



Ministry of Agriculture

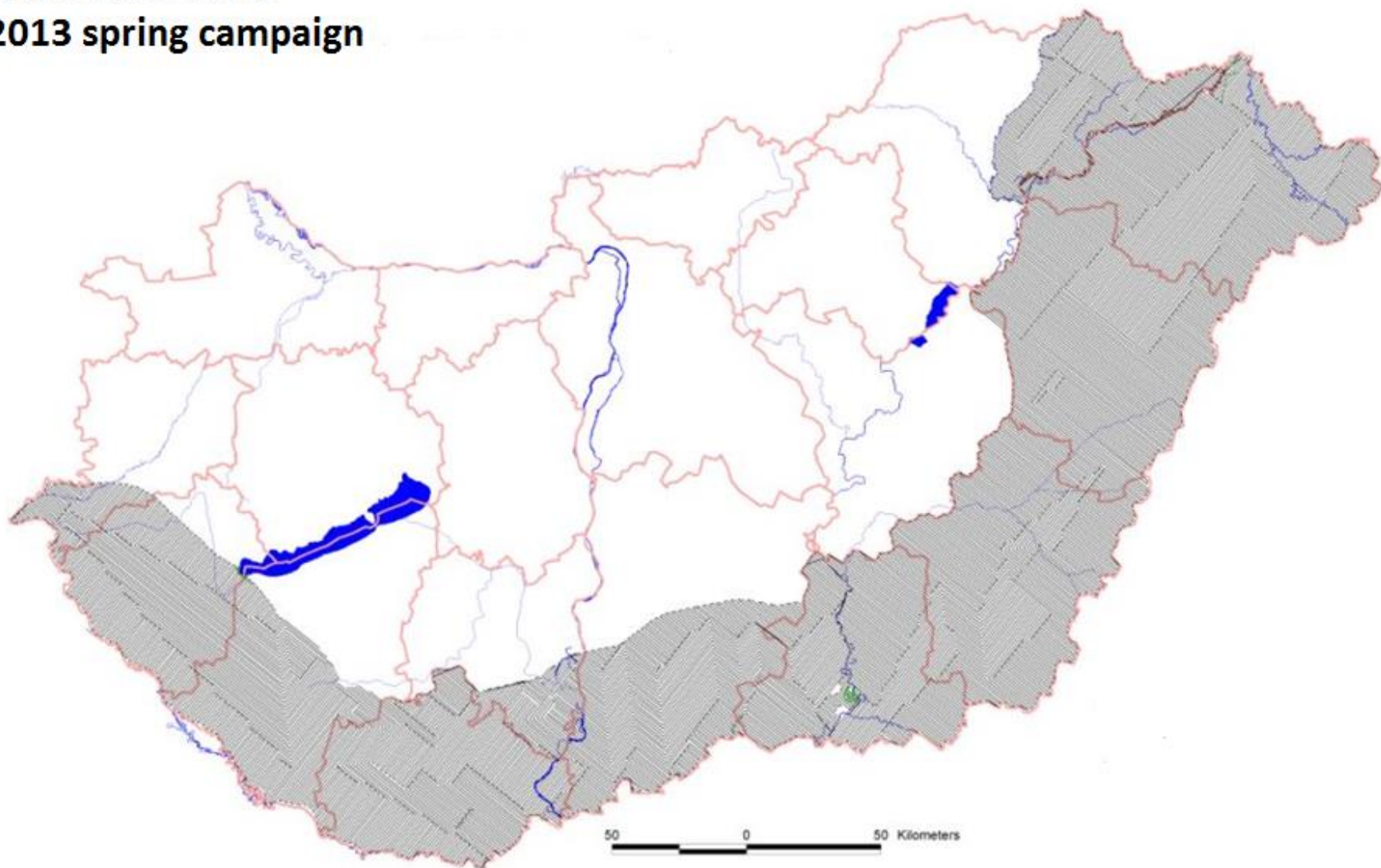
**RABIES CO-FINANCED ERADICATION
PROGRAMME IN HUNGARY 2014**

SCOPAFF 9.9.2015.

