



Implementation of Rabies programme in Bulgaria, 2018

*SCoPAFF, 24-25
October 2019*



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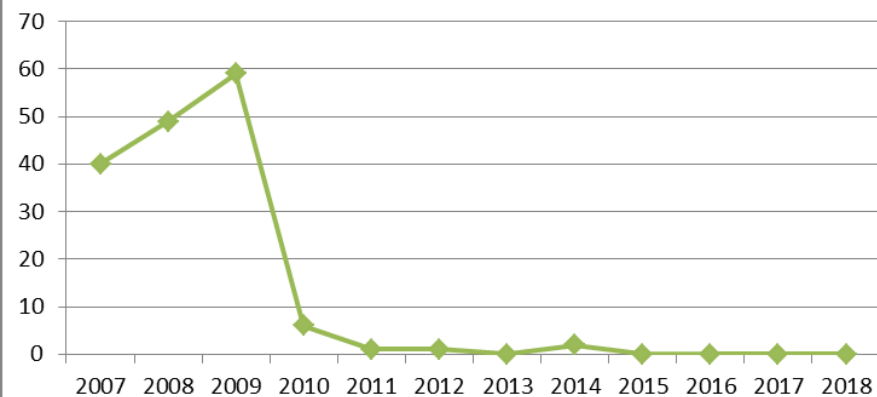


Epidemiological situation 2007-2018 - 1

Year	Total No. Domestic					
	of cases	animals	Dogs	Cats	Foxes	Jackals
2007	40	-	7	7	24	2
2008	49	-	6	4	33	6
2009	59	4	3	3	47	2
2010	6	-	3	1	2	-
2011	1	-	-	-	1	-
2012	1	-	-	-	1	-
2013	0	-	-	-	-	-
2014	2	-	-	-	2	-
2015	0	-	-	-	-	-
2016	0	-	-	-	-	-
2017	0	-	-	-	-	-
2018	0	-	-	-	-	-
Total:	158	4	19	15	110	10



