

Epidemiologija, eradikacija i kontrola besnila u EU – primer Slovenije

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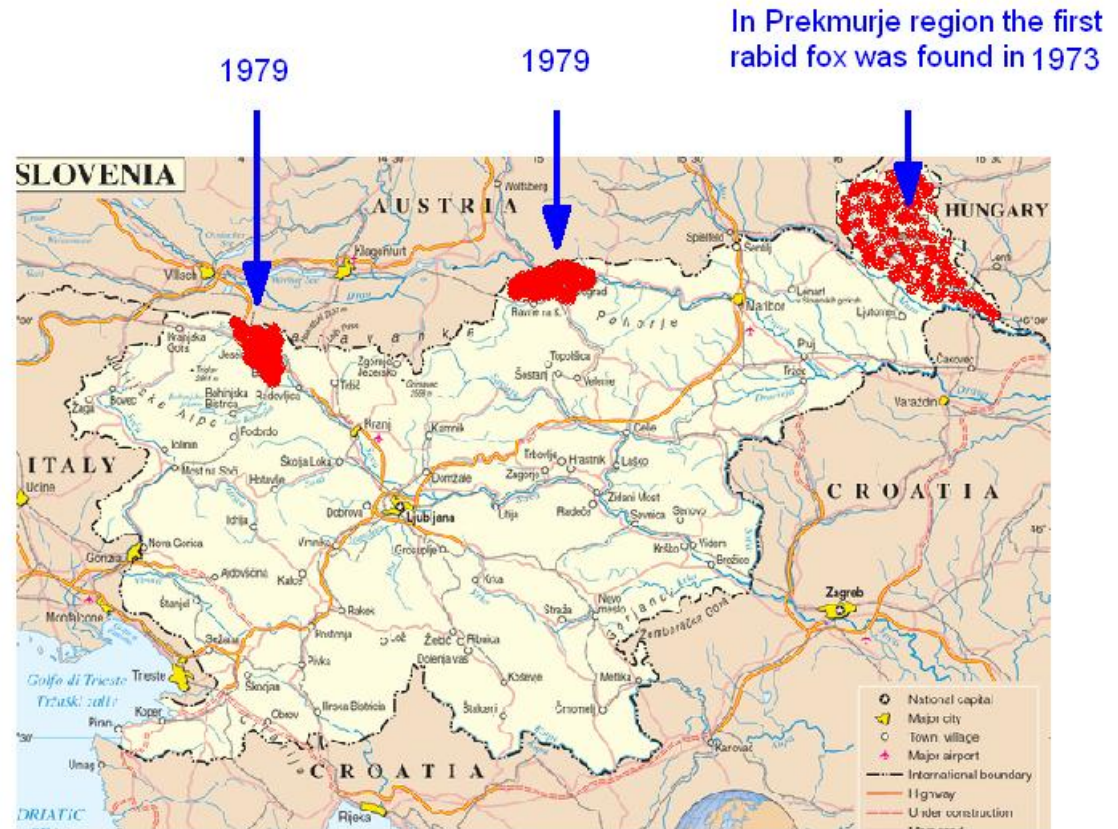
Beograd, 23. – 24. marta 2011.

Hotel Kontinental, Vladimira Popovića 10

Oralna vakcinacija lisica i drugih divljih mesojeda protiv besnila u Srbiji - epidemiologija, nadzor i monitoring

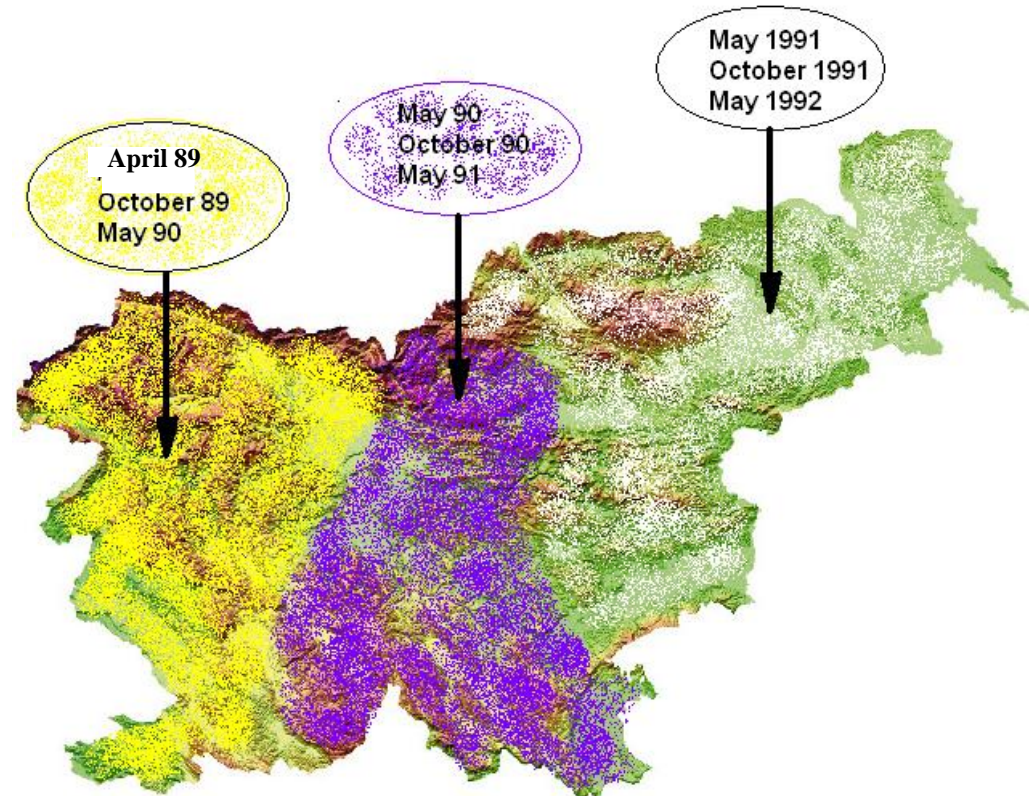
Rabies in Slovenia– sylvatic form

- first rabies case in fox was found in 1973 in Prekmurje
- second wave of rabies come from Austria in 1979
- fox (*Vulpes vulpes*) is main vector of rabies



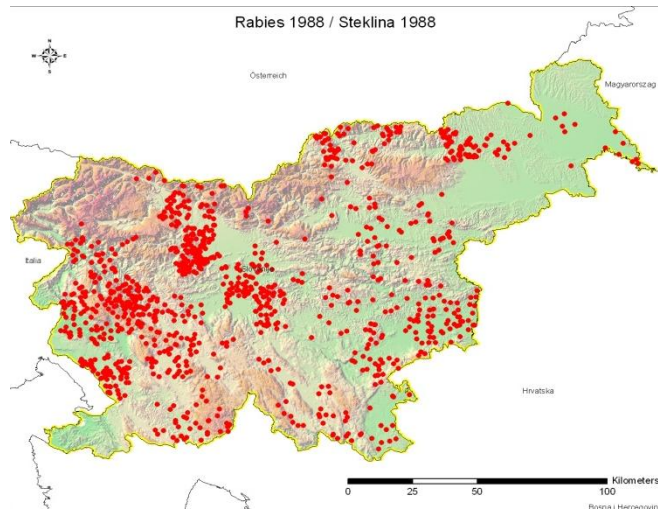
Rabies eradication program – trial period from 1988 - 1992

- Baits were distributed by hunters in first three campaigns
- Manual distribution: no GPS was used
- Vaccination area was spread step by step
- Each area was vaccinated 3 times
- 16 to 20 baits km²

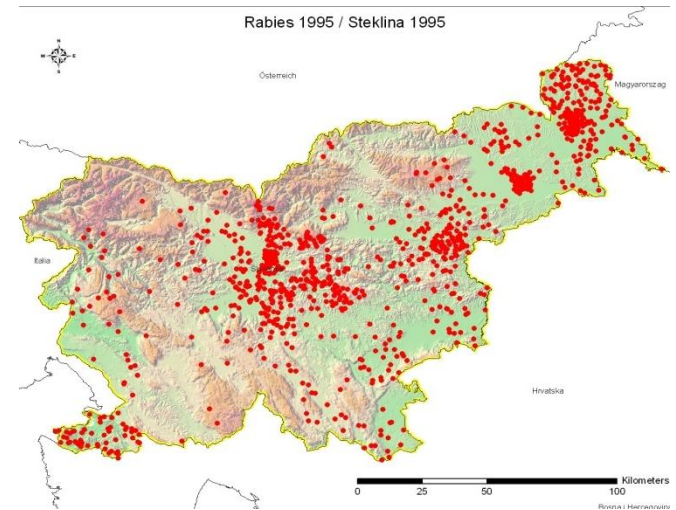


Characteristics of vaccination campaigns from 1988 - 1992

- Vaccination area was too small (3.000 – 8.000 km²/campaign)
- Difficulties with financing
- New rabies focuses in vaccinated areas
- Manual distribution - the control over manual distribution of baits by hunters was not possible
- Density of baits (16 – 20 baits/km²) was too low



