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Rabies surveillance and control in Europe

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- Vaccination areas
- Surveillance
- Monitoring
- Conclusion

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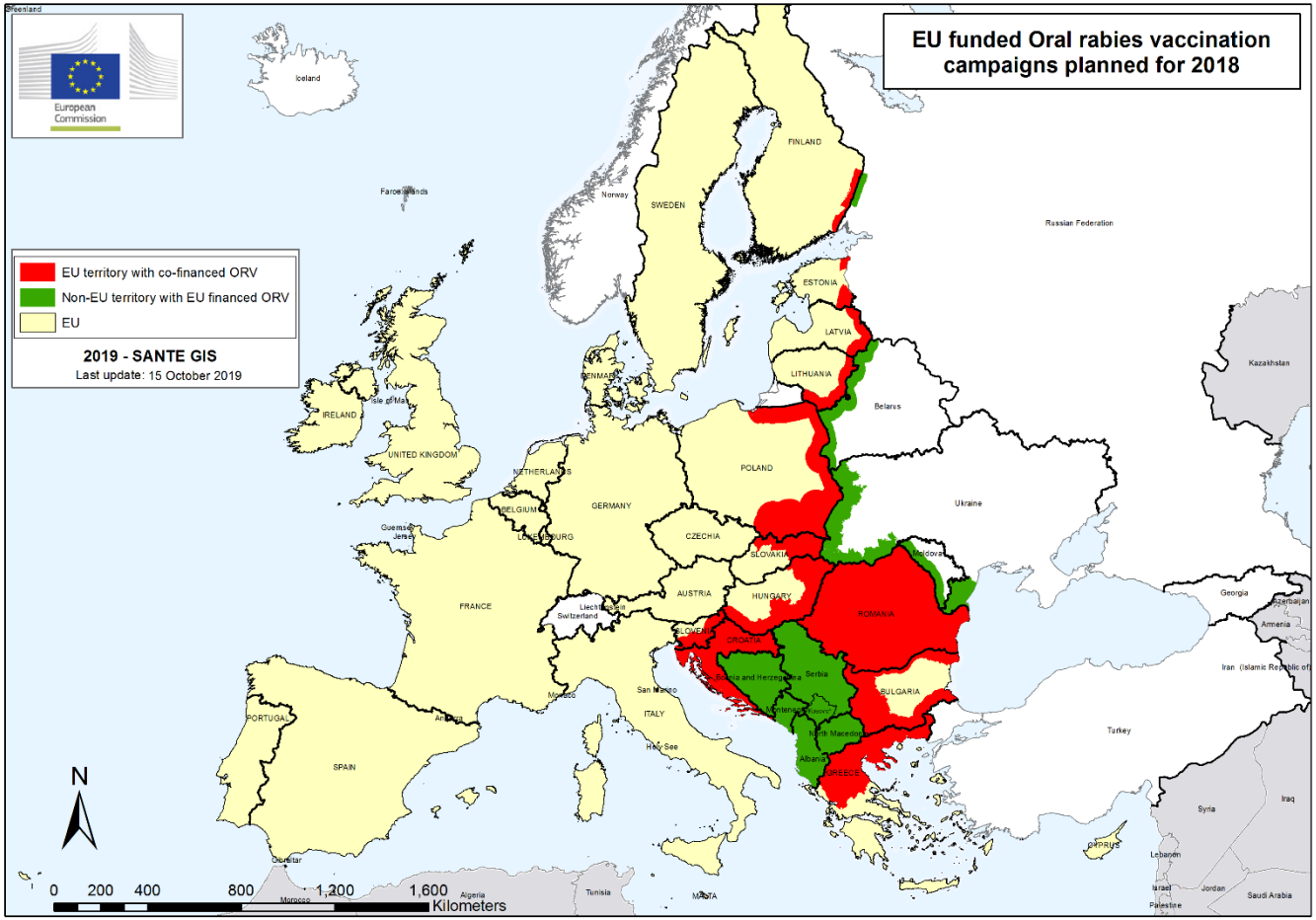