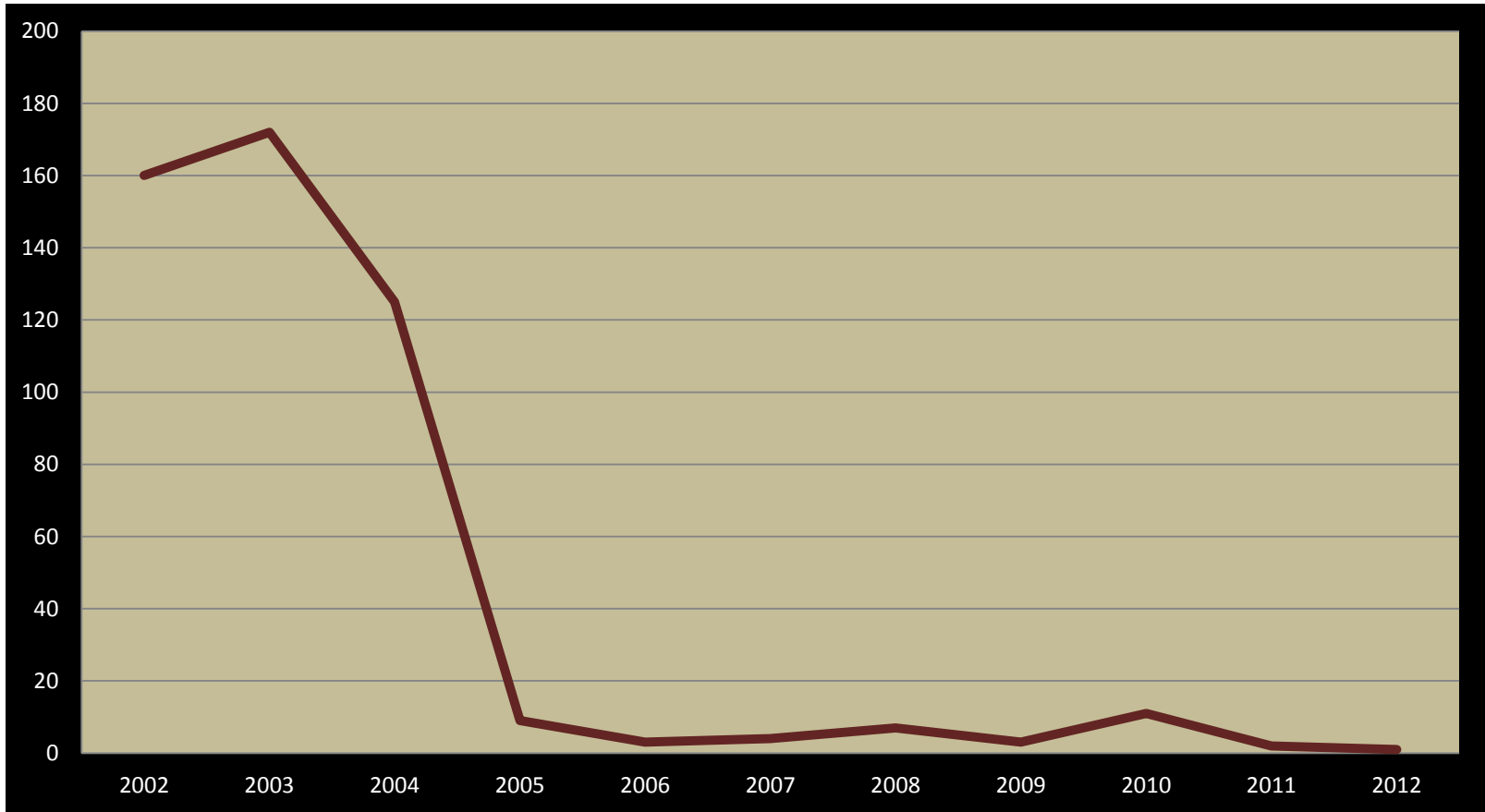
History of rabies in Hungary

- 1930's: Hungary became free from *urbanic* rabies
 - *Sylvatic* rabies was introduced into Hungary from the North in 1954; by the end of 1971 the whole country became infected.
 - 1992: oral vaccination of red foxes started in Western Hungary
 - 1996 – 2000: Transdanubia was covered by vaccination. As a result, rabies disappeared from Transdanubia by the end of 2000.
 - From 2001 the territory between the river “Duna” (Danube) and the river “Tisza” had been involved in the immunization campaigns.
 - 2004, 2005 and 2006: bait distribution in the whole territory of Hungary.
 - Since 2007 the rabies eradication, control and monitoring programme is approved and co-financed by the Community.
 - Since 2008, due to successful vaccination programmes in Austria and Slovakia, distribution has only been carried out in the 50 km wide border zone of Hungary from Slovenia to Ukraine.
-