Rabies positive: 1.067



Rabies positive: 1.089

Aerial distribution of baits since 1995

- **Two campaigns per year since 1995**
 - ✓ **Spring (end of May, June)**
 - ✓ **Autumn (October, November)**
- **Aircrafts are equipped by GPS and computer for storing of data**
- **Position of dropped baits are recorded (x, y coordinates)**
- **Distribution data is checked daily by Veterinary administration**
- **Fuchsoral vaccine has been used (previous also Lysvulpen)**
- **Density: 20 – 26 baits/km²**



Characteristics of vaccination campaigns from 1995 - 2011

From 1995 – 2000: all territory of county was vaccinated (Lysvulpen® and Fuchsoral®)

2000 – 2008: only south part of country was vaccinated

Since 2009 all territory , only Fuchsoral®

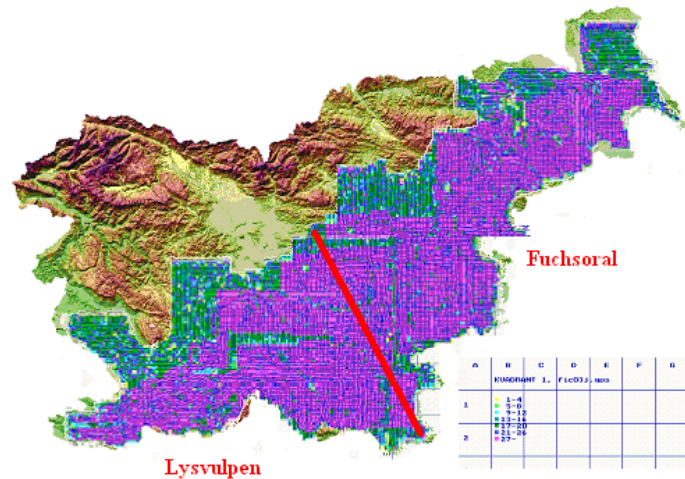


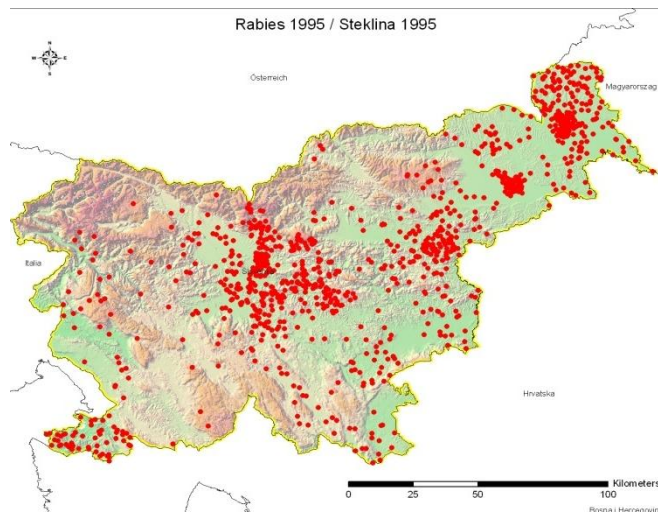
Fig1: Vaccination area from 2000 - 20008