***This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence**

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Surveillance (passive surveillance)

- In suspect or indicator animals
- All over the country
- Should include wild-domestic animals
- No target sampling size

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Surveillance: Cases in MS

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Finland	0	0	0	0	0	0	0	0	0	0	0
Estonia	3	0	1	0	0	0	0	0	0	0	0
Latvia	69	16	1	2	0	0	0	0	0	0	0
Lithuania	63	33	14	5	1	0	2	0	0	1	0
Poland	6	145	156	254	196	98	92	16	2	4	1
Slovakia	0	0	0	0	7	0	5	0	0	0	0
Hungary	2	10	0	0	24	23	1	1	2	0	0
Romania	515	469	342	457	486	142	29	14	2	3	3
Bulgaria	58	6	1	1	0	2	0	0	0	0	0
Croatia	784	652	375	166	23	1	0	0	0	0	0
Greece	0	0	0	9	29	10	0	0	0	0	0
Italy	68	209	1	0	0	0	0	0	0	0	0
Slovenia	34	12	0	3	1	0	0	0	0	0	0
Total	1602	1552	891	897	767	276	128	31	6	8	4

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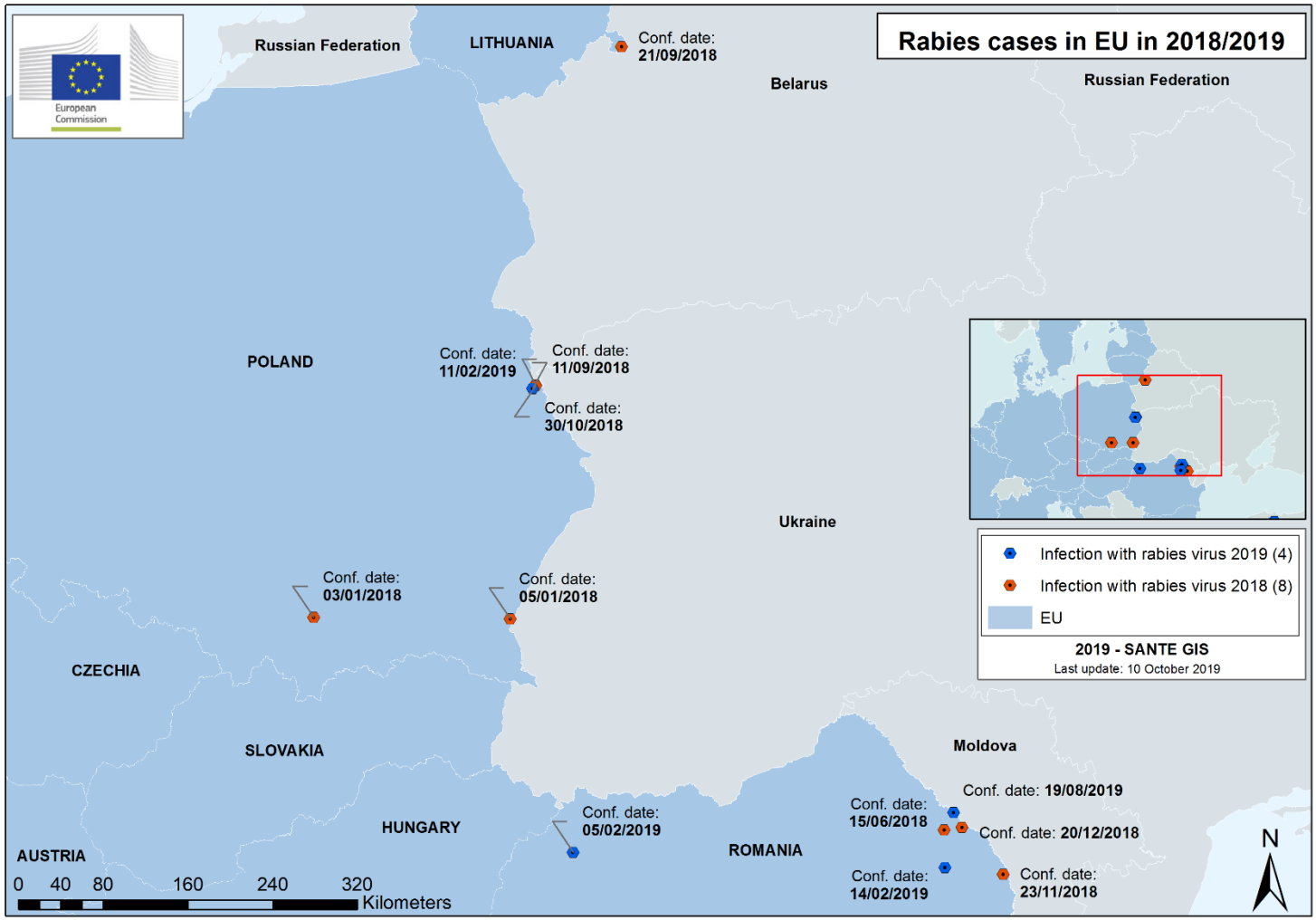
Cases in EU MS/2018-2019