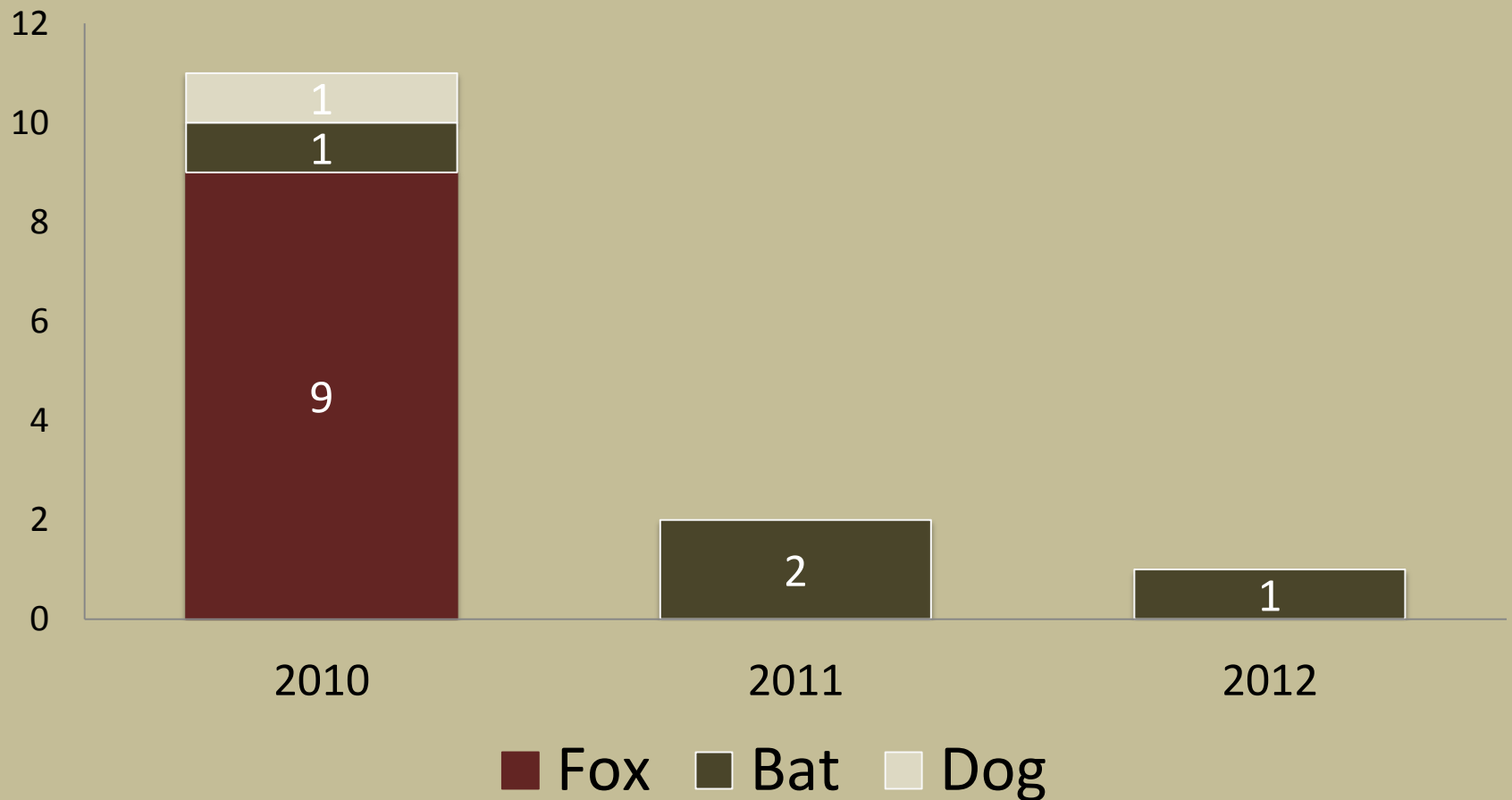
**Vaccination area
2013 spring campaign**



Rabies cases in Hungary 2002-2012



Rabies cases in Hungary 2010-2012



Outbreak - autumn 2013

- 2011 and 2012: only in bats (EBLV)
 - 12.09.2013. rabies was confirmed in a red fox in Bács-Kiskun county
 - The case occurred outside of the vaccinated area
 - 24 cases in 2013 (Oct-Dec)
 - 23 cases in 2014 (Jan-Oct)
 - Last case: 07/10/2014
 - NO outbreaks in 2015
-