Results of vaccinations

1995

Tested: 3787

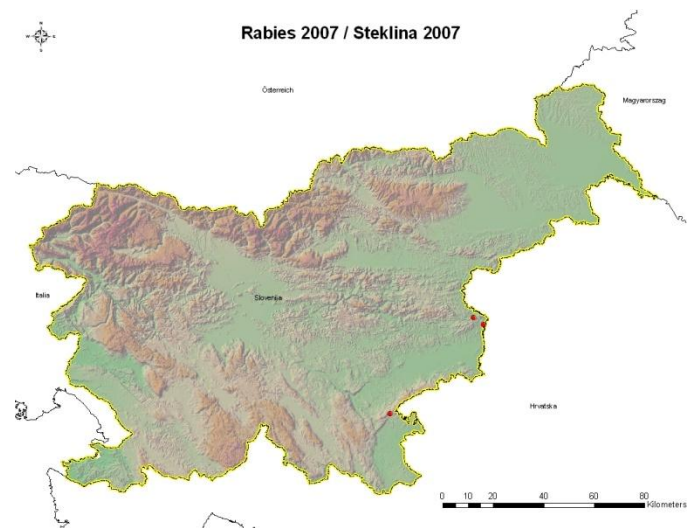
Rabies positive: 1089



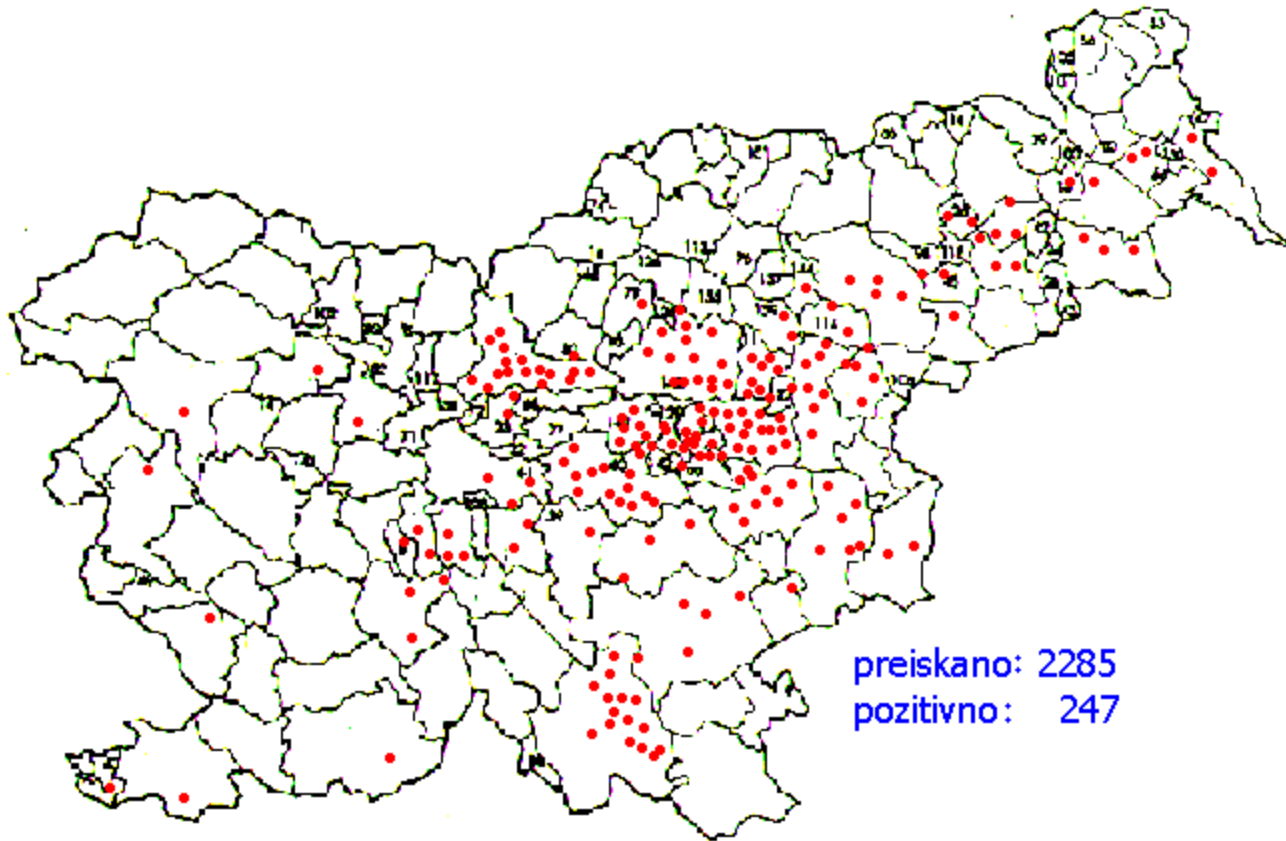
2007

Tested: 2075

Rabies positive: 3



Rabies in 1996



Rabies in 1997



preiskano: 1267
pozitivno: 29

Rabies in 1998



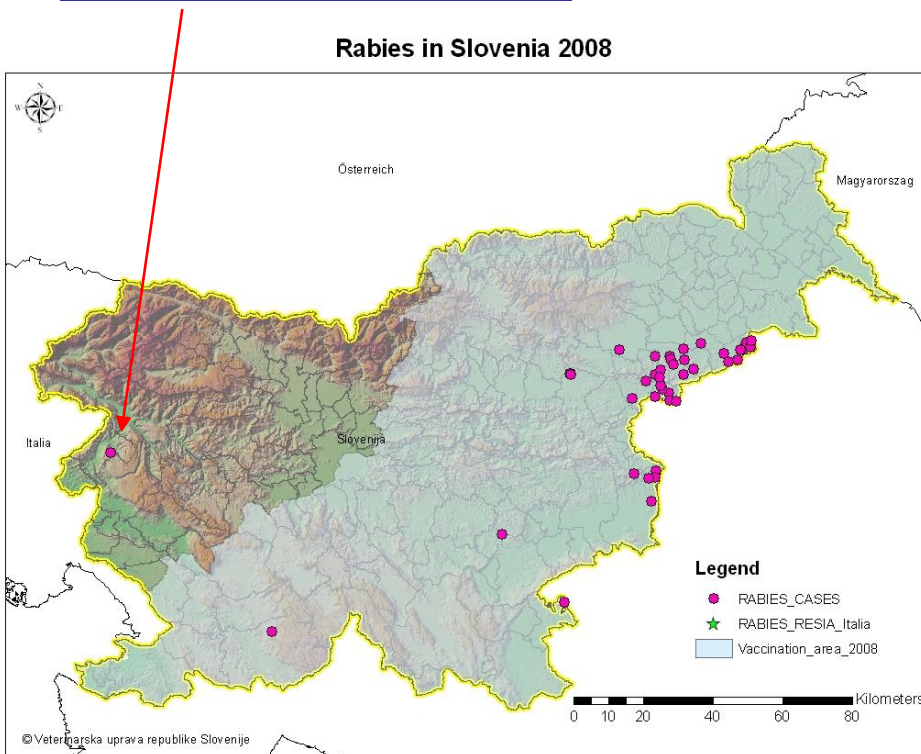
Rabies in 1999



Characteristics of vaccination campaigns from 2001 - 2009

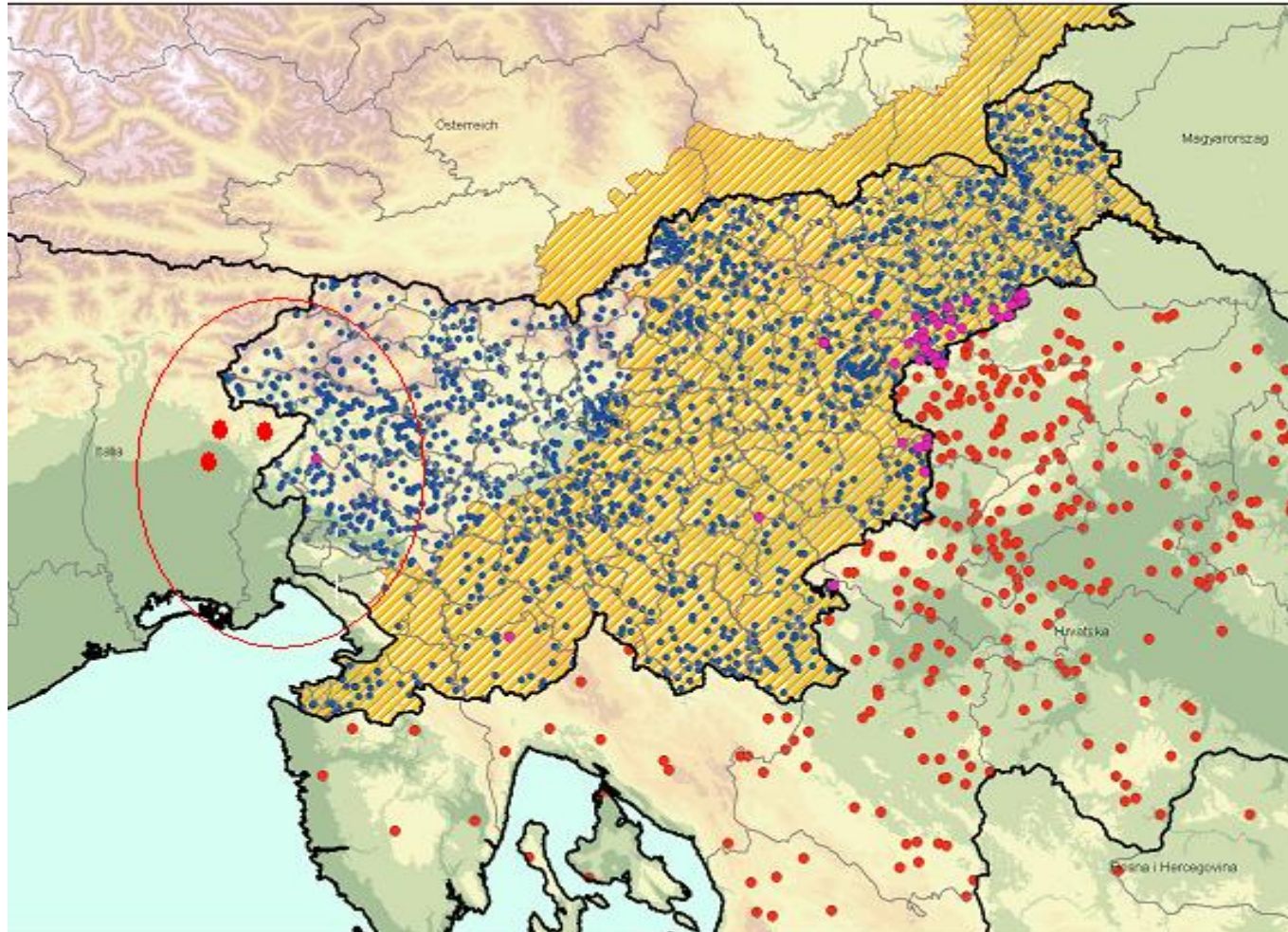
- north-western part of the country was excluded from vaccination area
- all positive cases have been detected inside the vaccination area

