

RABIES:

Status, Control and Strategy in Croatia

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Epizootiology

(1)

- 1967. last case of urban rabies
- 1977. first case of sylvatic rabies
 - Border municipalities with Hungary and Vojvodina
- 1985. spread of rabies through whole territory of Croatia, with the exception of the Adriatic islands
- 2008. endemic disease

Epizootiology

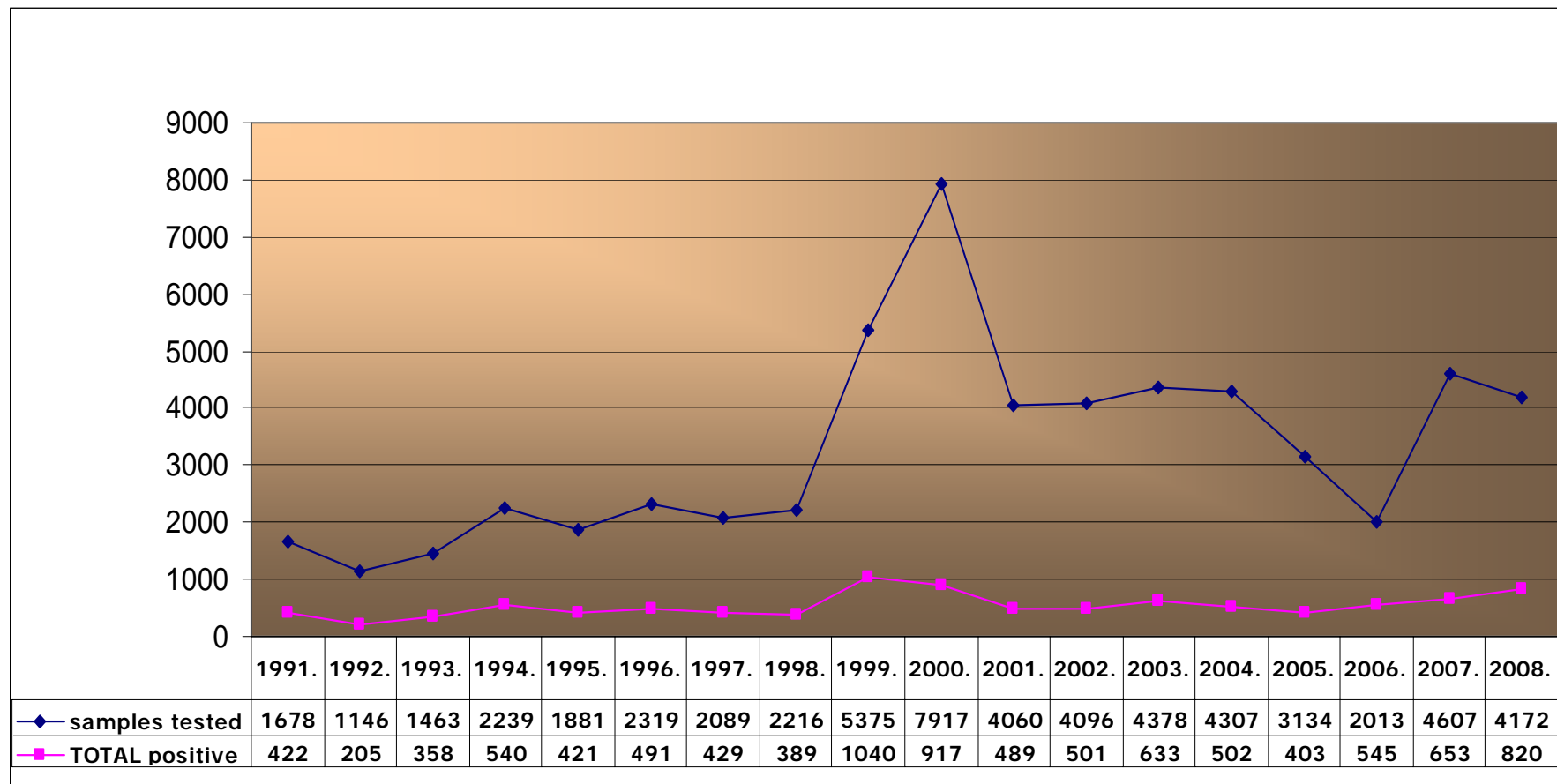
(2)