Ministry of Agriculture

Summary of cases 2013-2014

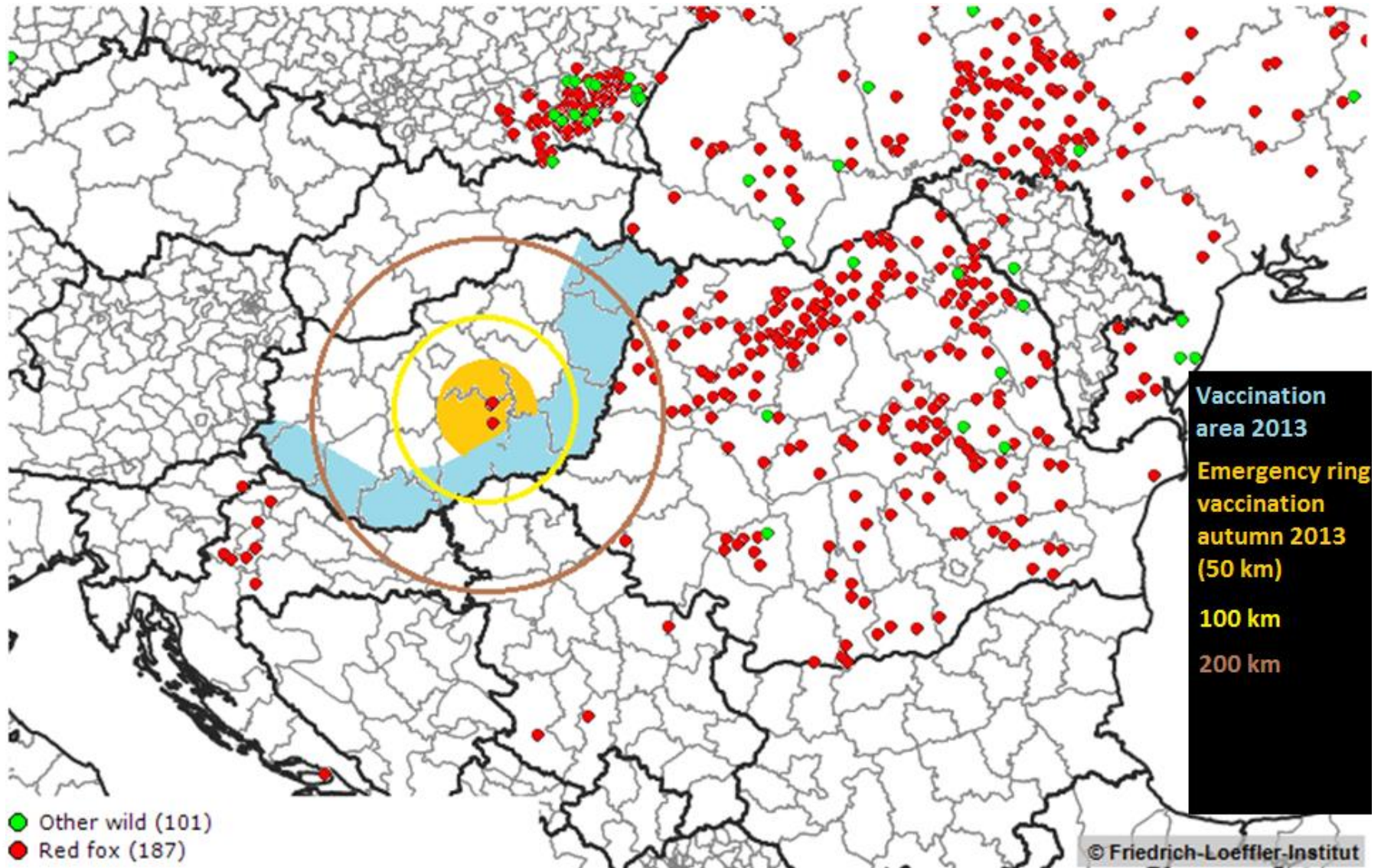
Year	County	Red fox	Roe deer	Cattle	Goat	Dog	Total county	Total Hungary
2013	Bács	16		1			17	24
	Jász	3					3	
	Pest	3		1			4	
2014	Bács	7	1				8	23
	Jász	1					1	
	Pest	12			1	1	14	

Outbreak - 2013/2014

Measures according to national legislation:

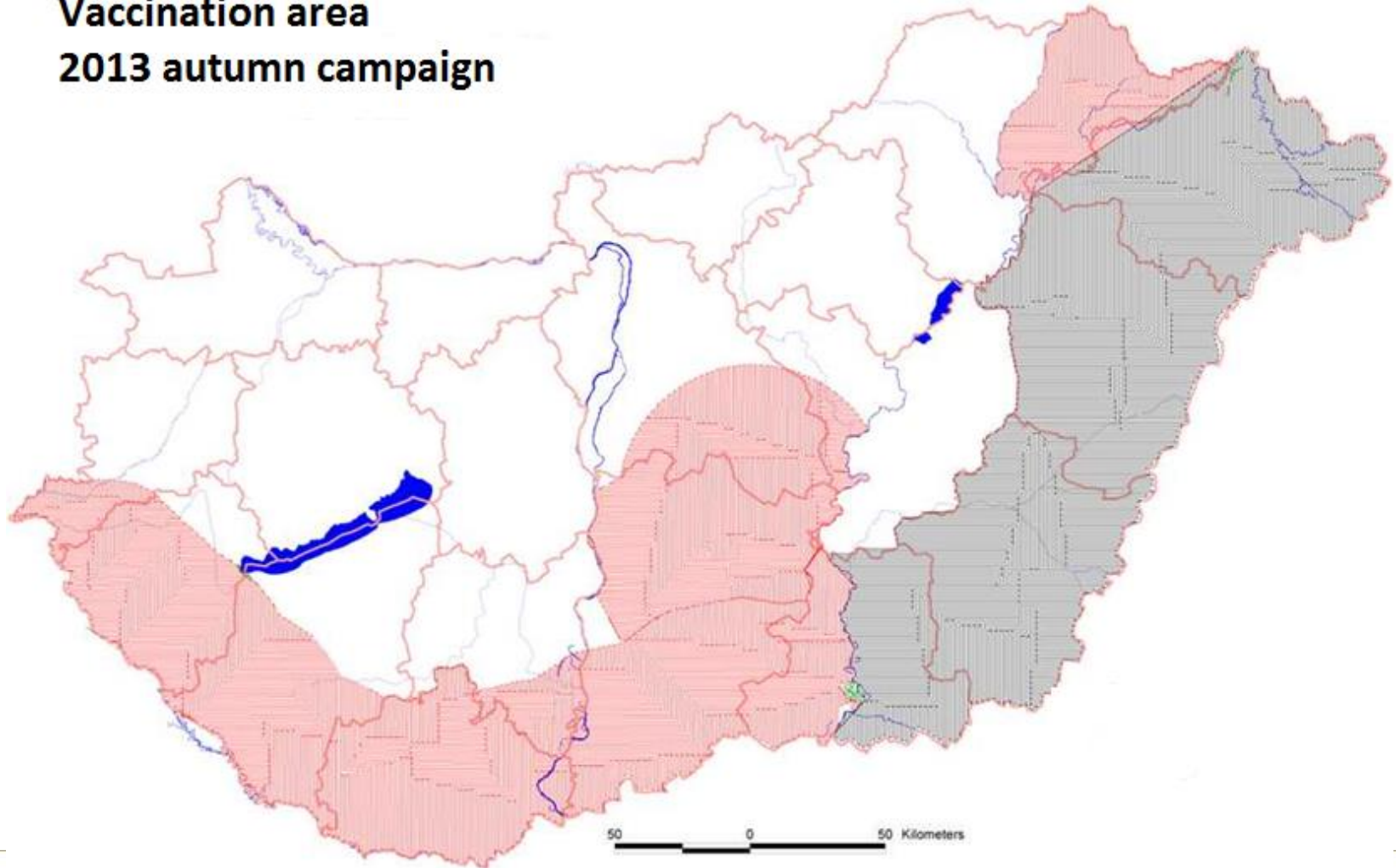
- Ban on animal movement in infected holdings
 - Culling (and compensation) of animals showing clinical signs
 - Preventive vaccination of cats and farm animals
 - Official surveillance for 90 days on affected holdings
 - Ban on grazing was ordered
 - Movement restriction of carnivores in infected city/village
 - Raising public and veterinary awareness
 - Increased number of samples (red foxes) in 2013 - enhanced surveillance to identify geographical spread of the disease
 - Emergency vaccination was implemented during the 2013 autumn campaign in a 50 km radius -circle around the first outbreak
 - Extension of vaccinated area from spring 2014 with double bait density in the infected area
-

The virus shows genetic relationship with rabies virus strains from Romania and Ukraine