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Surveillance

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Albania	1	0	0	3	0	1	0	0	0	0
BiH	25	18	27	13	6	1	0	0	0	0
Kosovo*	0	0	0	0	0	1	0	0	0	0
North Macedonia	0	0	6	3	0	0	0	0	0	0
Montenegro	49	69	16	1	0	0	0	0	0	0
Serbia	181	104	46	19	5	3	3	4	1	1
Turkey	64	167	300	496	560	714	563	419	485	339
Ukraine	1281	1864	1429	1995	1515	1084	1442	1350	1647	1914
Moldova	60	125	62	184	112	138	169	41	58	78

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Surveillance

- Monitoring-Active surveillance
  - **In hunted animals**
  - **In the vaccination area**
  - **Target Sampling size: 4 animals/100km^2 of vaccination area**

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Monitoring: Sampling patterns for 4 foxes / 100 km²
can be very different:

Example: target 100 foxes (2500 km²)

				20
2				
12	10			
6	32	1	8	9

4	4	4	5	3
4	5	4	4	4
3	4	3	5	4
4	4	5	2	5
5	4	4	4	4

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Tetracycline vs. serology? Fictive example

National data:

86% TC +

47% Ab+

Looks quite OK
(Assuming a representative sample distribution)

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Tetracycline vs. serology in the same animals and area

86% **TC +**

4 +++ +	4 +++	4 +++	5 +++ +	3 +++
4 +++	5 +++ +	4 +++	4 +++	4 +++
3 +++	4 +++ +	3 +++	5 +++ ++	4 +++
4 +++ +	4 +++	5 +++ +	2 ++	5 +++
5 +++ +	4 +++ +	4 +++ +	4 +++	4 +++ +

Monitoring samples are evenly distributed over the area.
The proportion of TC+ foxes is high and evenly distributed.

This indicates that the vaccine baits have reached the fox population in the whole target area

= satisfactory distribution

But remember that TC+ remains in the body so these results could be evidence from previous campaigns

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Tetracycline vs. serology
How should the test results be used?

47% **Ab+**

4 +++ +	4 +++	4	5	3
4 +++	5 +++	4	4	4
3 ++	4 +++	3 +++	5	4
4 +++	4 +++	5 +++	2	5
5 +++ +	4 +++ +	4 +++ +	4 +++	4 ++

Most of these animals had been in contact with baits (previous slide)

Uneven serology results, despite TC+, could indicate problems with:

- **vaccine quality in this area - vaccine inside bait not working;**
- **age distribution of foxes - old, with TC+ from earlier campaigns -> recent vaccine distribution may not have been good after all;**
- **Laboratory results - lab for this area with many false negatives.**

=> Further investigation is needed!

As rabies eradication is in sight, it is becoming more complex to keep adequate levels of surveillance and monitoring

- However, they are needed to
  - **Substantiate disease freedom**
  - **Assess effectiveness of vaccination**
  - **Detect early re-incursions**
  - **Support eventual phase out of vaccination**

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Many thanks

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