- Wild animals
 - Since 1981.- 2008. the majority of the disease occurrences
 - Red foxes (*Vulpes vulpes*)
 - The most important reservoirs of rabies
 - 91% of all infected animals

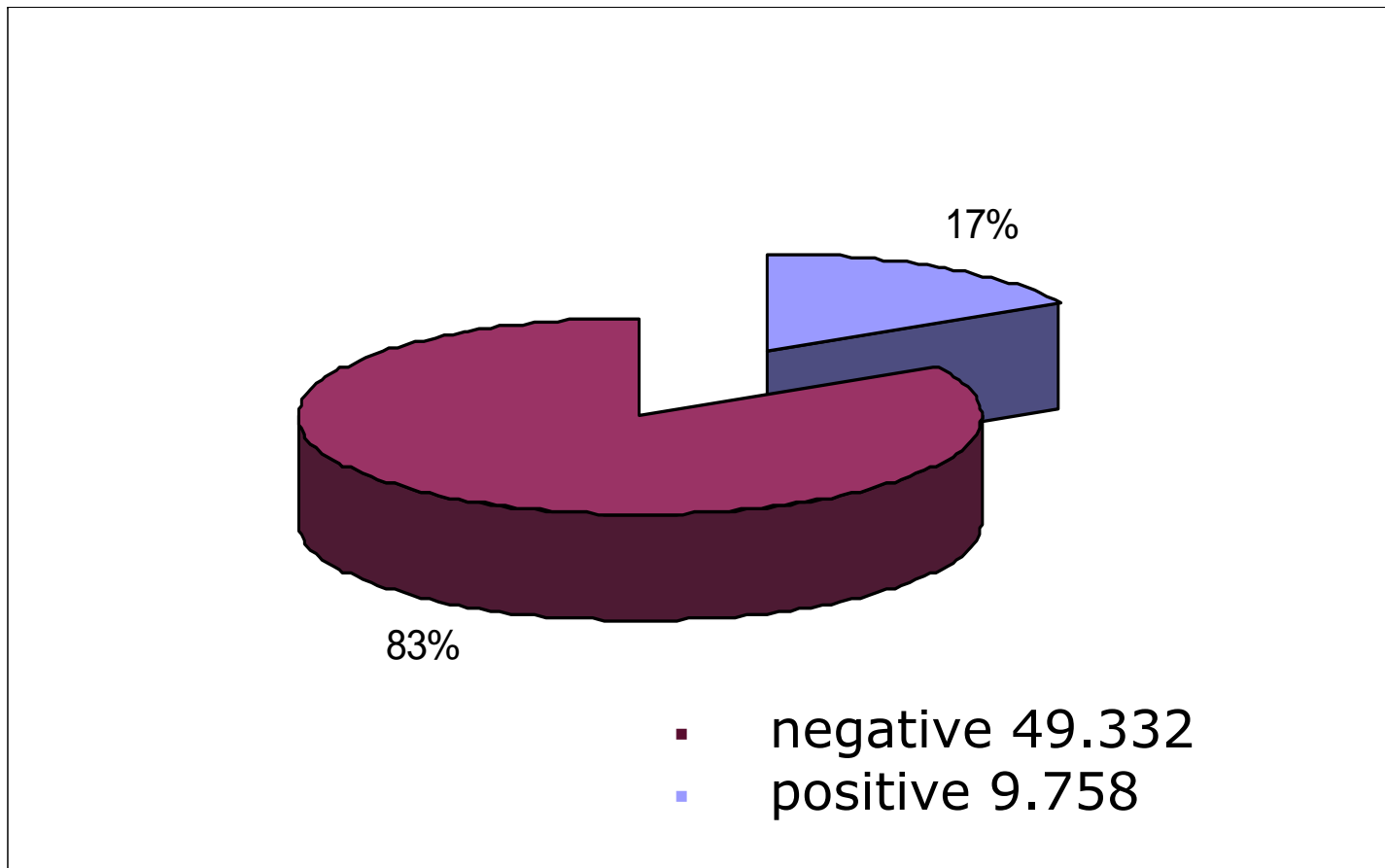
- Domestic animals
 - Sporadic cases
 - Contact with sick wild animals (bait)
 - 4% of infected animals

- Epi status
 - Almost unchanged
 - 450 – 550 cases/per year
 - Number increased in 2007/08
 - The whole country, accept the islands
 - NW/NE part of Croatia

RATIO OF TOTAL No TESTED SAMPLES/TOTAL No POSITIVE CASES (time period 1991. – September 2008.)