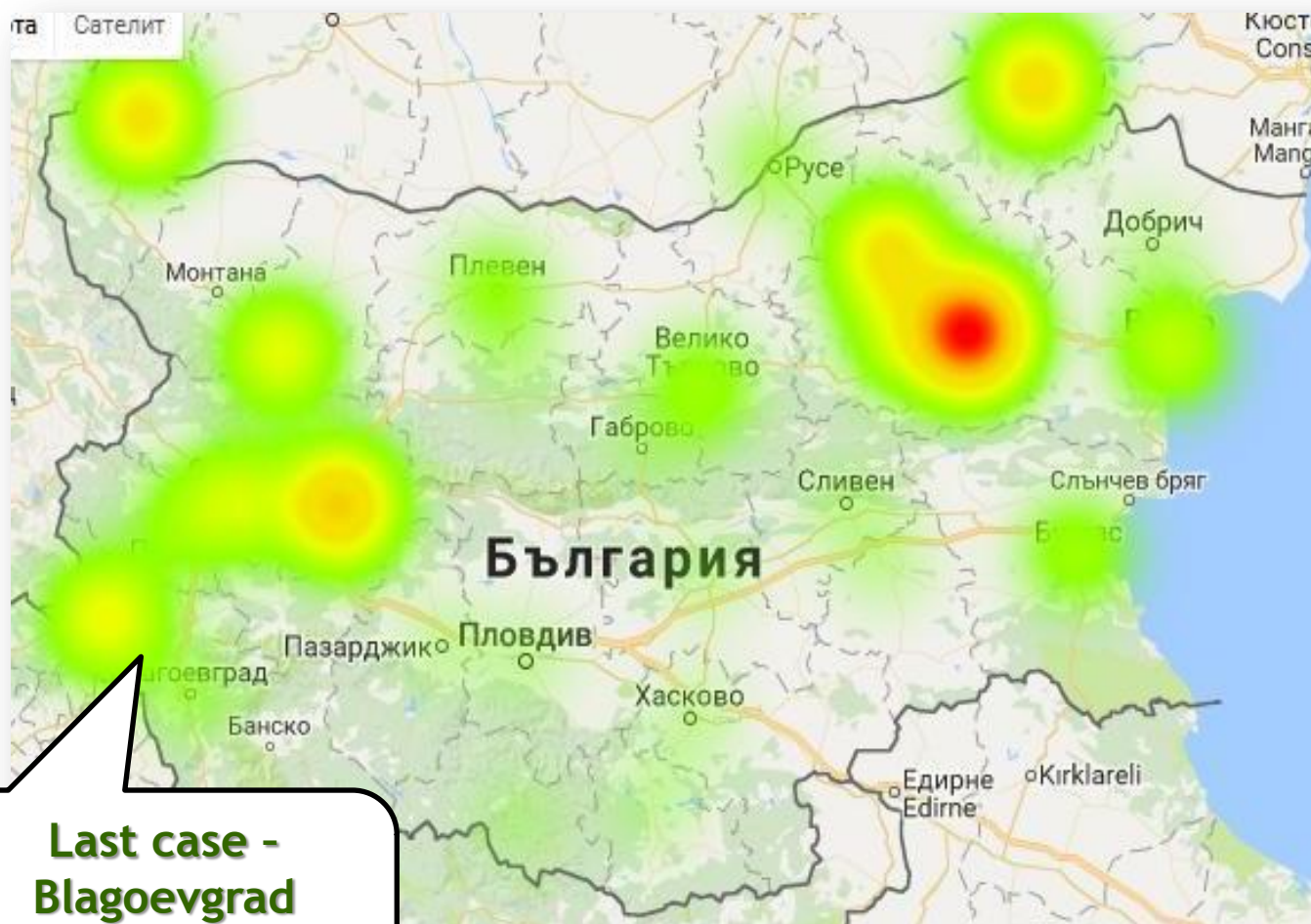
Rabies cases 2007-2018



Affected regions, 2007-2014



Epidemiological situation 2007-2018 - 2



Last case -
Blagoevgrad
region, June,
2014

*Distribution of the rabies cases for the
period 2007 - 2014*

Region	No. of cases
Blagoevgrad	2
Burgas	4
Varna	6
Vidin	13
Vratsa	9
V. Tarnovo	4
Gabrovo	0
Dobrich	1
Kyustendil	10
Kardzhali	0
Lovech	1
Montana	11
Pazardzhik	0
Pernik	3
Pleven	3
Plovdiv	0
Razgrad	13
Ruse	2
Silistra	14
Sliven	0
Smolyan	0
Sofia-city	7
Sofia-district	18
Stara Zagora	0
Targovishte	5
Haskovo	0
Shumen	32
Yambol	0
Total	158

