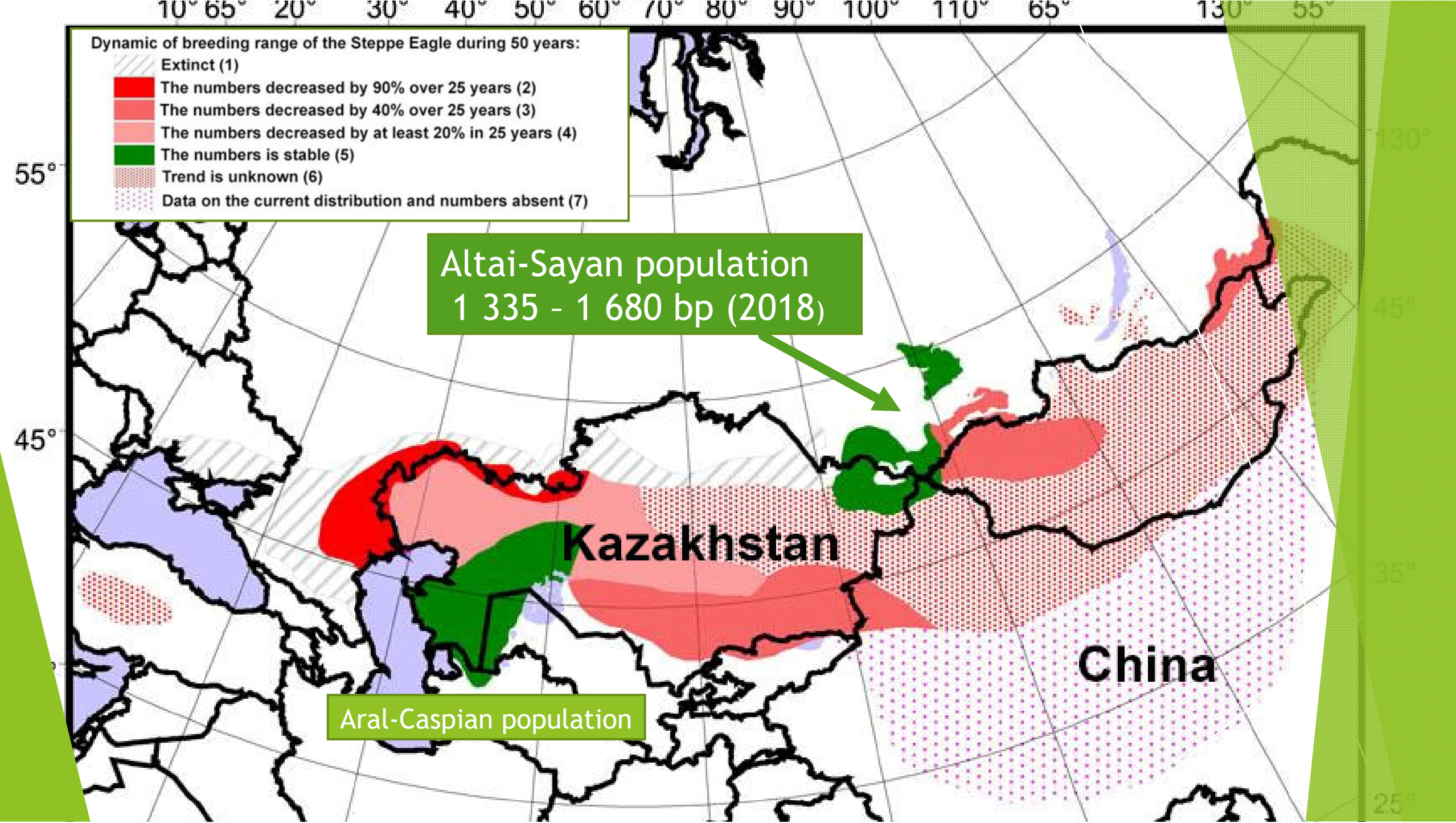
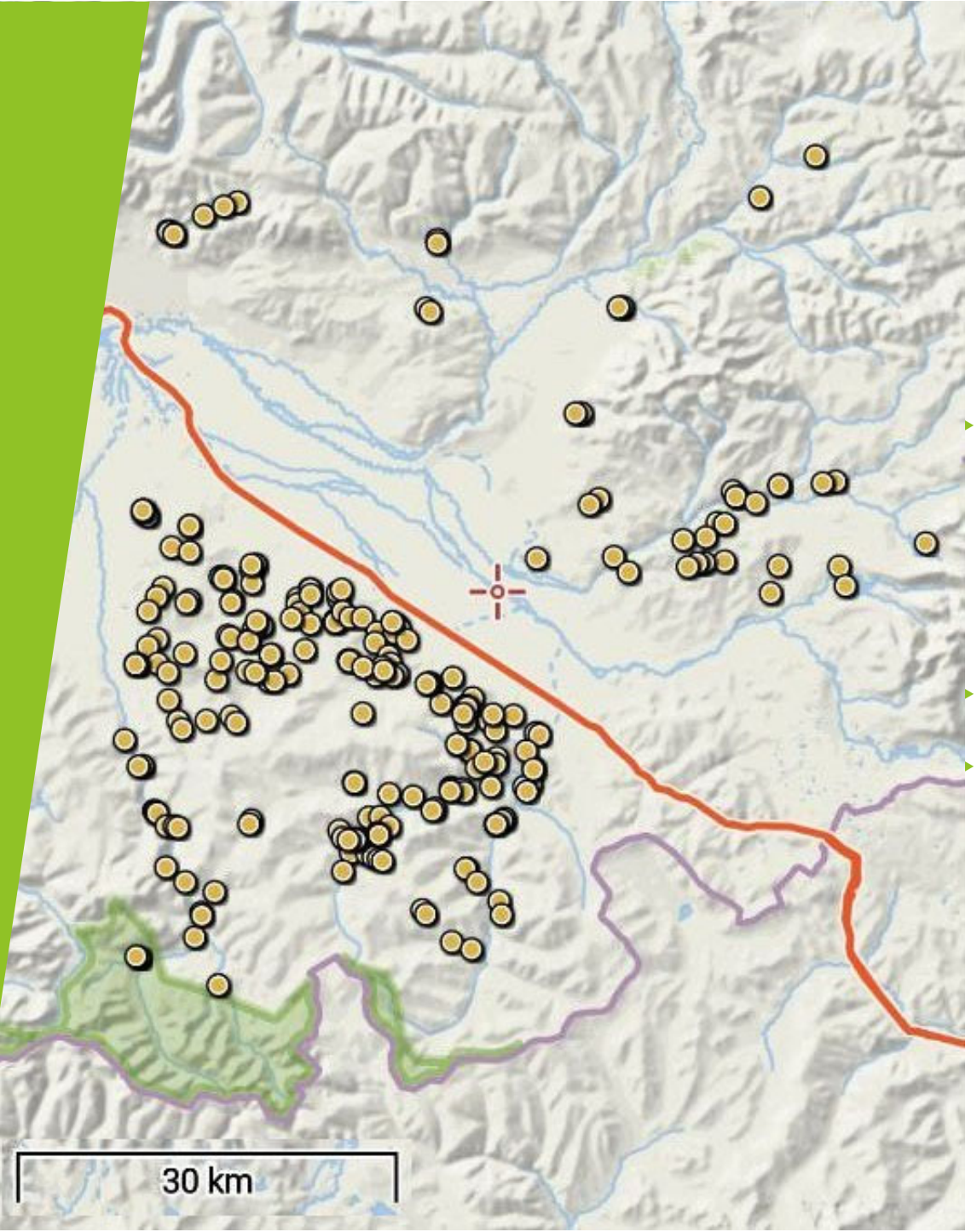
Russian Raptor Research and Conservation Network


Dynamic of breeding range of the Steppe Eagle during 50 years:
Extinct (1)
The numbers decreased by 90% over 25 years (2)
The numbers decreased by 40% over 25 years (3)
The numbers decreased by at least 20% in 25 years (4)
The numbers is stable (5)
Trend is unknown (6)
Data on the current distribution and numbers absent (7)
Altai-Sayan population
1 335 – 1 680 bp (2018)
Kazakhstan
China
Aral-Caspian population
55°
45°

Part 1. Altay

- Since 1999 our team conduct continuous surveys on the core population of Steppe Eagle in the Kosh-Agach district of the Altai Republic.