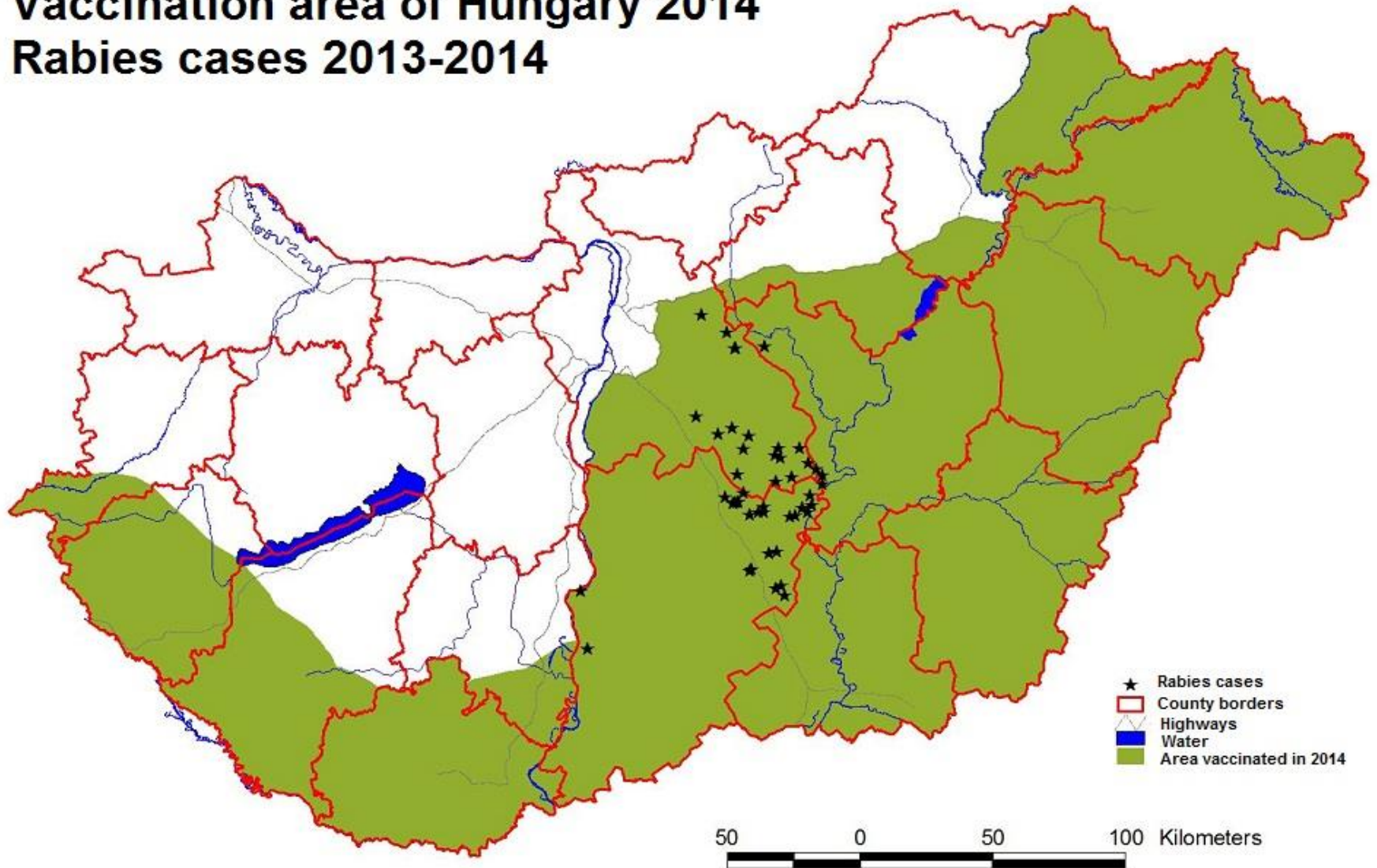
Area vaccinated in autumn 2013

**Vaccination area
2013 autumn campaign**



Vaccination area of Hungary 2014

Rabies cases 2013-2014



Oral immunisation programme

- Target species: **Red fox** (*Vulpes vulpes*) (golden jackal, badger – not significant)
 - 2014: Annual programme
 - 2 vaccination campaigns: spring (April)/autumn (October)
 - Vaccinated area: specified part of the country
 - Vaccine type: Lysvulpen
 - Distribution: aerial + manual
 - Implementation of sampling: hunters (hunting organisations)
 - Hunting period: 30 - 100 days after vaccination campaign
 - Control of efficiency of vaccination (serology, biomarker -TC)
 - Rabies surveillance (immunofluorescent test)
-

Distribution of vaccine baits

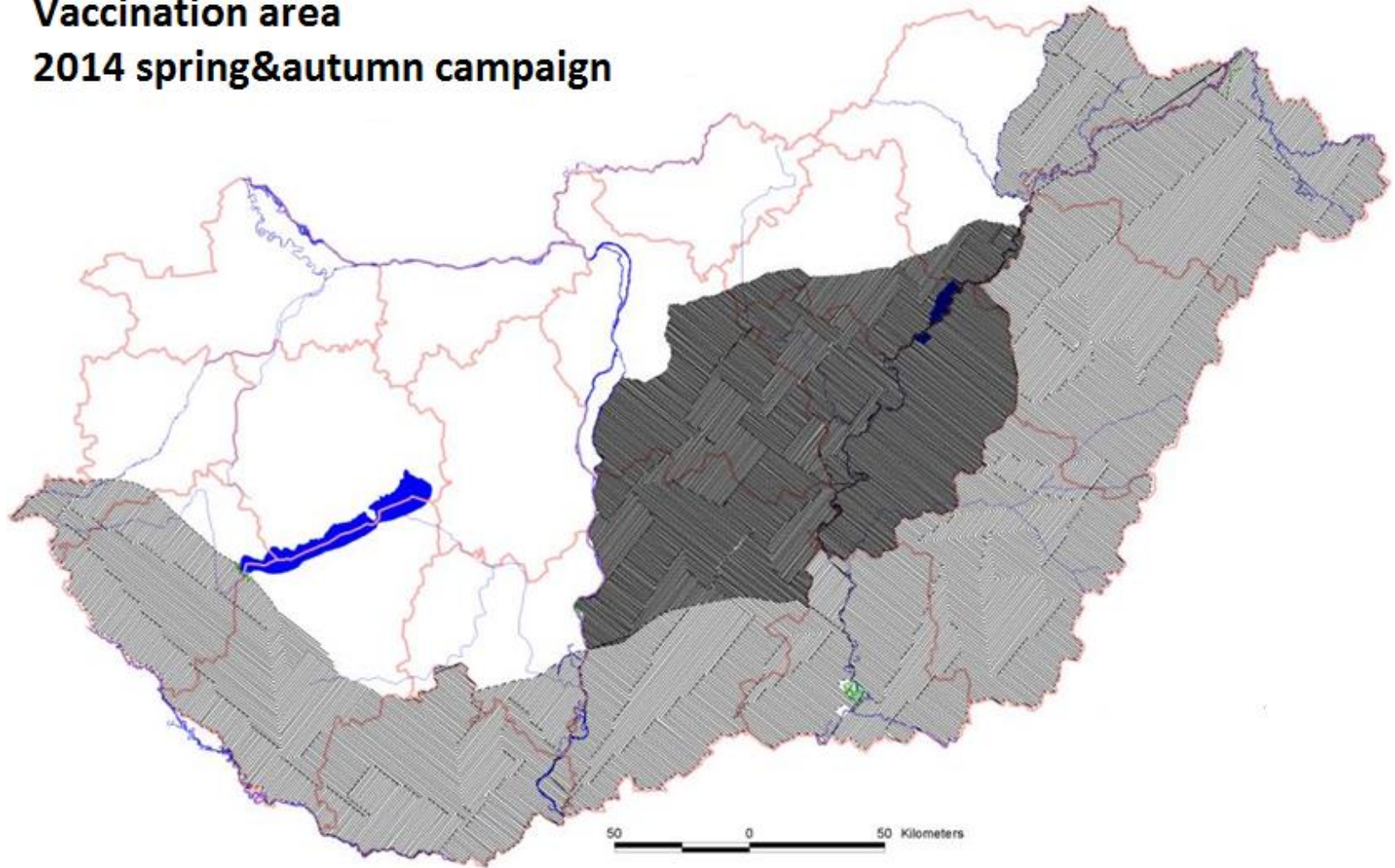
- Lysvulpen® vaccine (Bioveta)
 - 98% aerial distribution (airplanes):
 - GPS system, flying lines & dropping of baits recorded by computer
 - Distance between flight lines: 1000 m
 - Flying speed: 100-120 km/h
 - Density: 20 baits/km²
 - Flying lines rotated with 90° in the next campaign
 - 2% manually:
 - Where flying is not allowed or more targeted distribution needed (oil and power plants and railway transfer zones)
 - Carried out by qualified wild life biologists
 - GPS planning and recording
-