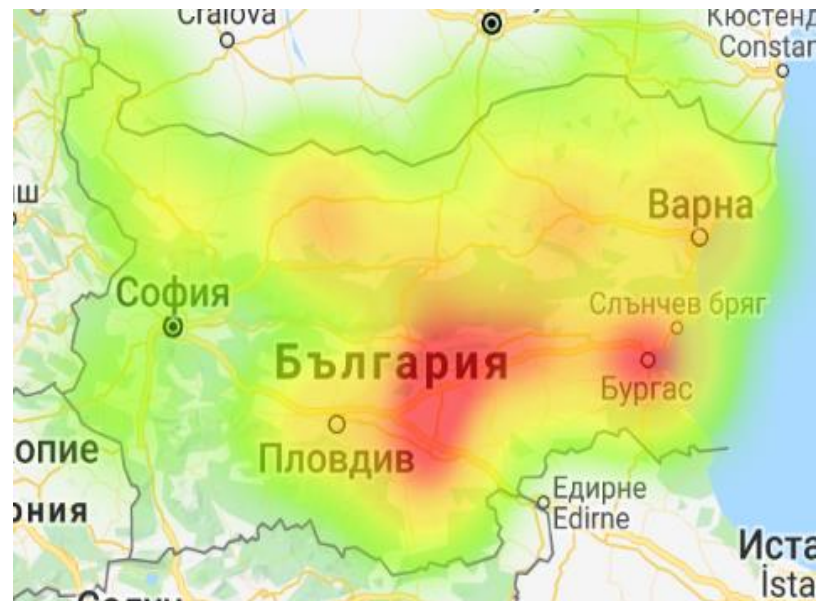


Populations of foxes and jackals

Foxes, 2018

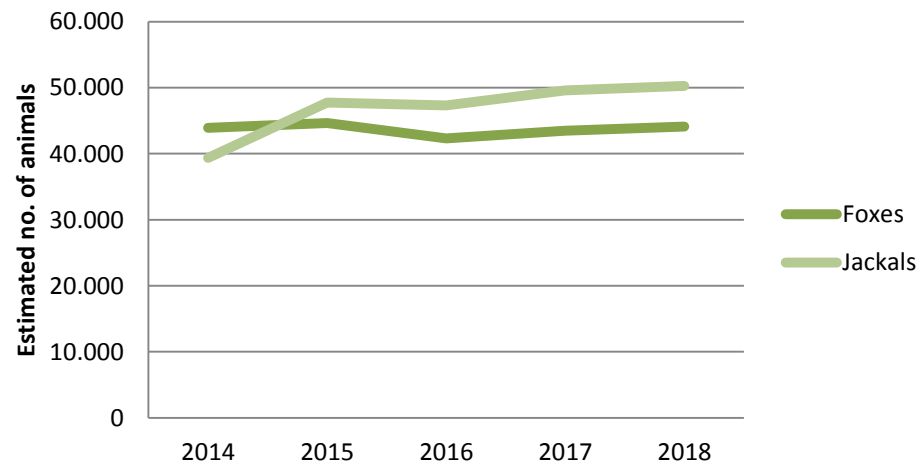


Jackals, 2018




Fox and Jackal Populations 2014-2018

Year	Foxes	Jackals
2014	43 912	39 365
2015	44628	47752
2016	42326	47294
2017	43476	49584
2018	44119	50266






Oral vaccination of foxes

 **Beginning of the programme – 2009** => currently part of the Multiannual National Programme for Animal Diseases and Zoonoses

 **2 campaigns per year – spring and autumn**

 **Aerial and manual distribution**

 **Vaccine used – Lysvulpen, Bioveta**

 **Bait density – 25 baits/sq. km**

 **Quality control of the batches**

Year	Vaccination campaigns	Regions	Size of territory (km ²)
2009	2 – spring and summer	18	55 037 km ²
2010	1 spring	19	55 995 km ²
2011	1 spring	19	55 995 km ²
2012	2 – spring and summer	20	59 500 km ²
2013	2 – spring and summer	20	59 500 km ²
2014	2 – spring and summer	22	79 119 km ²
2015	2 – spring and summer	16	54 716 km ²
2016	2 – spring and summer	16	54 716 km ²
2017	2 – spring and summer	16	54 716 km ²
2018	2 – spring and summer	23	57 019 km ²