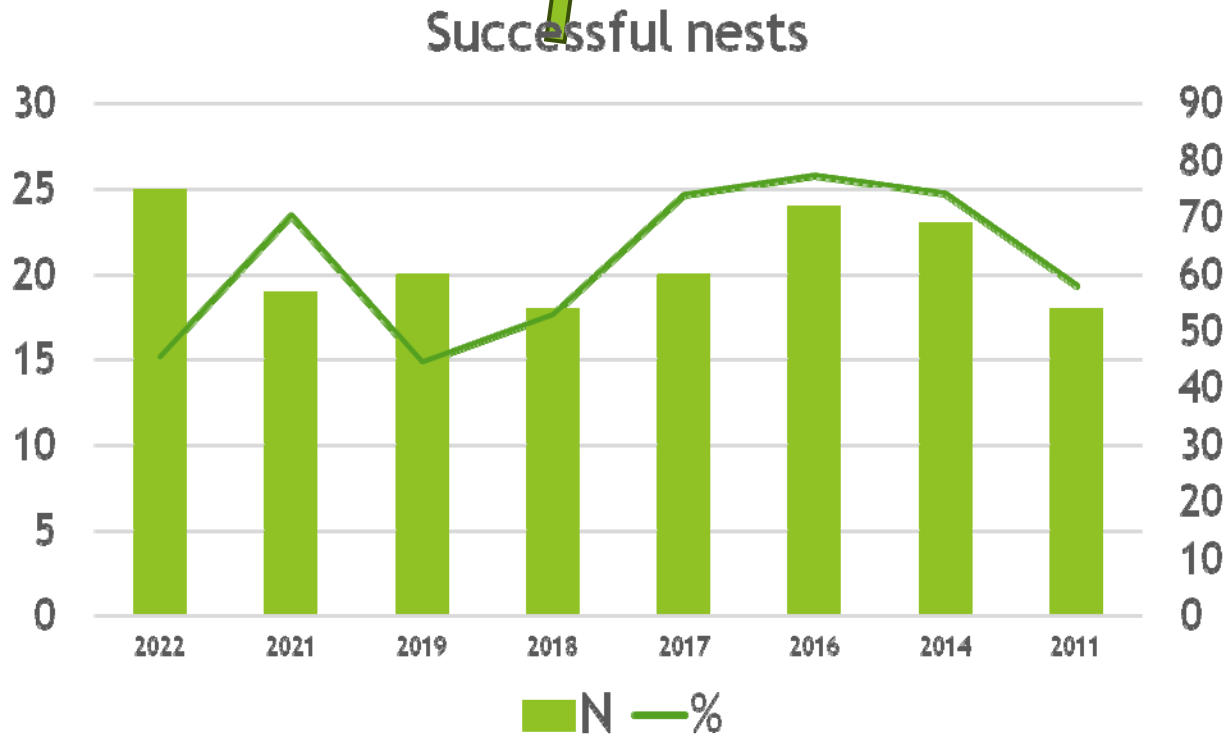


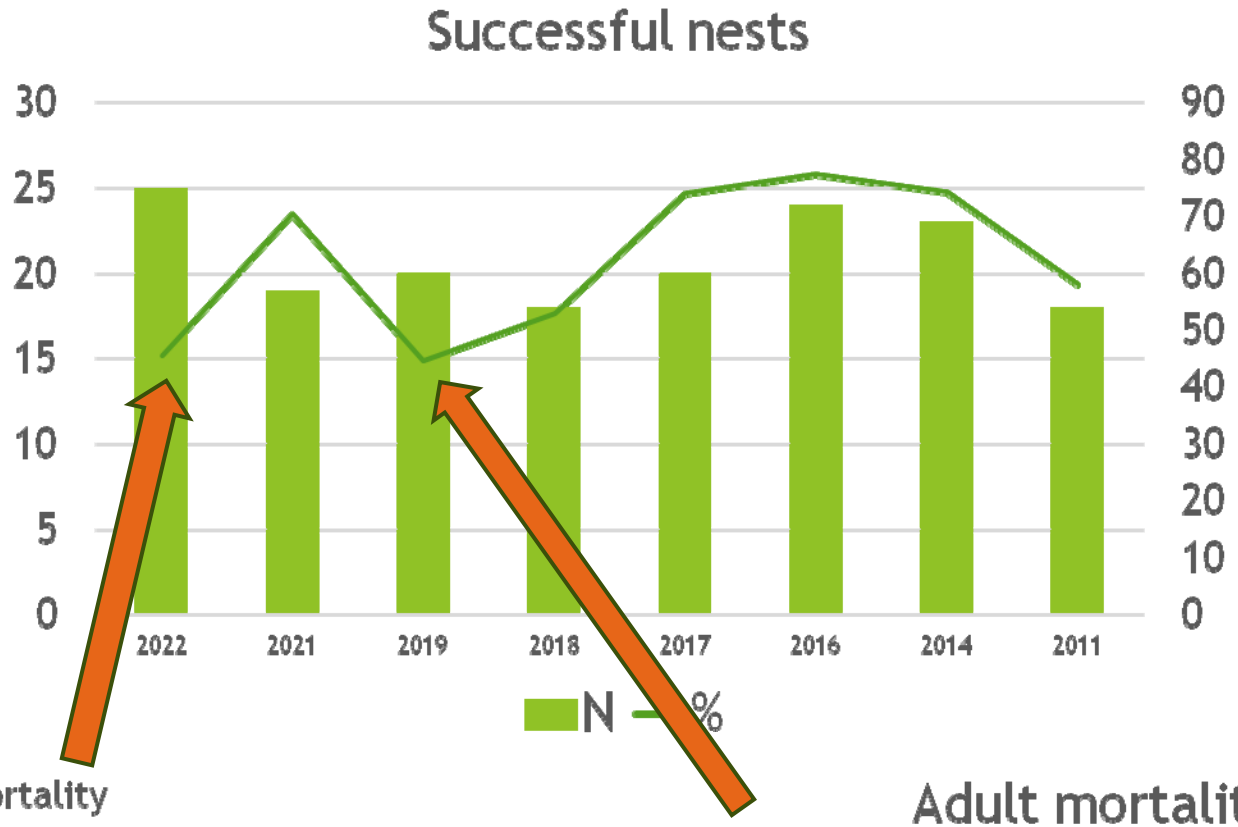
Altay

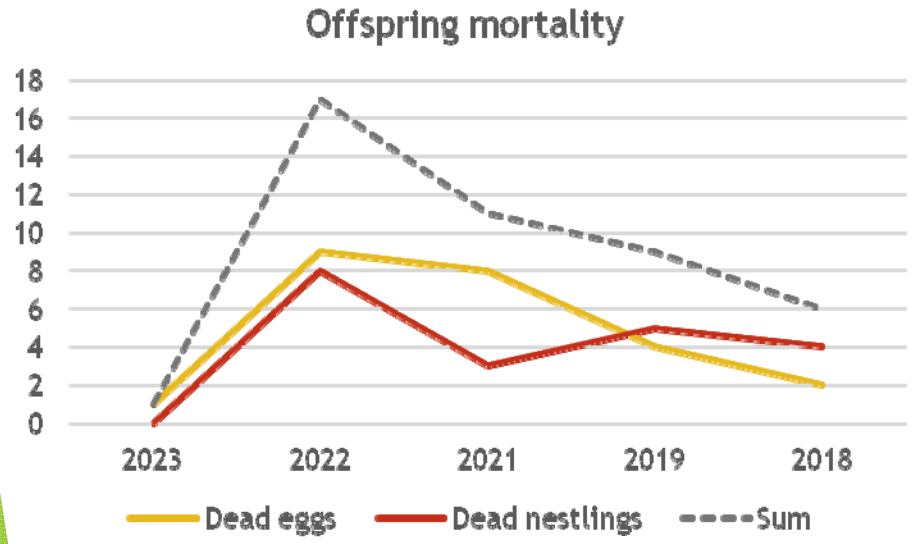
- The core of the population in Kosh-Agach district today encompass 79 known breeding territories, plus numerous BT on periphery
- Regular survey every year or two.
- 2022-2021-2019-2018-2017-2016-2014-2011