✓ except one fox in 2008

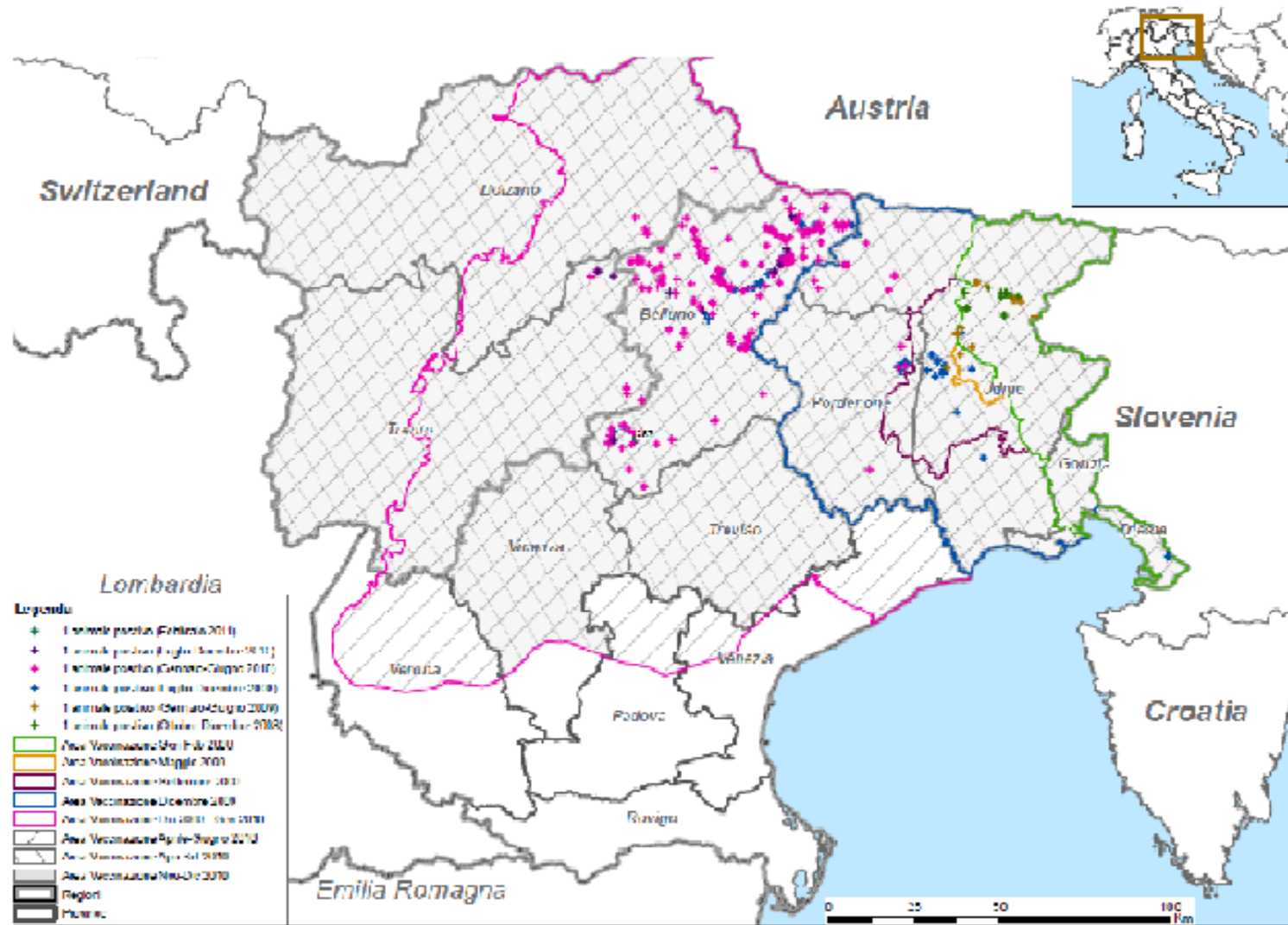


Year	Tested	Positive
1995	3787	1089
1996	2285	247
1997	1224	29
1998	1381	14
1999	1195	6
2000	1509	115
2001	2153	135
2002	1495	15
2003	993	8
2004	1612	2
2005	1603	3
2006	1896	2
2007	2075	3
2008	2619	55
2009	2809	34
Total	28605	1757

Surveillance, positive cases and vaccination area in Italy, Slovenia, Austria in 2008



Rabies reintroduction in Italy – 2008, situation in 2010



Evaluation of ORV program

➤ Passive surveillance

- indicator animals are individuals suspected of having the rabies disease
- animals showing clinical signs
- abnormal behaviour suggestive of rabies
- wild animals found dead and road-kills



➤ Active surveillance

- to follow WHO recommendations, 8 target animals (foxes) per 100 km² have been investigated



Rabies surveillance and monitoring in Slovenia

➤ Oral vaccination of foxes – Report of Scientific Committee on Animal Health and Animal Welfare, October 2002

✓ ORV group

- VARS
- RO VARS
- MAFF
- NVI
- Slovene Forest Service
- Slovene Hunting Association
- Concessioner



Rabies surveillance and monitoring in Slovenia

- **Veterinary Administration of the Republic of Slovenia - HQ**
 - ✓ preparation of Rabies eradication program
 - ✓ submission for approval to the EC
 - ✓ financing
 - ✓ co-operation and communication
 - ✓ reporting, supervision, audit
- **Veterinary Administration of the Republic of Slovenia – Regional Offices**
 - ✓ control over implementation of the program
 - ✓ control of baits
 - ✓ control of ORV contractor and subcontractors
 - ✓ control of hunters, private practitioners, NVI and other organisations, involved in the program

Rabies surveillance and monitoring in Slovenia

➤ National Veterinary Institute

- ✓ **Central laboratory in Ljubljana (rabies diag.), 6 regional labs**
- ✓ **Routine rabies diagnostics**
 - FAT, Virus isolation, Virus determination, FAVN test - antibody titre, PCR
- ✓ **Monitoring of ORV**
 - Bait titration, ELISA AB, determination of biomarker(TTC), age determination of foxes
- ✓ **VHS - Veterinary Hygienic Service**
 - transportation of diagnostic material (e.g. foxes) from regional labs to the Central Unit
 - on – call – everybody that finds dead or suspicious animal can call VHS to take the animal for the investigation
- ✓ **Inter - laboratory control (proficiency and ring tests)**
 - NVI is on the list of approved labs for AB titration

Rabies surveillance and monitoring in Slovenia

➤ **Slovenian Forest Service**

- ✓ Data on fox population
- ✓ Hunting and breeding plans – cca. 5 foxes per 4.000 ha

➤ **Slovenian Hunting Association**

- ✓ Sampling – obligation according to the law on hunting
- ✓ Contracted to VARS
- ✓ 16,00 € per fox

➤ **Private practitioners**

- ✓ Collect shot foxes and send them for rabies investigation
- ✓ Observation of animals that bite a person
- ✓ Vaccination of dogs, cats and other animals

➤ **Contractor for OVF**

- ✓ Conduct OVF (purchase, distribution, planning, maps,...)
- ✓ Develops and upgrades software and system

Co-operation and Communication

➤ Co-operation and communication

➤ National

✓ Commission for zoonosis

- Ministry of Health – Institute of public Health at least two meetings per year

✓ On regular basis

- exchange of information between regional institutes for public health and central services of MH

➤ International

✓ Exchange of information of OVF

- With neighbouring countries
- Co-ordinated OV campaign with neighbouring regions, countries (Styria, Hungary, Italy)

✓ Task force for monitoring disease eradication – Rabies subgroup

Datoteka Urjanje Pogled Zgodovina Zaznamki Orodja Pomoc

10.1.7.5 Google Downloads - Support ...

Steklina | Veterinarska uprava RS

REPUBLIKA SLOVENIJA Državne ustanove ISKALNIK Išči po tej strani: Najdi

Ministrstvo za kmetijstvo, gozdarstvo in prehrano
Veterinarska Uprava Republike Slovenije

Domov
 Kazalo
 Kontakt
 English

Zdravje živali / Steklina / T. Natani

Steklina

- O Veterinarski upravi
- Aktualno
- Delovna področja
- Javni razpisi 2010 MREŽA
- Javne objave
- Zakonodaja in dokumenti
- Informacije javnega značaja
- Javna naročila in javni razpisi
- Novinarsko središče
- Spletne aplikacije
- Registri in sezname
- Mednarodne zadeve
- Varna hrana, kрма in zdravila
- Zaščita živali
- Zdravje živali
 - Evropski Veterinarski Teden
 - Infekciозна anemija kopitarjev - IAK
 - Načrti ukrepov
 - Mesečna poročila

STEKLINA (Lyssa, Hidrofobia)

- O steklini
- Znaki stekline pri živalih
- Epidemiologija stekline
- Prenos boleznii
- Prijava boleznii

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Zdravje živali / Steklina / Steklina 2009 / T. Natani

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Pojavi stekline v letu 2009

Legenda
 • Steklina (2009) 34 primerov (03.06.10, 1.30.04)

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RS_3t_139/061.

Zatiranje stekline pri psih

Mesojede domače živali (pes, mačka) so možni prenašalci stekline na ljudi. Kar 99% vseh ugotovljenih primerov stekline po svetu pri ljudeh je posledica ugrizov psov.

Zato je preventivno izvajanje ukrepov, kot je npr. obvezno cepljenje psov proti steklini, velikega pomena v boju zoper stekline.

V državah, kjer je še vedno prisotna urbana oblika stekline, izvajajo tudi masovna parenteralna cepljenja psov (v obliki nastavljenih vab), tudi potepuških, da bi preprečili prenos stekline na ljudi. Kljub temu, da je v Evropi steklina v večji meri že izkoreninjena, pa pomeni cepljenje hišnih ljubljencev enega najpomembnejših zaščitnih ukrepov.

Zatiranje stekline pri lisicah

V Sloveniji (kot tudi v Evropi) se večinoma pojavlja silvatična oblika stekline. Večina primerov stekline je ugotovljenih pri lisicah. Pri drugih živalih (pes, konj, govedo) so bili ugotovljeni primeri po tem, ko se je stekla lisica stegla z oziroma je ugriznila necepljeno domačo žival.

Peroralno cepljenje lisic proti steklini predstavlja edino učinkovito metodo zatiranja stekline pri divjih živalih. Z izvajanjem te metode je večina zahodno evropskih držav steklino že izkoreninila.