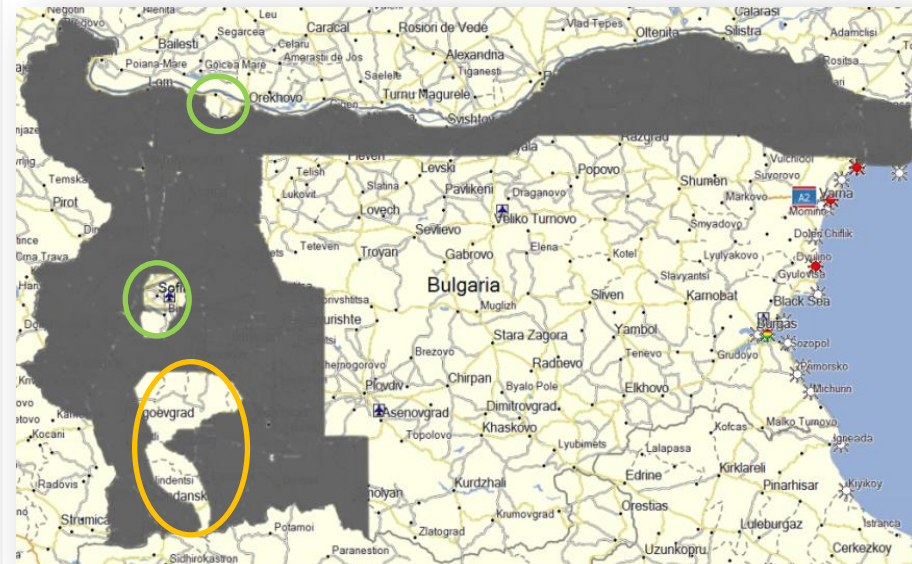




Oral vaccination of foxes

2015-2017

2018 =>

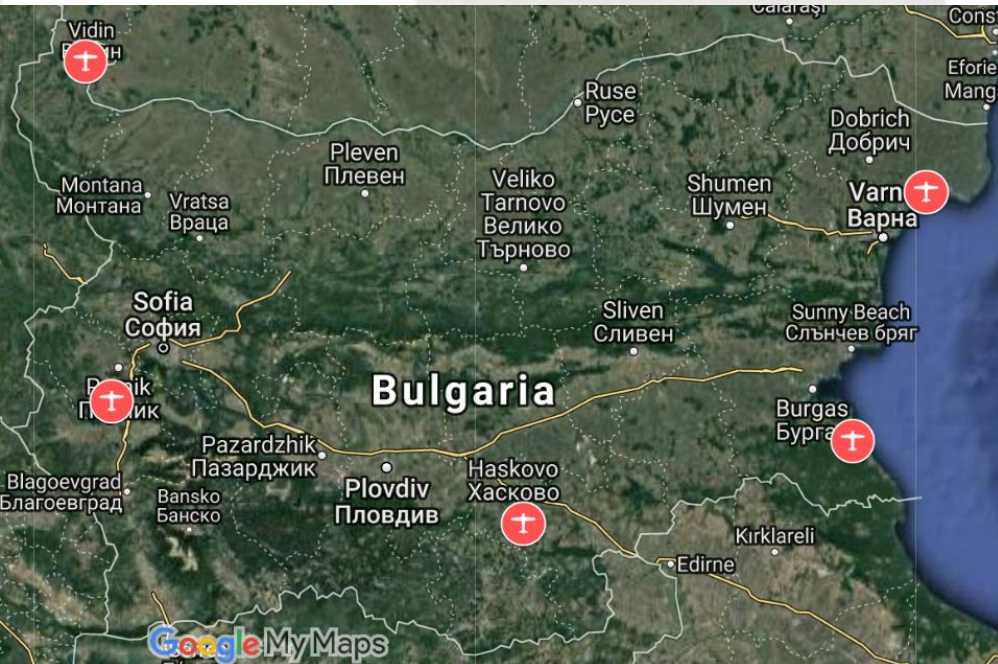


 *Manual distribution*

 *High-altitude areas not covered by vaccination*



Aerial Coverage – 2018 and following years



Airport	Regions covered
Balchik	Dobrich, Silistra, Montana (part), Shumen, Razgrad, Ruse (part), Pleven (part), Vratza (part), Sofia-district (part)
Primorsko	Smolyan (part), Kardzhali (part), Haskovo (part), Blagoevgrad (part), Pazardzhik (part), Yambol, Burgas, Plovdiv (part), Stara Zagora (part)
Erden (changed to Vidin since 2019)	Pernik, Vidin (part), Montana (part), V.Tarnovo (part), Pleven (part), Vratza (part)
Malevo	Smolyan (part), Kardzhali (part), Haskovo (part), Blagoevgrad (part), Pazardzhik (part), Plovdiv (part), Stara Zagora (part)
Kondofrey	Kyustendil, Vidin (part), Montana (part), Sofia-district (part), Pleven (part), Vratza (part)

- **2018** - Training of official vets on the daily control of the aerial vaccination