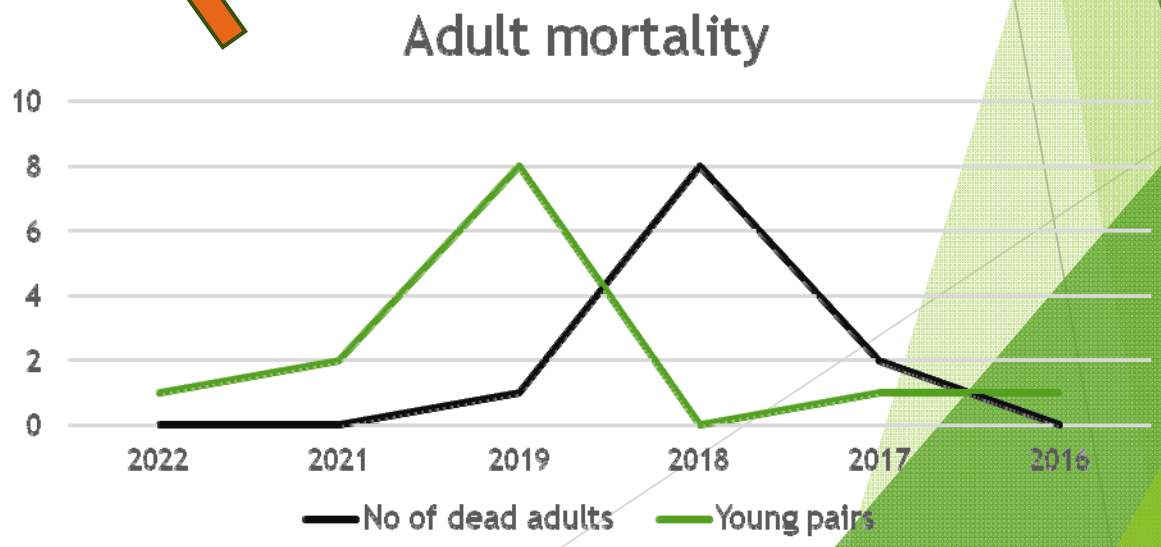
Breeding success

Year	2022		2021		2019		2018		2017		2016		2014	
Breeding territories	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Checked (N, % from total)	68	88,3	33	42,9	51	66,2	40	52	29	37,7	40	51,9	38	49,4
Occupied (N, % from checked)	55	80,88	27	81,8	45	88,2	34	85	27	93,1	31	77,5	31	81,58
Successful (N, % from occupied)	25	45,45	19	70,4	20	44,4	18	52,94	20	74,1	24	77,4	23	74,19

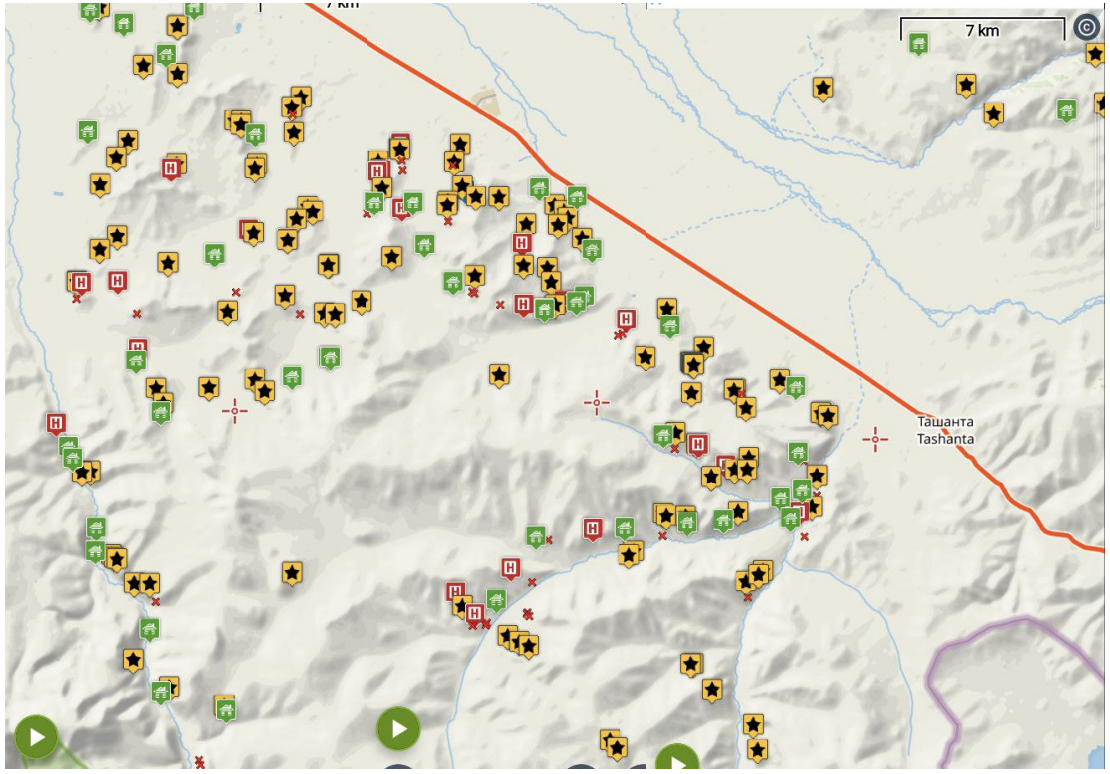



Successful nests
30
25
20
15
10
5
0
90
80
70
60
50
40
30
20
10
0
2022
2021
2019
2018
2017
2016
2014
2011
N
%


Offspring mortality
18
16
14
12
10
8
6
4
2
0
2023
2022
2021
2019
2018
Dead eggs
Dead nestlings
Sum

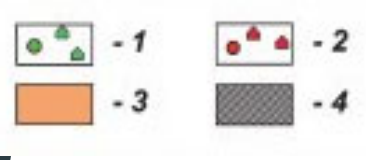

Adult mortality
10
8
6
4
2
0
2022
2021
2019
2018
2017
2016
No of dead adults
Young pairs