V Sloveniji se peroralno cepljenje lisic izvaja že od leta 1988. Od leta 1995 se vabe polagajo s pomočjo letal. Letno se izvajata dve akciji cepljenja lisic – spomladanska in jesenska.

Spomladanska akcija lisic se izvaja poznó spomladi, konec maja in začetek junija, jesenska pa oktobra in

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- kapsula s cepivom, ki vsebuje oslabljen virus stekline (SAD B 19).

!! POMEMBNO !!

*Ne dotikajte se nastavljenih vab za lisice!
 O tem poučite tudi otroke!
 Če najdete vabo na svojem dvorišču ali vrtu, jo primate z vrečko in odvrzite v najbližji grm ali v smeti.
 Prepovedano je prsto gibanje psov na javnih mestih!
 Izogibajte se stikom s potepuškiimi in divjimi živalmi!
 Če je prišla vsebina vabe v stik s sluznico ali svežo rano, to mesto dobro sperite in umijte z milom. Ker se vsak stik z vabo obravnava kot ugriz stekle živali, nemudoma obiščite najbližjo [avstrijsko ambulanco!](#)
 Če vas ugrizne ali opaska potepuška ali divja žival, obiščite najbližjo anivrabčno ambulanco!
 Ilegalni vnos psov in drugih živali, dovzetnih za steklino (mačke, beli duristi, kune...), predstavlja veliko tveganje za pojav stekline!*

Pojavnost v Sloveniji

Leta 1988, ko je Slovenija pričela s peroralnim cepljenjem lisic prosti steklini, je bilo ugotovljenih 1.067 primerov stekline. Po uvedbi letalskega polaganja vab je število pojavov boleznii [drastično upadlo](#).

V letu 2008 je število primerov ponovno naraslo, predvsem zaradi visoke pojavnosti stekline na Hrvaškem, kjer zaenkrat še ne izvajajo peroralnega cepljenja lisic.

Koristne povezave

- Akcija cepljenja lisic proti steklini
- Rabies Bulletin Europe
- Izkoreninjavanje stekline v Sloveniji
- Ugotavljanje prisotnosti Lyssavirusov v populaciji netopirjev v Sloveniji
- Informacijski material
- Film o steklini

cepljenje lisic proti steklini - Iskanje Google - Mozilla Firefox

Datoteka Urgejanje Pogled Zgodovina Zaznamki Orodja Pomoč

http://www.google.si/search?q=cepljenje+lisic+proti+steklini&ie=utf-8&oe=utf-8&aq=t&rls=org.mozilla:sl:official:☆

10.1.7.5 Google Downloads - Support - ...

cepljenje lisic proti steklini - Iskanje ...

Več rezultatov z mesta www.vurs.gov.si

[\[PDF\] Spoštovani! Veterinarska uprava Republike Slovenije bo izvedla ...](#)
Oblika datoteke: PDF/Adobe Acrobat - [Hitri pogled](#)
predvsem lisic. Veterinarska uprava RS bo predvidoma 6. maja 2009 pričela s spomladansko akcijo **cepljenja lisic proti steklini**, ki bo trajala predvidoma do ...
www.lovska-zveza.si/ftp/pdf/Cepljenje%20lisic.pdf - [Podobno](#)

[Inštitut za varovanje zdravja - PRVA STRAN - Aktualno - Varstvo ...](#)
1 okt 2009 ... Varstvo prebivalcev pred steklino – **cepljenje lisic proti steklini** ... začela jesenska akcija **cepljenja lisic proti steklini**, ...
www.ivz.si/index.php?akcija=novica&n=2048 - [Posnetek](#) - [Podobno](#)

[Cepljenje lisic proti steklini](#)
Veterinarska uprava Republike Slovenije bo izvedla jesensko akcijo **cepljenja lisic proti steklini**, ki jo opravlja predvsem zaradi posrednega varovanja ljudi ...
www.lz-maribor.si/informacije-za.../29-cepljenje-lisic-proti-steklini - [Posnetek](#)

[Cepljenje lisic proti steklini :: Prvi interaktivni multimedijski ...](#)
1 okt 2006 ... Veterinarska uprava je v nedeljo začela izvajati jesensko akcijo **cepljenja lisic proti steklini** s polaganjem vab.
www.rtvsllo.si/okolje/cepljenje-lisic-proti-steklini/60771 - [Posnetek](#)

[VURS izvaja jesensko akcijo cepljenja lisic proti steklini](#)
Med 1. oktobrom in 30. novembrom bo Veterinarska uprava Republike Slovenije izvedla jesensko akcijo **cepljenja lisic proti steklini**, ki jo opravlja predvsem ...
www.kozjansko.info/.../823-vurs-izvaja-jesensko-akcijo-cepljenja-lisic-proti-steklini.html - [Posnetek](#) - [Podobno](#)

[\[PDF\] POŠKODBE IN CEPLJENJA PROTI STEKLINI](#)
Oblika datoteke: PDF/Adobe Acrobat - [Hitri pogled](#)
napisal/a M Stantič-Pavlinič - 2002 - [Sorodni članki](#)
sveta poteka **cepljenje lisic proti steklini** (18). Zaradi slabih epizootskih razmer v sosednji Hrvaški in tudi obstoja žarišč stekline na domačem ozemlju ...
vestnik.szd.si/st2-10/615-619.pdf

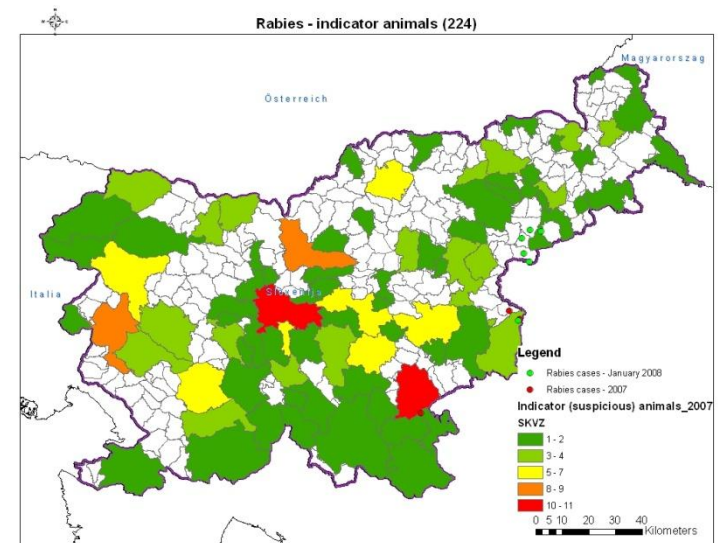
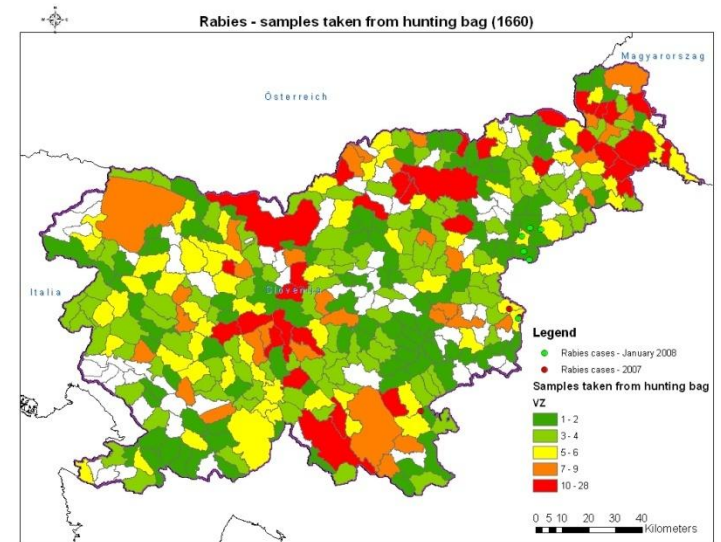
[Vurs začenja z jesensko akcijo cepljenja lisic proti steklini ...](#)
Veterinarska uprava RS (Vurs) bo v petek začela z akcijo **cepljenja lisic proti steklini**, ki jo opravlja predvsem zaradi posrednega varovanja ljudi pred to ...
www.dnevnik.si/novice/slovenija/1042303409 - [Posnetek](#)

[Evropski inštitut za varovanje zdravja - Prva stran - Cepljenje lisic proti steklini](#)