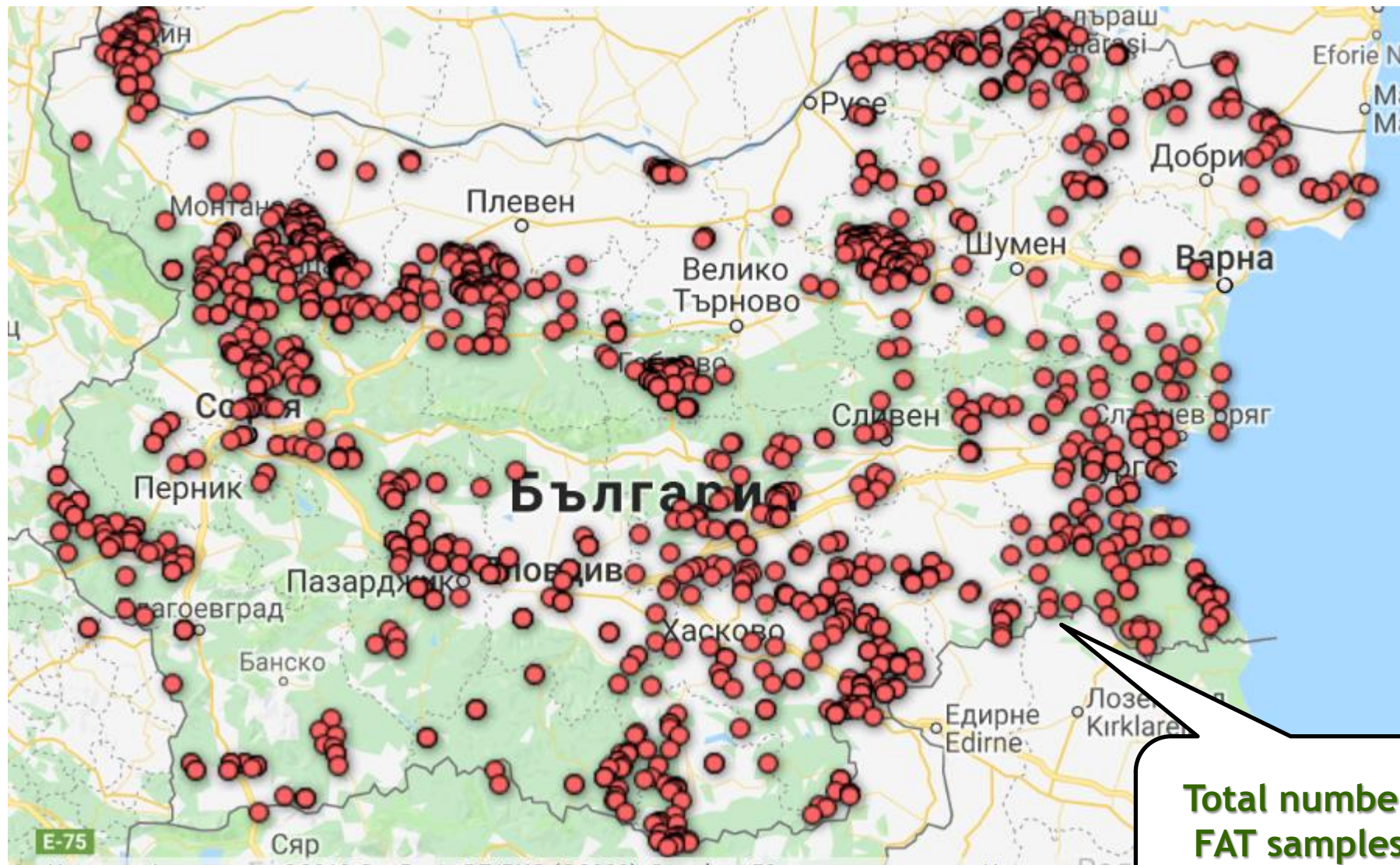
Oral vaccination of foxes - 2018

Aerial distribution					
No of regions	Campaign	No. of baits	Size of territory (km ²)	Type of distribution	Bait density (per km ²)
22	spring	1 425 475	57 050	aerial	24,98
	autumn	1 425 900	59 347		24,03
	Total	2 851 375	58 198,5	aerial	24,51

Manual distribution					
No of regions	Campaign	No. of baits	Size of territory (km ²)	Type of distribution	Bait density (per km ²)
2	spring	12 000	4 300	manual	2,79
	autumn	12 000	4 300		2,79
	Total	24 000	4 300	manual	2,79



Distribution of samples taken under active surveillance (FAT) – 2018

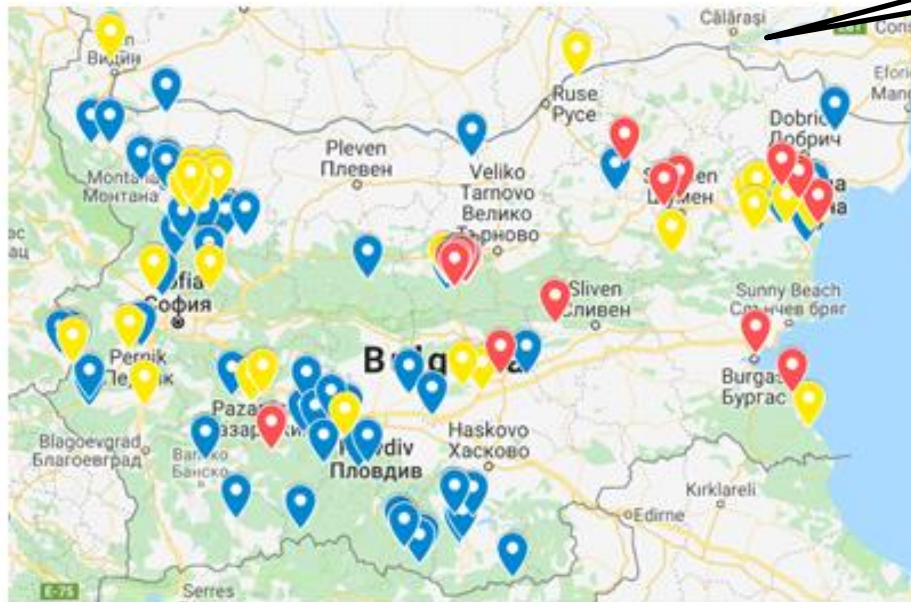


Total number of
FAT samples in
2018 - 2376



Distribution of samples taken under passive surveillance (FAT)