Green – farms, red – affected nests, yellow – other nests

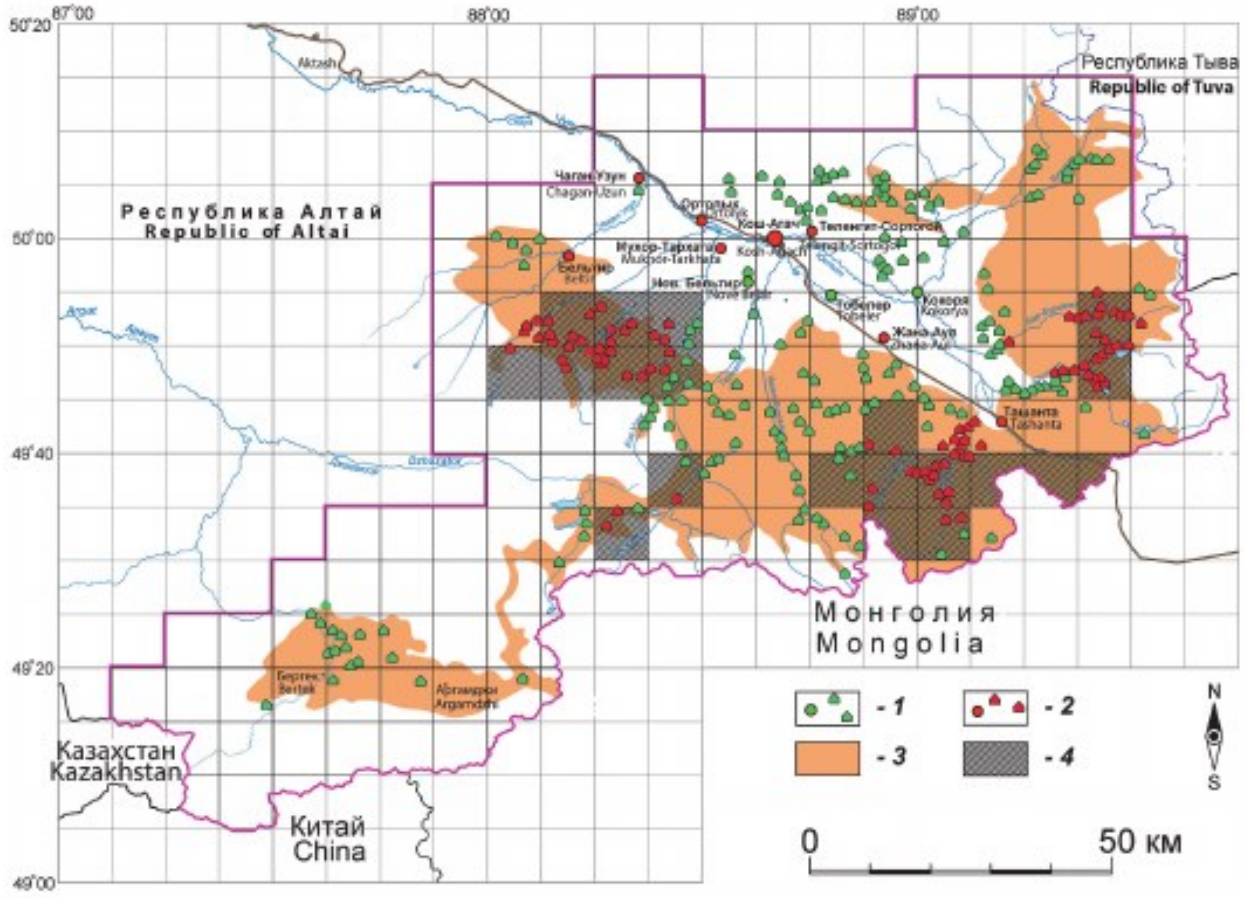


Spatial distribution of breeding territories suffered from nestling or adult losses and livestock farms in 2017-2022

A scheme of deratization activities in the Kosh-Agach district in 2017

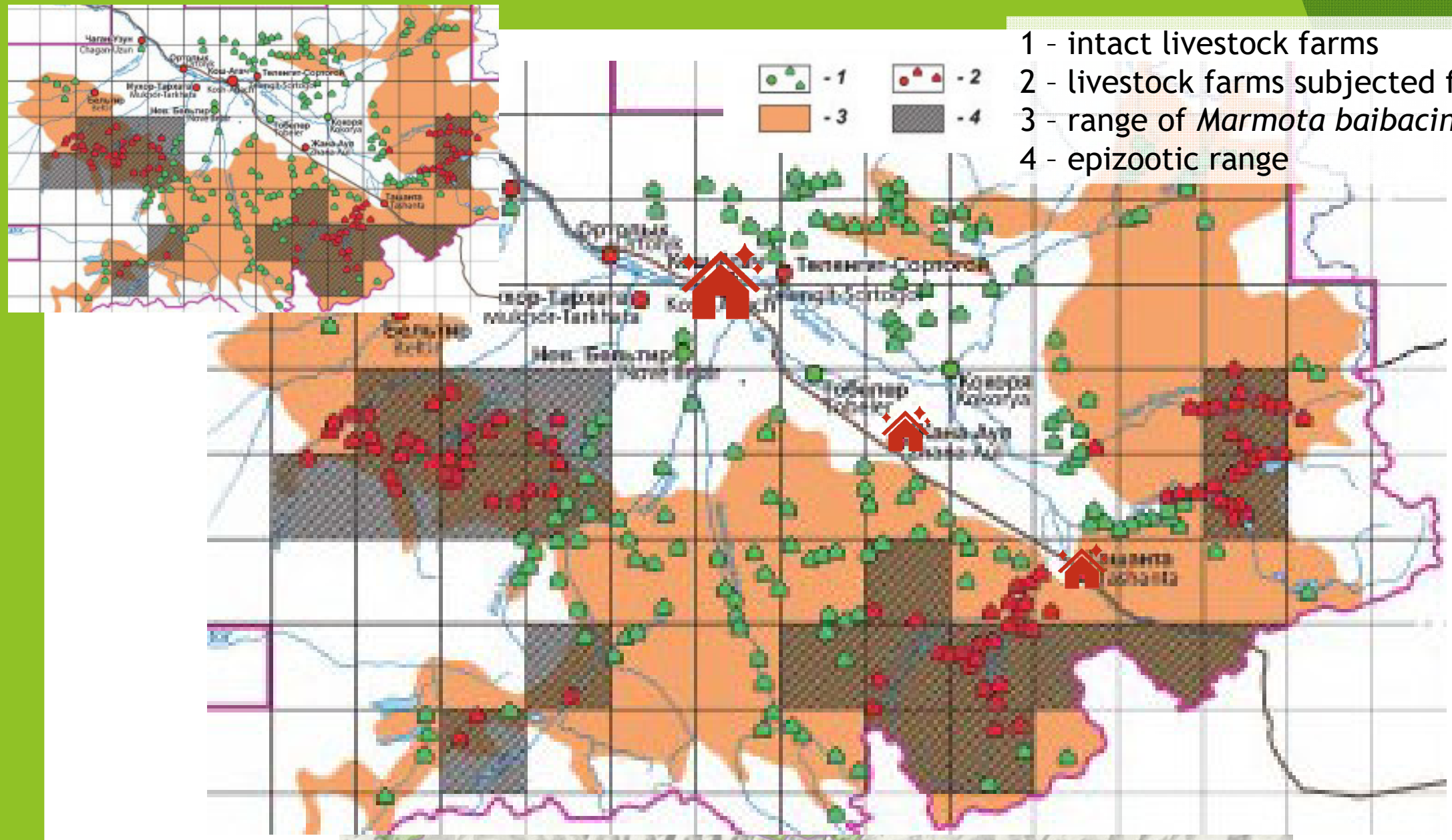


1 – intact livestock farms
2 – livestock farms subjected for deratization
3 – range of *Marmota baibacina*
4 – epizootic range



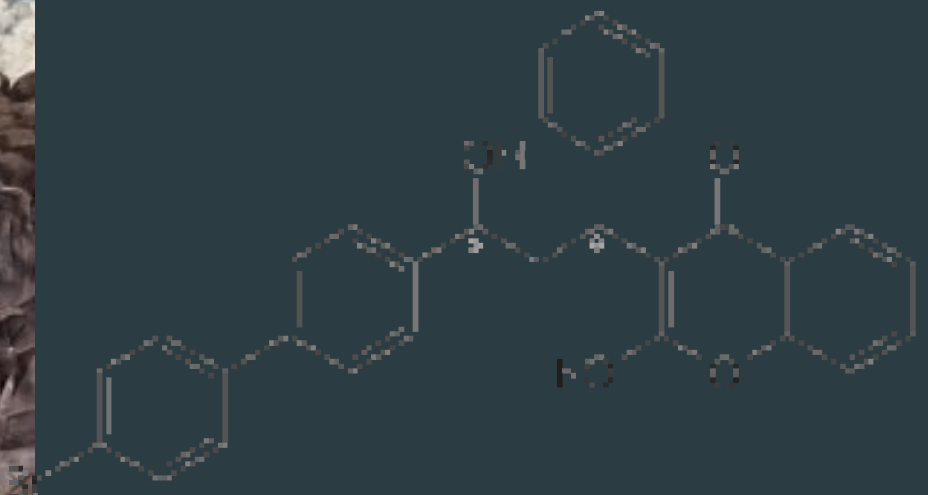
Дезинсекция и дератизация в населенных пунктах на территории Горно-Алтайского высокогорного природного очага чумы в 2014–2017 гг.:

1 – стоянки животноводов; *2* – стоянки животноводов и крупные населенные пункты, где проведена дезинсекция и дератизация; *3* – ареал серого сурка; *4* – эпизоотические секторы



1 – intact livestock farms
2 – livestock farms subjected for deratization
3 – range of *Marmota baibacina*
4 – epizootic range

The killer is Bromadiolone



Nestling mortality in 2022

- No dead adults were found
- 8 nestlings or fledglings found dead
- Combination of Difenacum+Bromadialone
- Several undigested voles were found in the area

How does it affect the breeding success and what is the population dynamics in the area?