Končano

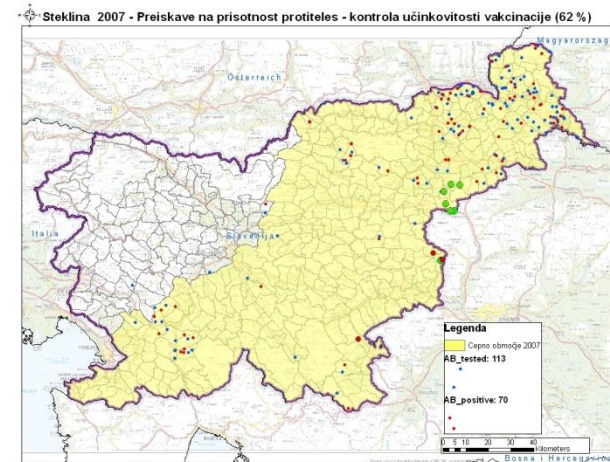
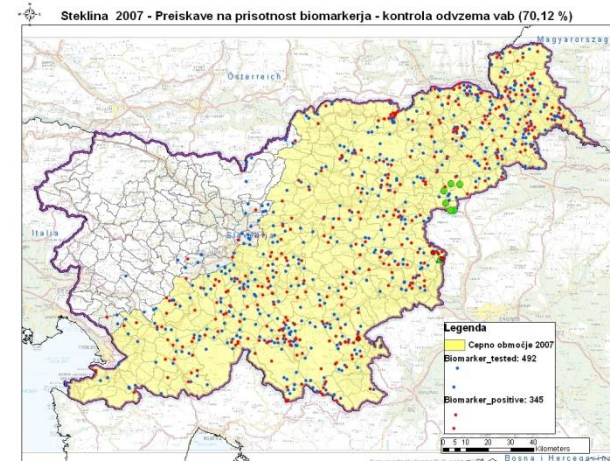
Rabies surveillance 2007

- Evaluation of 2007 programme
 - Number of tested animals
 - 2.075
 - Number of tested foxes
 - 1.884 (1.660 out of hunting bag, 224 indicator animals)
 - Number of positives:
 - 3 positive
 - Determination of isolates
 - “field” virus



Rabies surveillance 2007

- Evaluation of 2007 programme
 - Control of vaccination
 - determination of bio-marker TTC – 70 %
 - detection of antibodies in blood samples – 62 %
 - Control of baits
 - determination of virus titre in vaccine baits



Rabies surveillance 2008

➤ Evaluation of 2008 programme

➤ Number of tested animals

➤ 2.619

➤ Number of tested foxes

➤ 2.332

➤ Number of positives:

➤ 55 positive (51 foxes, 2 badger, 1 dog, 1 horse)

➤ Determination of isolates

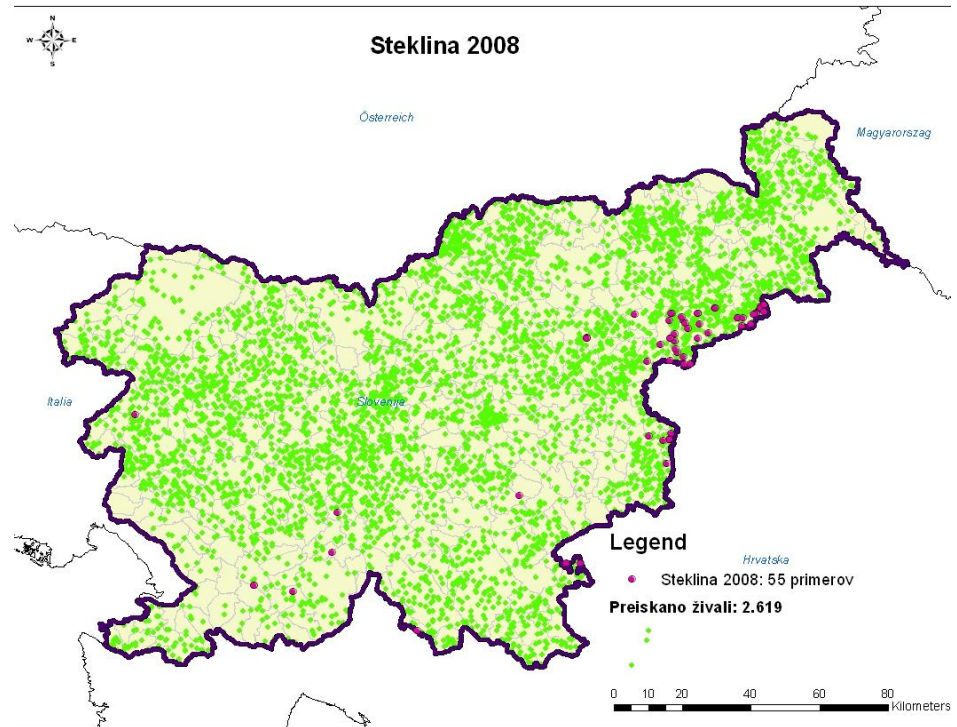
➤ “field” virus

➤ Bait up-take

➤ 79,53%

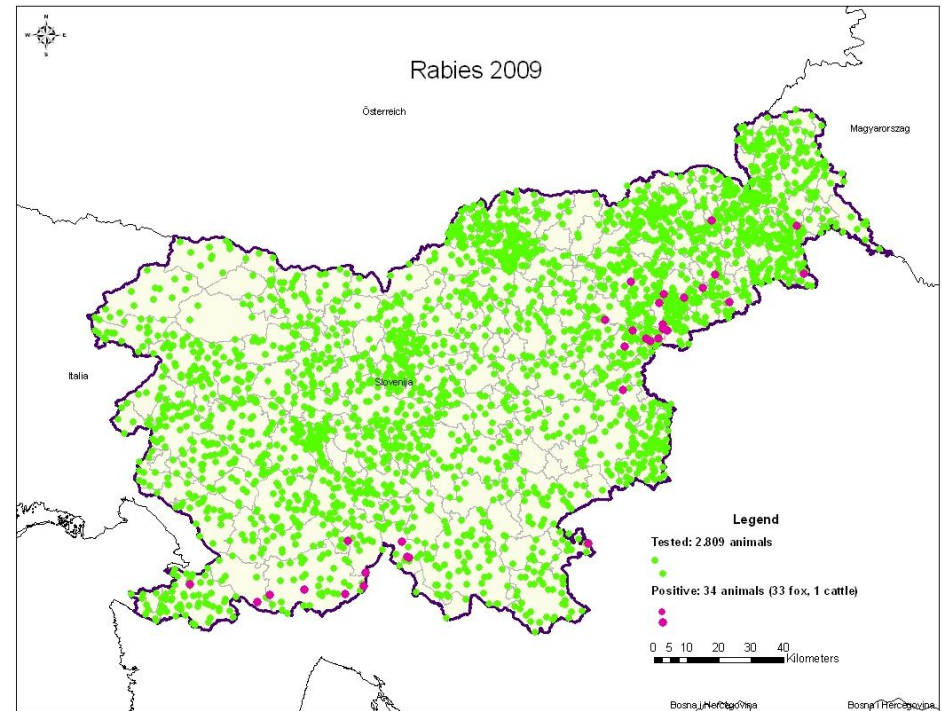
➤ Immunity (AB detection)