Total number of FAT samples in 2018 - 133



- Fox
- Jackals
- Other species

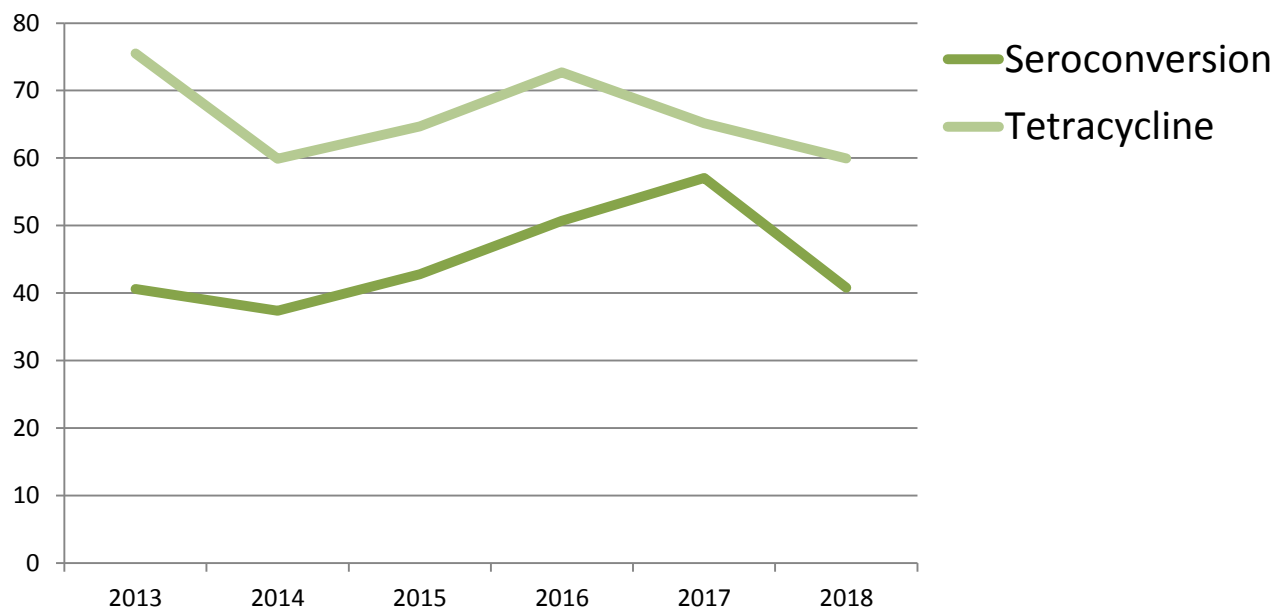
Passive surveillance samples in 2018

SUSPECT tested 2018 (no rabies cases)											FOUND DEAD AFTER ROAD ACCIDENT tested 2018 (no rabies cases)						FOUND DEAD tested 2018 (no rabies cases)					
Fox	Jackal	Wolf	Bat	Dormouse	Bovine	Sheep	Goat	Dog	Cat		Fox	Jackal	Marten	Otter	Badger	Dog	Cat	Fox	Jackal	Bat	Dog	Cat
0	0	1	1	1	1	0	0	3	2		28	14	1	1	2	21	2	31	15	0	7	2