dead nestling
dead adult
young partner

New breeding territories

	23	22	21	19	18	17	16	14
AN-RA(Z3)		1		1			1	
AN-RA(A7)		1		1		1		
AN-RA(A8)		1		1		1		
AN-RA(A11)	0	1	1	1		1		
AN-RA(A12)		1	1	1		1		
AN-RA(LL25)		1	1	1		1		
AN-RA(AJ12)	1	1	1	1				
AN-RA(A10)	0	1	1	1				
AN-RA(Z8)	0	1	1	1				
AN-RA(Z6)			1	1				
AN-RA(A13)		1	1					
AN-RA(F2)	1	1	1					
AN-RA(F2021-17)		1	1					
AN-RA(OSh2021-1)		0	1					
BH-RA039		1						
AN-RA(J06)		1						
AN-RA(J99)		1						
AN-RA(A4)		1						

N=18 (17 core + 1 periphery)

Recovered breeding territory

	23	22	21	19	18	17	16	14
AN-RA032	1	1	1	1	1	1		0
AN-RA042		1	1	1	1		0	
AN-RA043		1			1	1	0	
AN-RA046		1		0				
AN-RA047		1	1	1	0	1	1	
AN-RA164		1			1		0	
AN-RA166		1		1	1	0		
AN-RA185	1	1		1		1		0
AN-RA216		1					0	
AN-RA262	1	0	0					1
AN-RA(BAR1888)		1					0	
AN-RA(burata)		1		0	1			

N=12 all in the core area

Abandoned territories

	23	22	21	19	18	17	16	14
AN-RA010		0		0	0	1	1	1
AN-RA033			0		0	1	1	
AN-RA034		0			1	1	1	0
AN-RA(BAR1857)		0		0			1	
AN-RA277						1	0	1
AN-RA(A1)		0	0	0	1			
AN-RA(Elangash)					1	1	1	
AN-RA(A9)		0		0		1		

N=8 (6 core and 2 periphery)

	23	22	21	19	18	17	16	14	13	11
AN-RA004		1			1			1		
AN-RA006=255		1			1		0	1		0
AN-RA007		1		1	1	1	1	1		1
AN-RA008		1		1	1					1
AN-RA009		1		1	1	1	1	1		1
AN-RA011		1	1			1				1
AN-RA027				1	1	1		1		1
AN-RA036				1	1		1	1		1
AN-RA040		1		1				0	1	1
AN-RA041=210=211		1	1		1	1	1	1		1
AN-RA045	1	1	1	1		1				1
AN-RA049					1	0	1	1		1
AN-RA051				1	1			1		0
AN-RA079		1	1				1			
AN-RA094		1		1	1	1		1		
AN-RA157		1	0	1	1					
AN-RA165		0		1	1	1				1
AN-RA181				1	1			1		1
AN-RA182		1			1	1		1		
AN-RA206	0	1	1	1						1
AN-RA207		1	1	1				0		1
AN-RA208	0	1	1	1						1
AN-RA209		1		1		1		1	1	1
AN-RA215	0	1	1	1				0	1	1
AN-RA218		1		1	1		1	1		1
AN-RA246				1			1	1	1	
AN-RA250				1			1			1
AN-RA258		1		1	1		0	1		
AN-RA272				1	1	1	1		1	
AN-RA276					1	1	1	1		
AN-RA(BAR1854)		1	0	1			1			

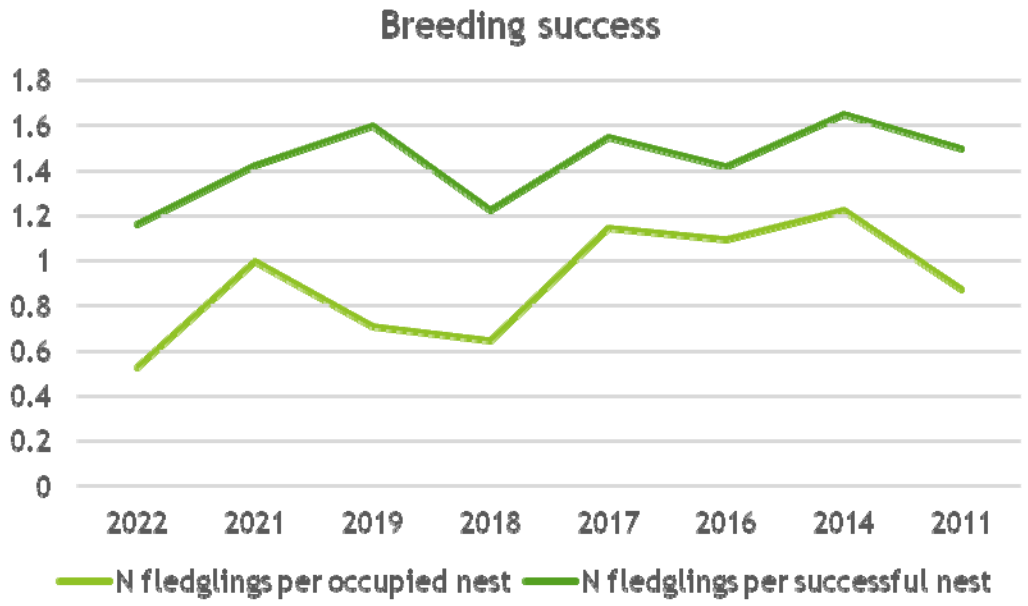
31 stable breeding territories where Steppe Eagles make breeding attempts nearly each year despite gained losses. 26 in core area and 5 on periphery

Plus, there are 18 more territories known in the core area that is hard to reach and I have no enough data on them to estimate their status, but at least 5 of them existed on 2021-2022.

	23	22	21	19	18	17	16	14	13	11
AN-RA052		1			0			1		1
AN-RA156		0		1			1			
AN-RA214		1			0			1		1
AN-RA050				1	1		0			1
AN-RA053		0			1			1		
AN-RA102		0								1
AN-RA147							1			
AN-RA168_RA229		1					1			0
AN-RA169							1	1		1
AN-RA170							1			0
AN-RA172							1			1
AN-RA212		1	1					0		1
AN-RA213		1	1							1
AN-RA217		0			1					1
AN-RA(2016-5)							1			
AN-RA(Nstep2016)					1		1			

Dynamics

- Since 2014 the core population of Steppe Eagles in Kosh-Agach district increased by 23 pairs and now makes 73 in 2022 vs 50 in 2014 (growth by 46%).



Part 2. Tuva

A catastrophe caused by the Bromadiolone use in Mongolia touched Tuva in 2002.