Activities in 2014- Distribution of baits

	Area covered by vaccination (km ²)	Flight distance/ bait density	Number of baits distributed	Number of campaigns	Total number of baits distributed
Regular vaccination	41 045	1000 m/ 20 baits/km ²	820 900	2	1 641 800
New vaccinated area	15 859	500 m/ 40 baits/km ²	634 360	2	1 268 720
Total:	56 904				2 910 520

Area vaccinated in 2014

**Vaccination area
2014 spring&autumn campaign**



Activities in 2014-Distribution of baits



Activities in 2014-Distribution of baits



Activities in 2014- Control of vaccination efficiency

Laboratory background:

National Food Chain Safety Office/

Veterinary Diagnostic Directorate/

Budapest (National Reference Laboratory)

Debrecen (regional laboratory)

Kaposvár (regional laboratory)

Monitoring on efficiency of the oral immunization

- biomarker tetracycline test (bone polishing of the mandible) - test for bait uptake
- serological test (ELISA)
- direct immunfluorescence of brain imprints (FAT)

Titration of vaccine baits

National Food Chain Safety Office/Veterinary Medicinal Products Directorate

Results 2014

Type of test	Type of sample	Number of tests performed	Number of positive samples
Virological test Immunfluorescence test (FAT)	Brain (red fox)	2521	1 (0,04%)
Bone polishing (Tetracycline detection)	Mandible (red fox)	2510	1744 (69%)
Serological test AB-ELISA	Blood (red fox)	2085	733 (35%)
Virological test Immunfluorescence test (FAT)	Brain (all species)	2199	22 (1%)

Age distribution: bait-uptake

Tetracycline, fox	Nr of samples	Positive	%
Under 1 year	1202	590	49,08
1 year	561	459	81,82
2 years	415	379	91,33
3 years or older	301	288	95,68
Adult	13	12	92,31
Undetermined	18	16	88,89
Total	2510	1744	69,48

Age distribution: seroconversion

ELISA, fox	Nr of samples	Positive	%
Under 1 year	1032	274	26,55
1 year	431	164	38,05
2 years	346	156	45,09
3 years or older	233	128	54,94
Adult	13	5	38,46
Undetermined	30	6	20,00
Total	2085	733	35,16

Improvement

	2012	2013	2014	2015 (ongoing)
Bait uptake	72,18	70,97 %	69,48 %	47%
Seroconversion	38,80 %	24,77 %	35,16 %	52%
Cases	0 (1 bat)	24	23	0

Financial contribution

- 2013/722/EU (29 November 2013)
 - Amended by 2014/925/EU (18 December 2014)
 - The financial contribution by the Union for the oral immunisation programme of red foxes implemented in Hungary in 2014 shall not exceed 1 970 000 €
 - Total cost of the programme: 2 136 339 €
 - Costs eligible for co-financing: 1 585 419 €
-