Monitoring of vaccination effectiveness, foxes

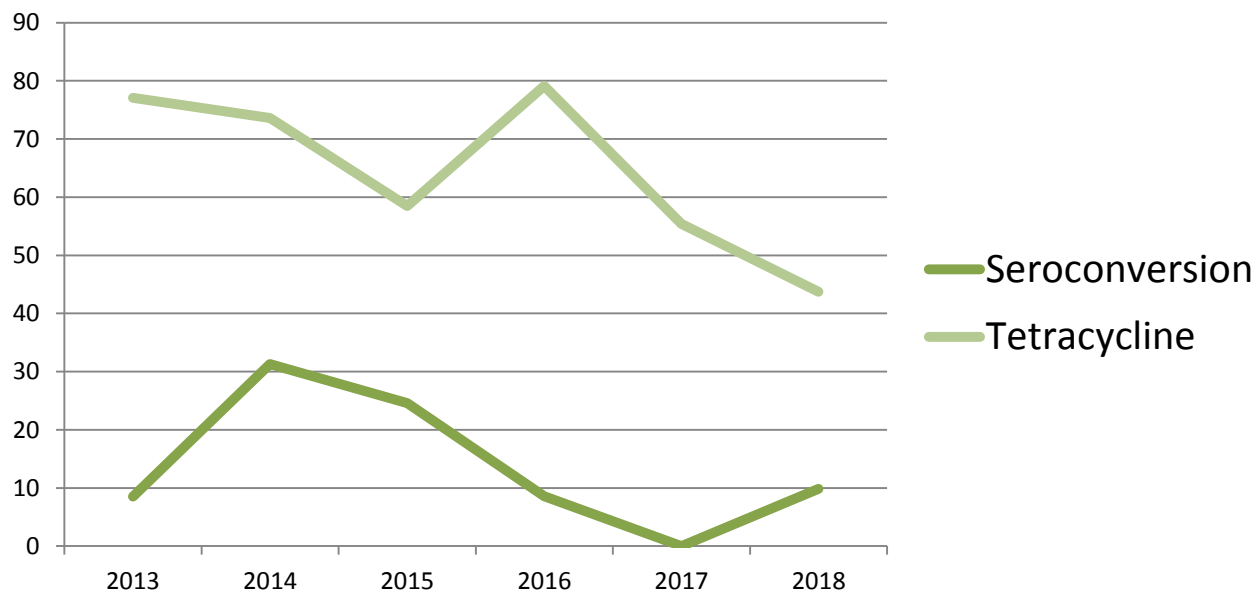
Bulgaria	Species	Serological tests				Tests for the presence of biomarker –Tetracycline (T)				IFT		
		Type of test	Number of tests	Seropositive	% seropositive	Type of test	Number of tests	Biomarker present	% marker presence	Type of test	Number of tests	Positive
2018	foxes	ELISA	485	198	40,82	T	903	507	56,12	IFT	863	0





Monitoring of vaccination effectiveness, jackals

Bulgaria	Species	Serological tests				Tests for the presence of biomarker –Tetracycline (T)				IFT		
		Type of test	Number of tests	Seropositive	% seropositive	Type of test	Number of tests	Biomarker present	% marker presence	Type of test	Number of tests	Positive
2018	jackals	ELISA	305	30	9,83	T	1065	466	43,75	IFT	1052	0





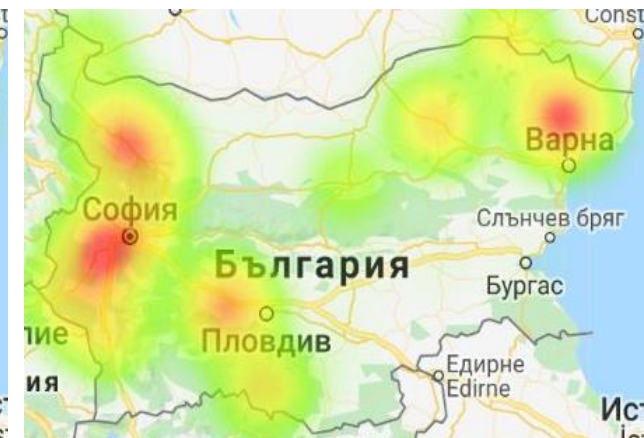
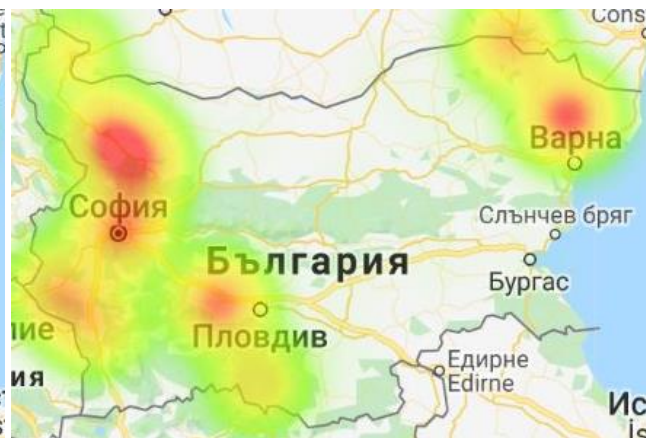
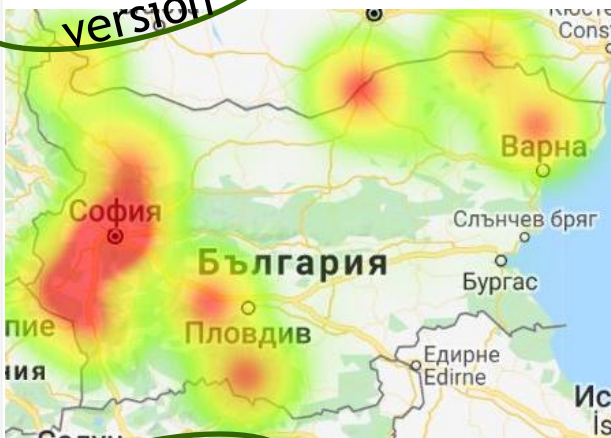
Indicative heat-maps of seroconversion and bait uptake rates in the country