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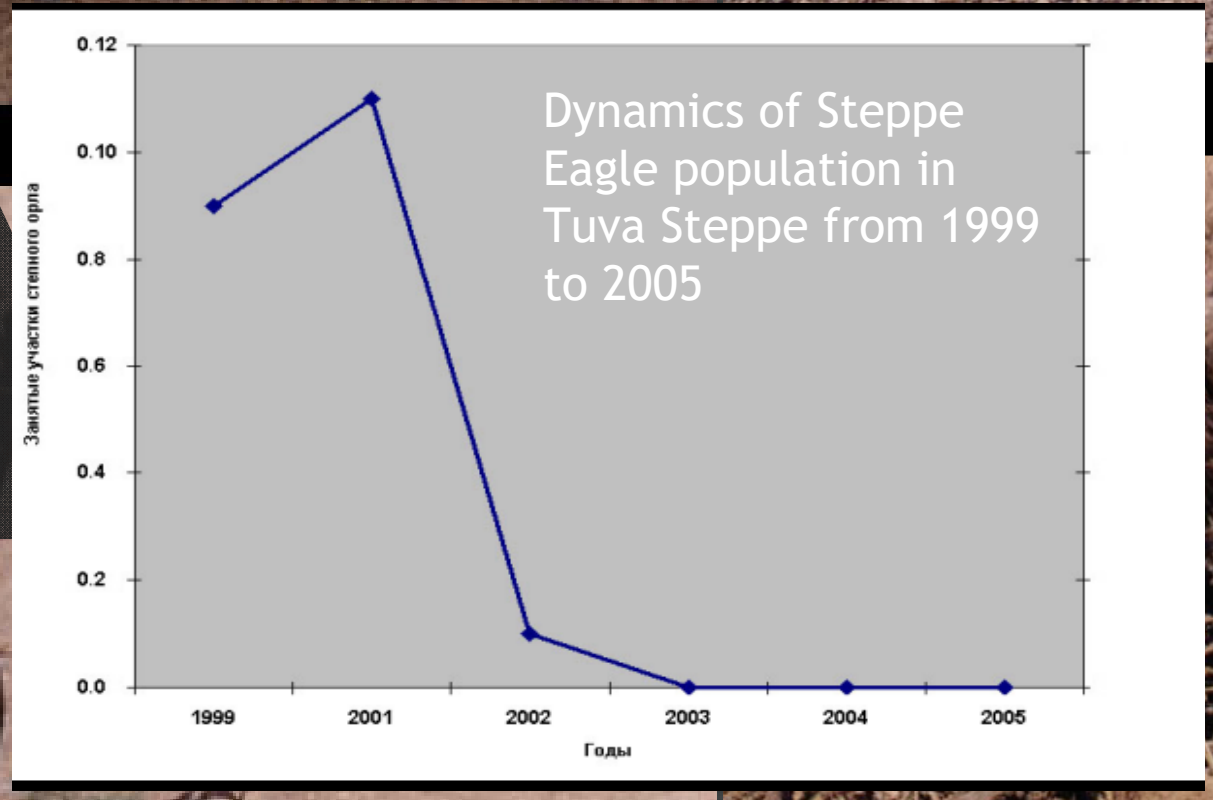
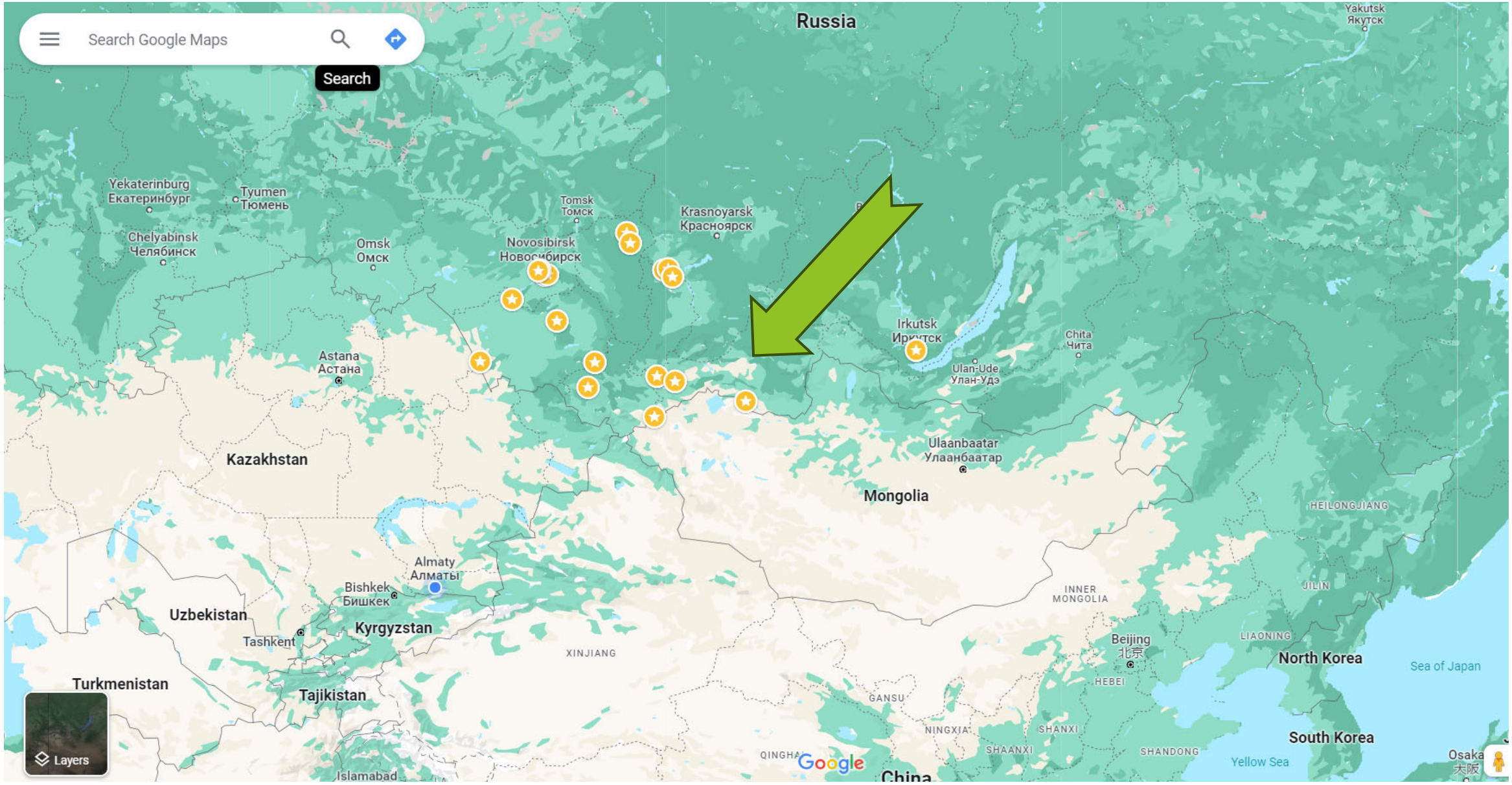
Bromadiolone catastrophe of 2002

- Poisoning happened in April when many eagles from Tuva population were still in Mongolia
- A total of 5 110 km^2 were treated with bromadiolone in Mongolia
- It caused an extinction of SE population in the Tuva Steppe

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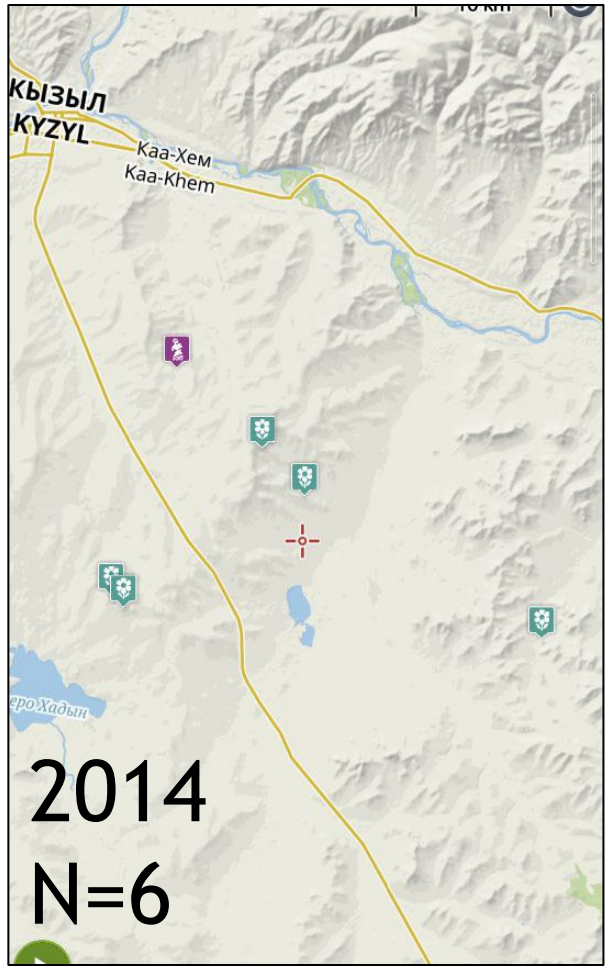
Эрик
Давст
Тэсийн гол
Тэс