➤ 62,26%

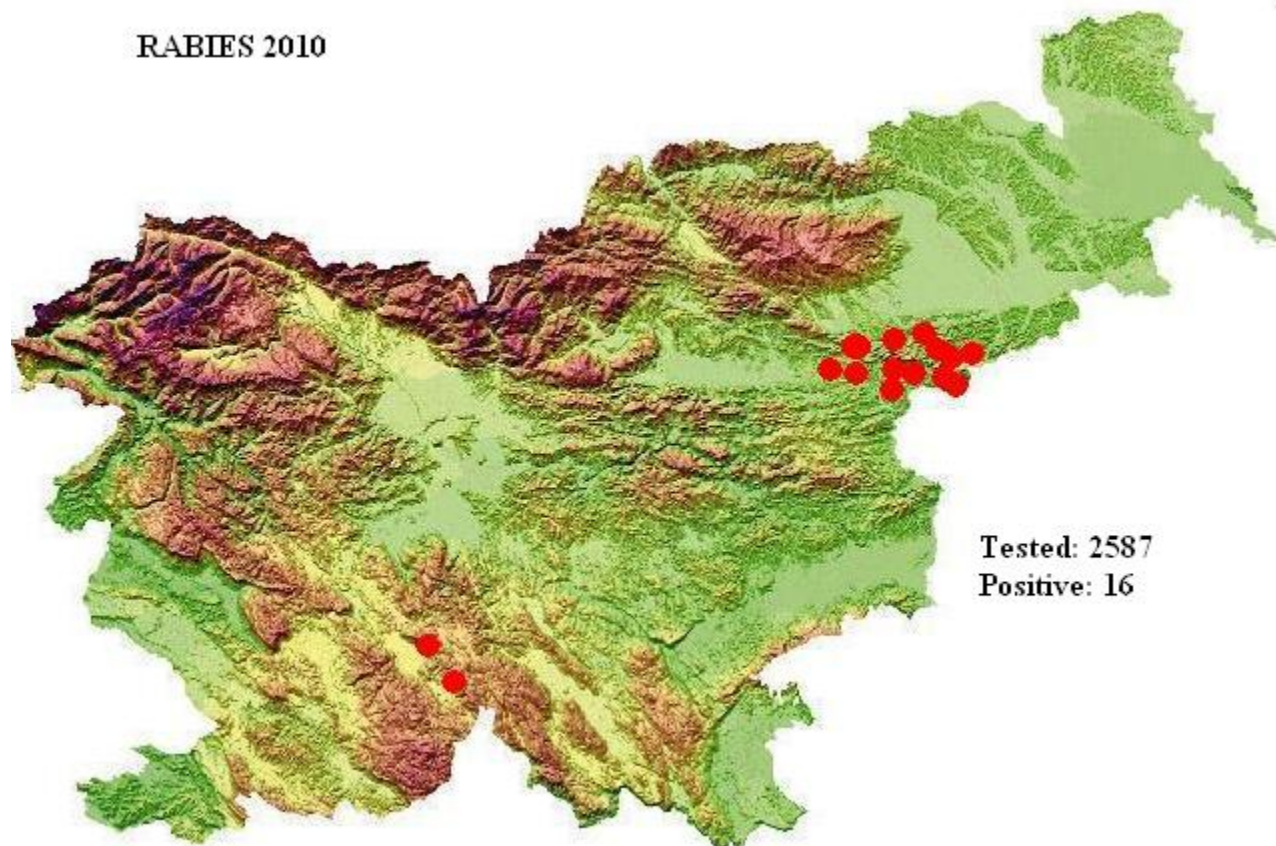


Rabies surveillance 2009

- Evaluation of 2009 programme
 - Number of tested animals
 - 2.809
 - Number of tested foxes
 - 2.482
 - Number of positives:
 - 34 positive (53 foxes, 1 cattle)
 - Determination of isolates
 - “field” virus, 1 vaccine
 - Bait up-take
 - 61,42%
 - 76,22% - over 1 year
 - Immunity (AB detection)
 - 70,77 %
 - 82,96% - over 1 year



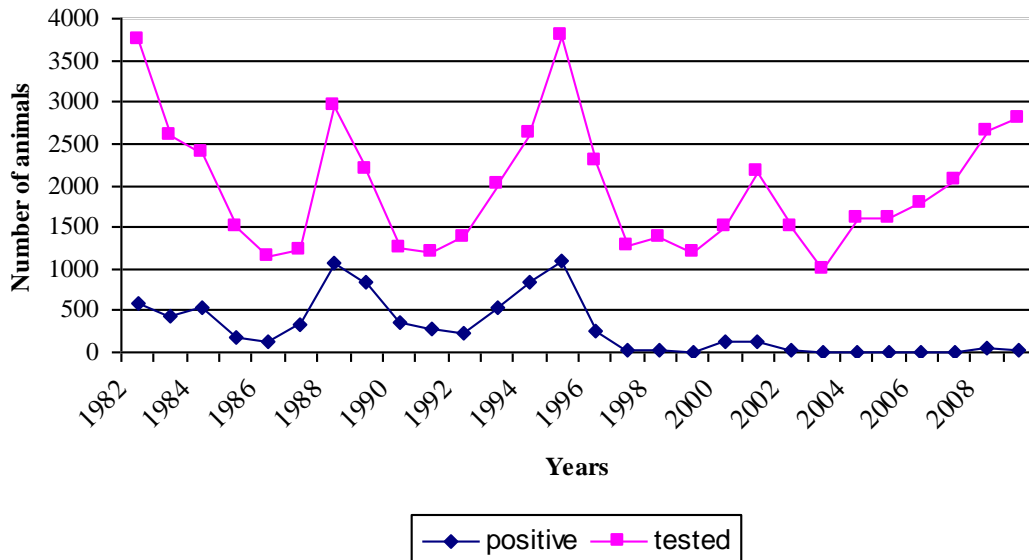
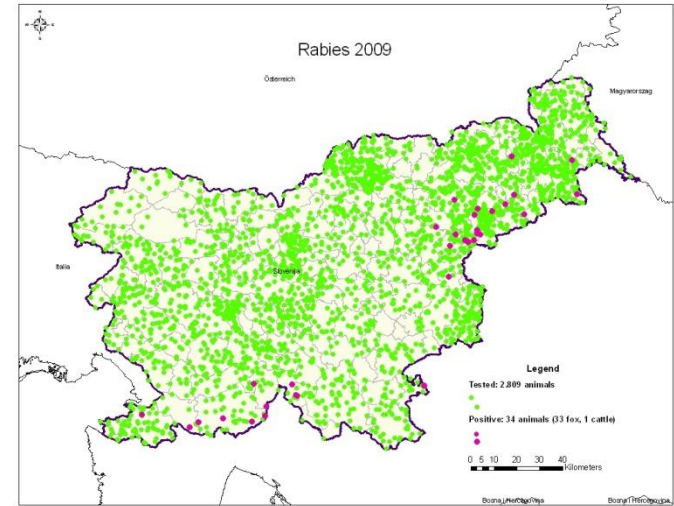
Rabies surveillance 2010



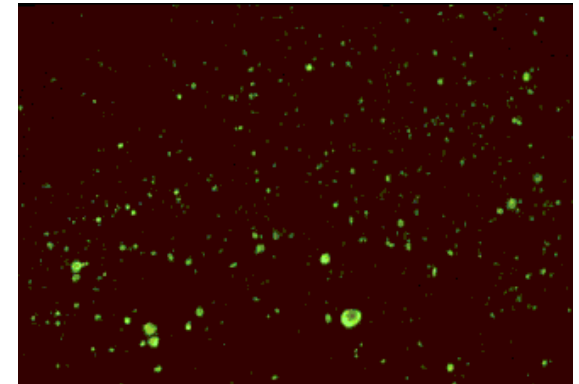
Evaluation of ORV program

- monitoring of rabies (tested > 8 animals/100 km²)

Beginig of the ORV using
aerial distribution of baits



DECLINE OF RABIES CASES



Evaluation of ORV program

- detection of biomarker (tetracycline)

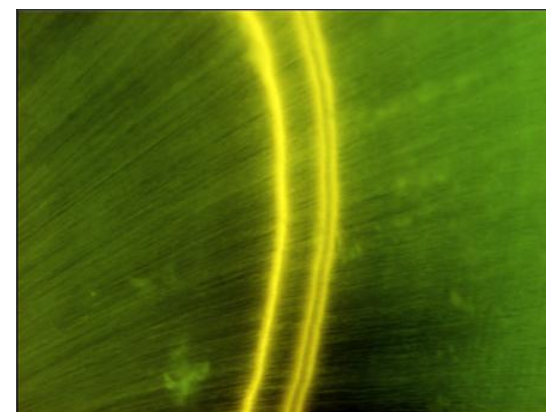
Tetracyclin is incorporated in baits

control of bait up- take

Slide of tooth

Age	Tetracycline		Percentage
	Tested	Positive	
< 6 mesec	427	101	23,65
od 6 do 12	493	373	75,66
1	455	331	72,75
2	131	106	80,92
3	53	49	92,45
nad 3 leta	40	31	77,50
Total	1599	991	

Results of baits up-take in foxes in 2009



Tetracycline lines in tooth

Evaluation of ORV program

Detection of antibodies

- blood or body liquid sample of foxes
- test ELISA (Bio-Rad)