2016

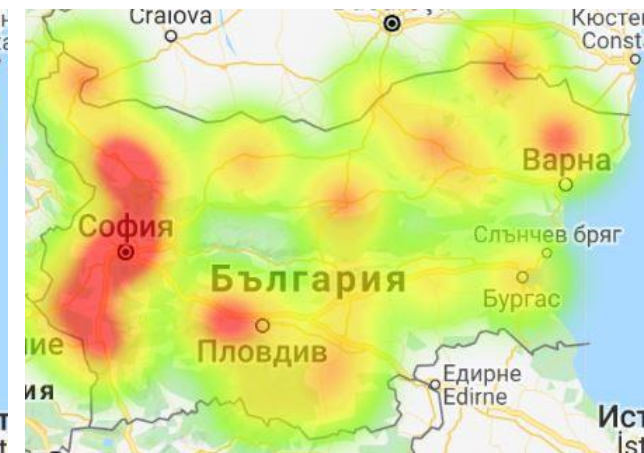
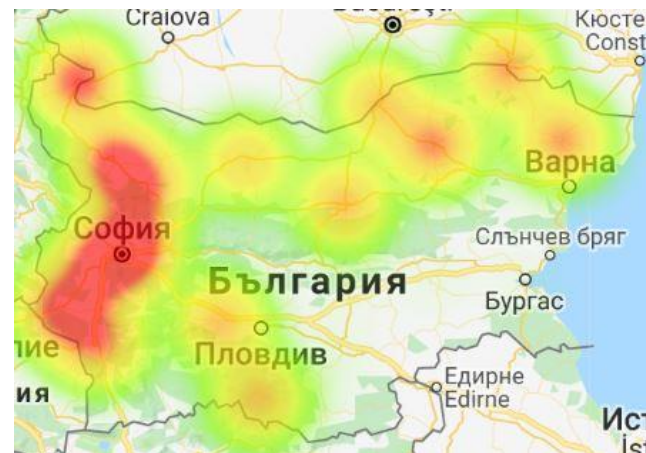
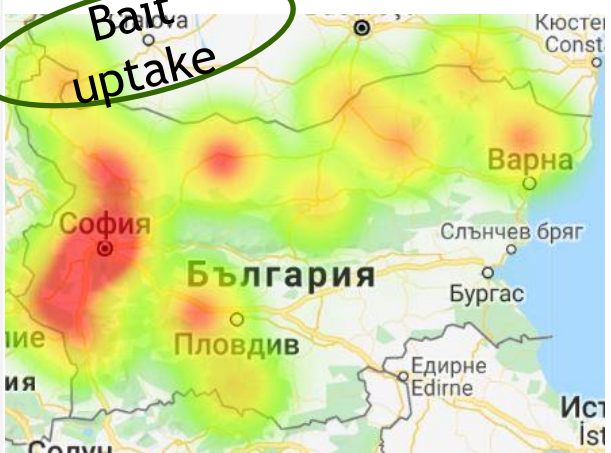
2017

2018

Serocon
version



Bait
uptake



**In foxes*

**Based on region, not sample location*



Thank you!

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