Population recovery in the Tuva Hollow

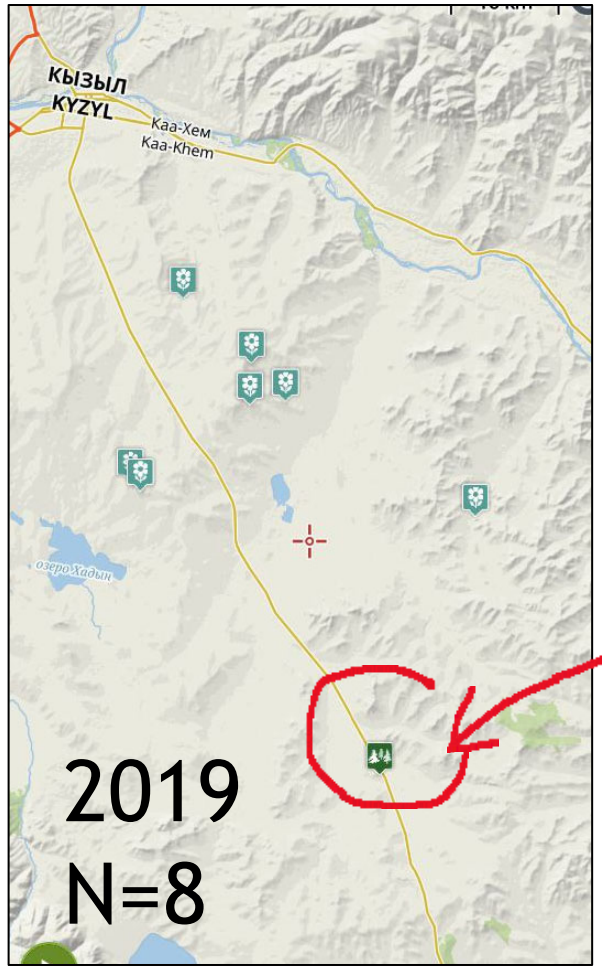
- From 2004 till 2010 there was no breeding population of Steppe Eagle
- First 3 pairs settled only in 2011
- In 2014 there were 5 active nests on 6 occupied breeding territories
- Today we have 11-13 breeding territories in the area