	Nr.	Avg. cost	Unit cost	Ceiling	Total cost (actual)	EU contribution (uc/cg, 75%)
Sampling	2234	23,38 €	-	13,33 €	52 226 €	22 334 €
Serological tests	2085	-	15,24 €	-	31 775 €	23 832 €
Biomarker (TC)	2510	3,76 €	-	10,0 €	9 447 €	7 085 €
Fluoresc. ab tests (all)	4720	-	13,09 €	-	61 785 €	46 339 €
Vaccine - titration	10	78,36 €	-	100,0 €	784 €	588 €
Vaccine - purchase	2 910 520	0,26 €	-	0,80 €	757 301 €	567 976 €
Vaccine - distribution	2 906 333	0,42 €	-	0,47 €	1 223 021 €	917 266 €
TOTAL					2 136 339 €	1 585 419 €

Vaccination Programme in Third Country

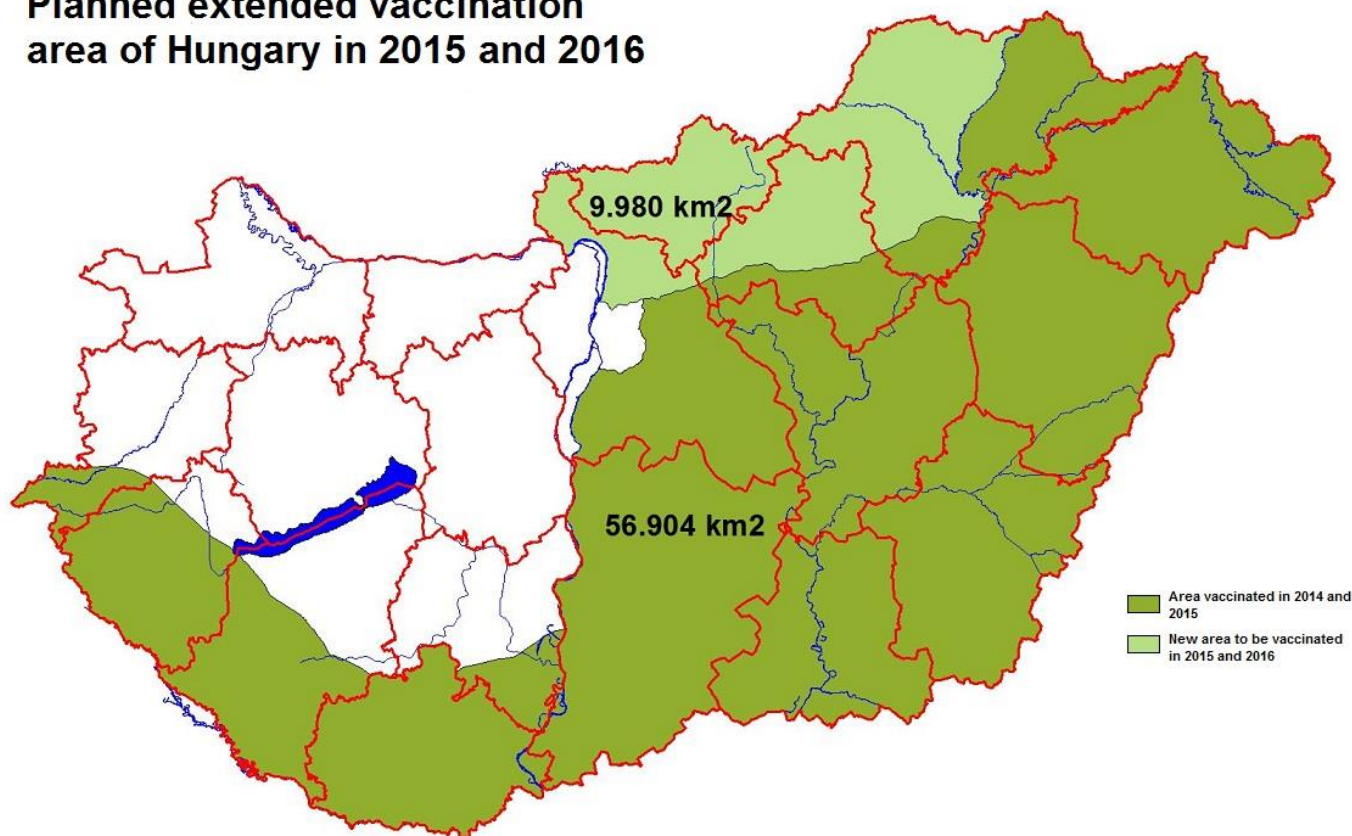
- Ukraine – no vaccination performed in 2014
- Agreement signed for 2015



Current situation

- No outbreaks in 2015
- Vaccination is extended

**Planned extended vaccination
area of Hungary in 2015 and 2016**





Ministry of Agriculture

Thank you for your attention!