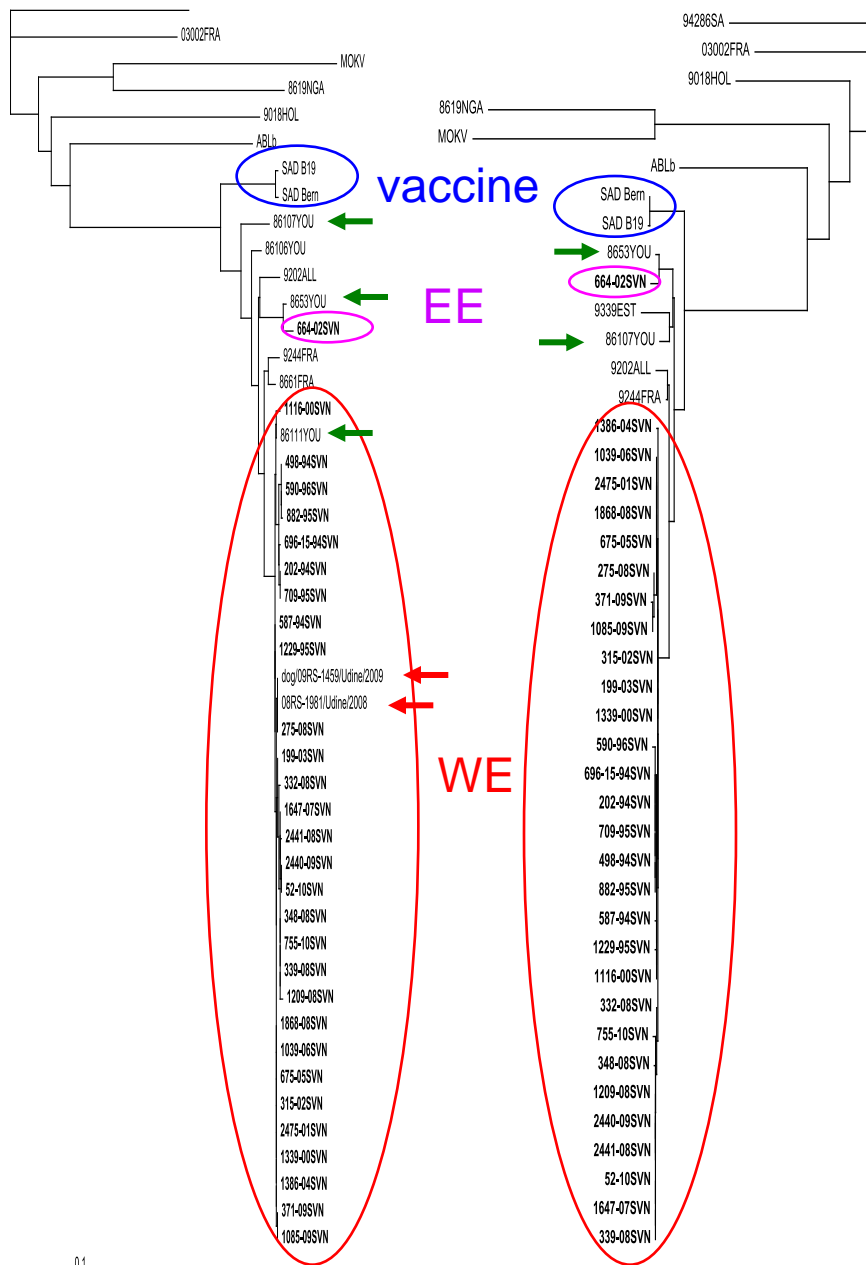


	Antibodies			
Age	Tested	Positive	Percentage	
< 6 mesec	24	12	50,00	
od 6 do 12	114	71	62,28	
1	84	62	73,81	
2	27	19	70,37	
3	6	5	83,33	
nad 3 leta	6	6	100	
Total	261	175		

Recomendation:

> 70% prevalence

Prevalence of rabies antibodies in foxes in 2009



Evaluation of ORV program

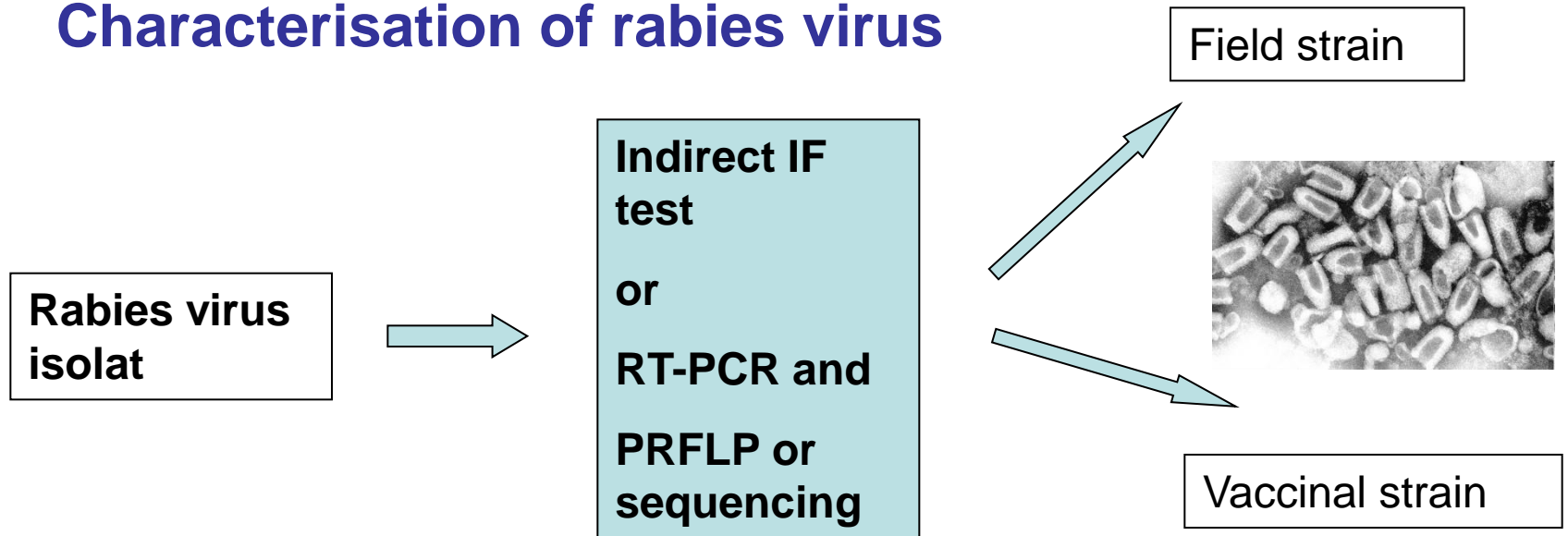
- Determination of sequences of N and G gene on the selection of 30 rabies positive samples (1994-2010)
- originated from red fox (n=19), badger (n=3), cattle (n=3), dog (n=2), cat (n=1), marten (n=1) and horse (n=1).
- form two genetic groups of closely related strains; 29 belongs to West Europe (WE) group
- Only one samples belong to East Europe (EE) group.
- strains were clearly different from vaccine strains SAD B19 and SAD Bern

N gene (1092 nt)

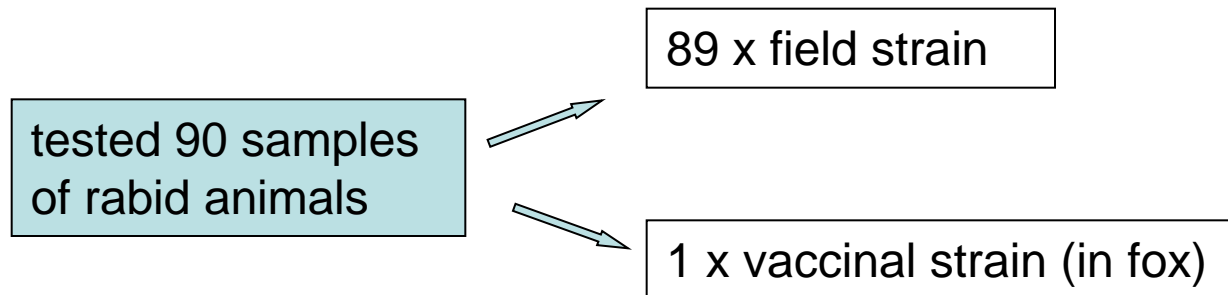
G gene (672 nt)

Evaluation of ORV program

Characterisation of rabies virus



Results:



RABIES SITUATION IN EUROPE

Countries eradicated rabies by ORV: Swiss, France, Belgium, Netherland, Denmark, Finland, Germany, Austria, Czech

2010



■ Vaccination area

● Rabies cases