Population dynamic

- 2018-2020 first ever tree-breeding pair in the area

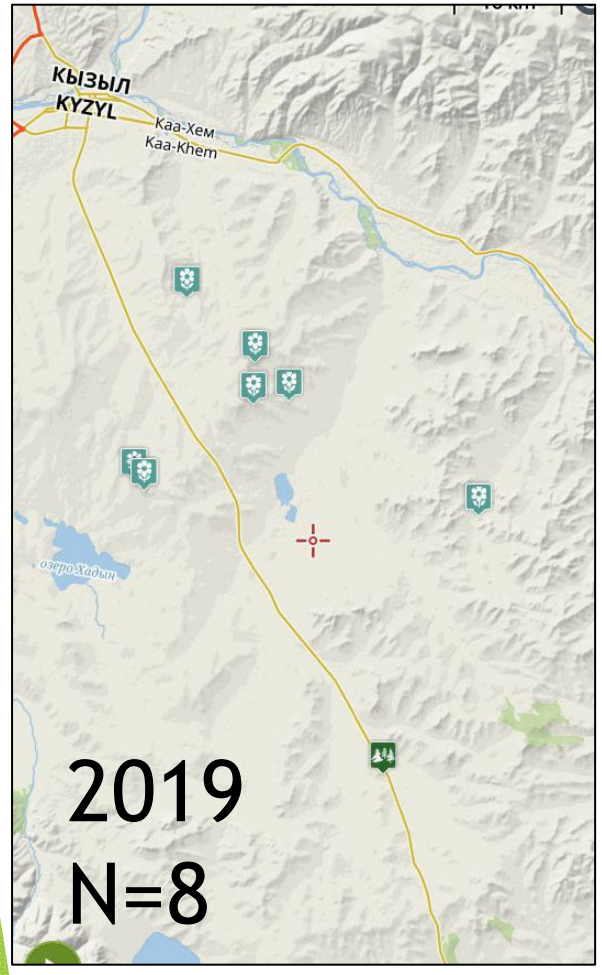


+2



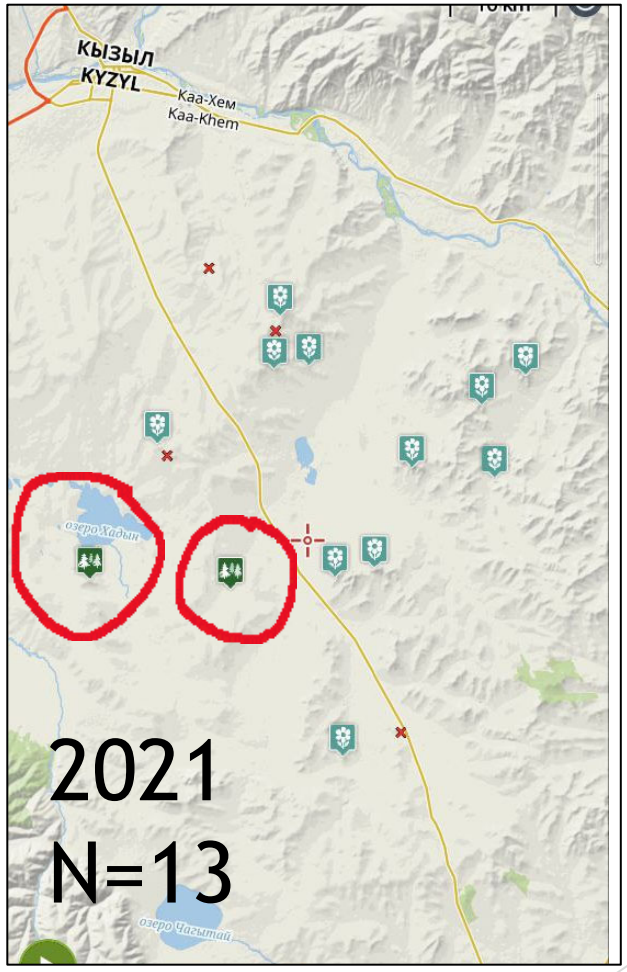
Population dynamic

- Two more tree-nestling pairs



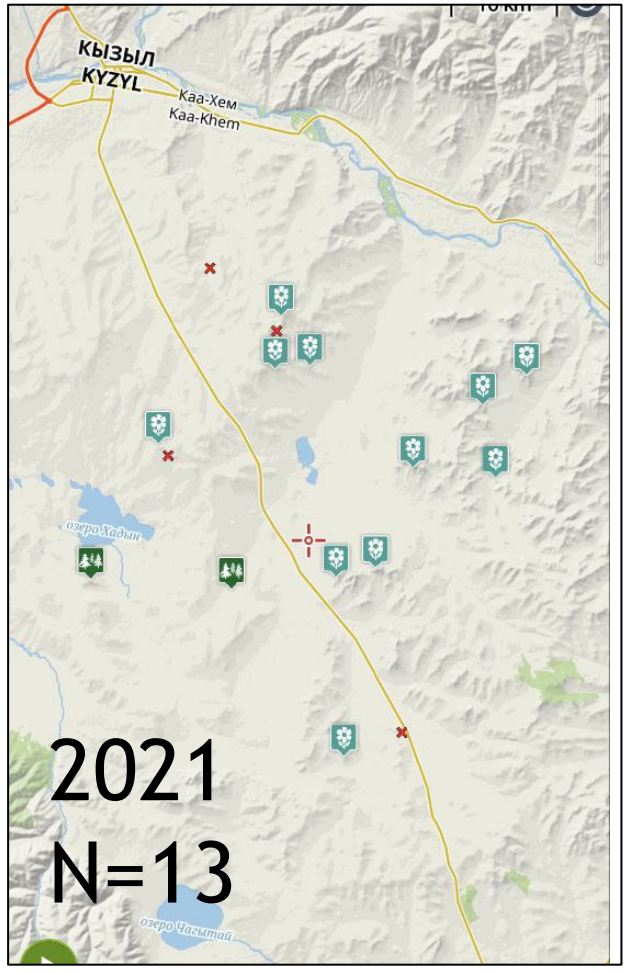
+9

-4



Population dynamic

- New tree-nestling pair, but female was shot dead



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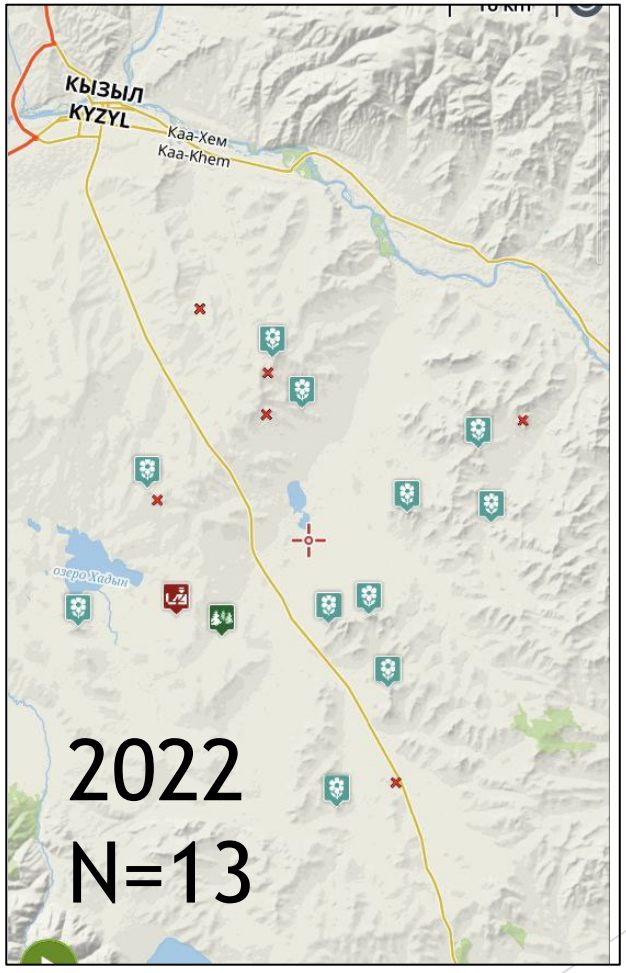
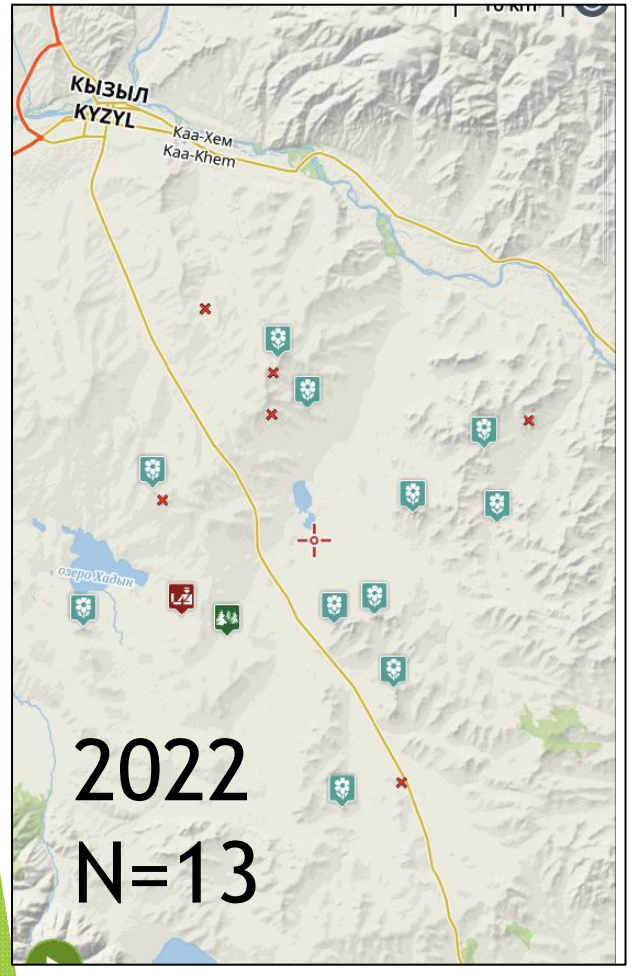


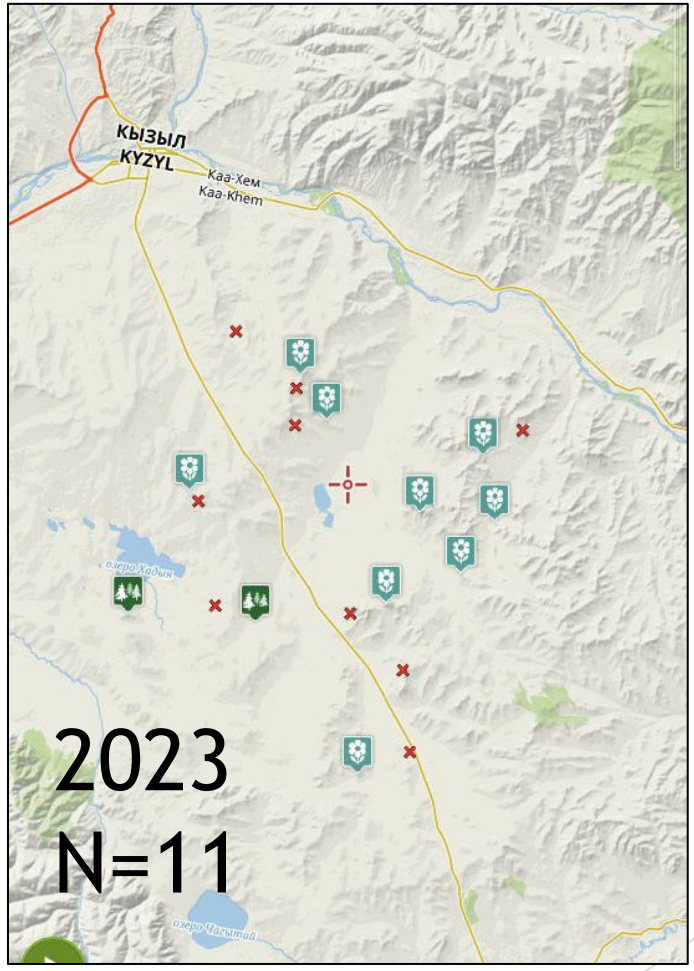
Population dynamic

- Very low breeding success due to unfavorable weather conditions. Only three pairs had fledglings.



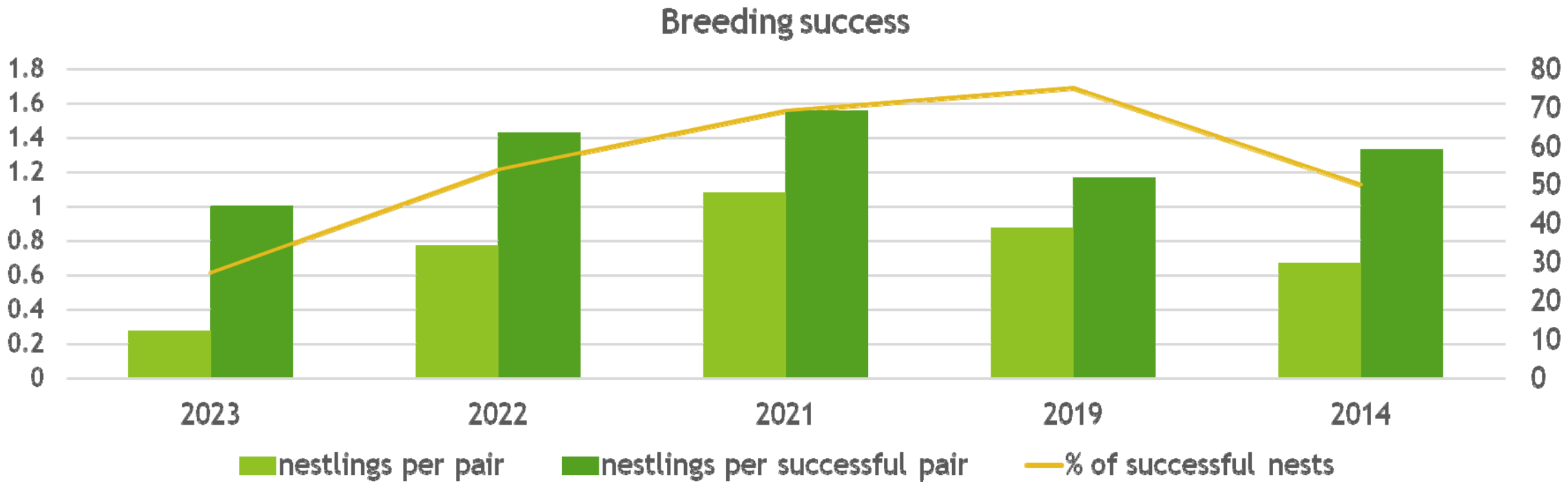
+1

-3



Conclusions

- In 10 years, population number grows from 6 pairs in 2014 to 13 pairs in 2022 (+117%)
- Only three breeding sites are stable through this time, despite breeding partner turnover occurred.
- 10 new breeding territories were established and 3 BT which existed before 2002 recovered.
- In total 4 pairs with a new tree-breeding stereotype settled the area since 2018. Only in 2 (or maybe 3 cases) out of 8 their breeding attempts were fruitful.



Breeding success increased until 2019, but is now declining


Thank you for your attention