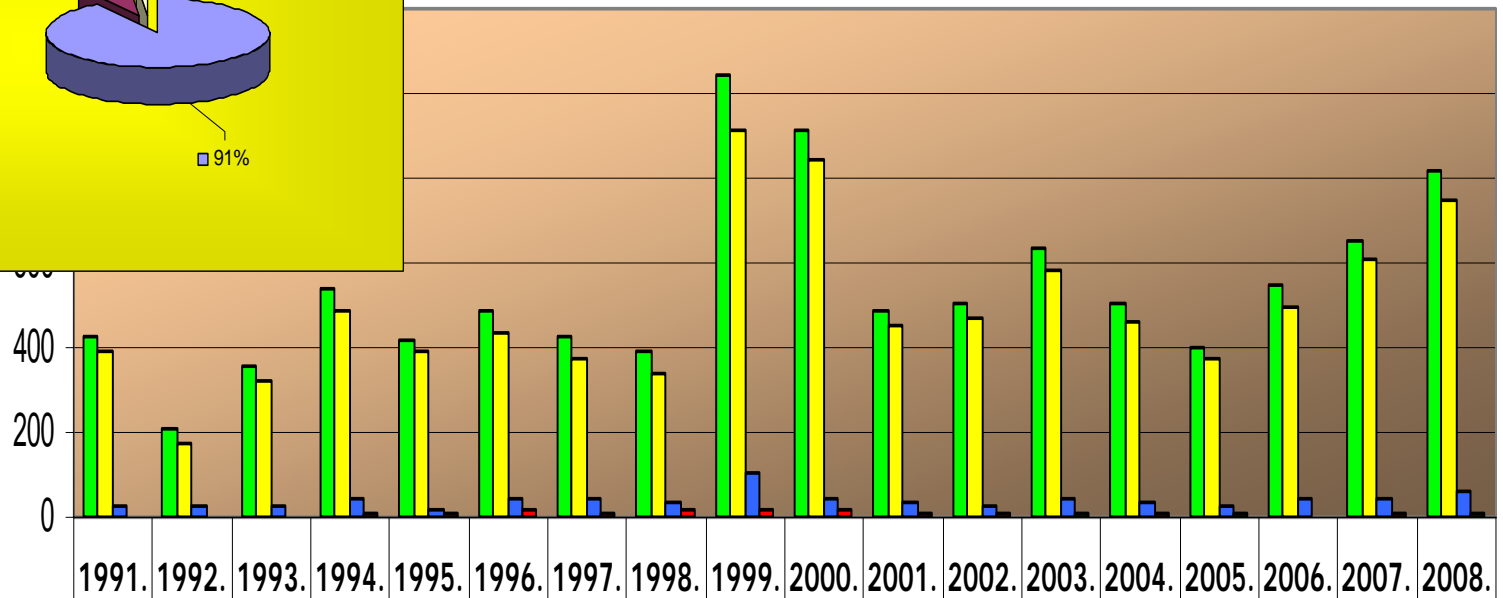
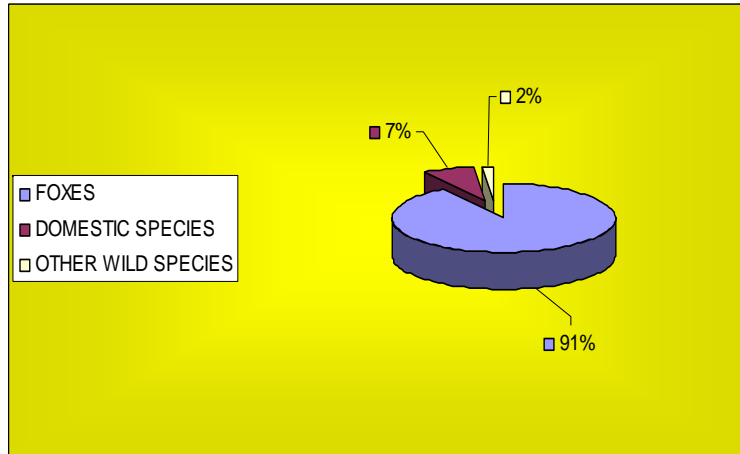


**RATIO: POSITIVE/NEGATIVE SAMPLES TESTED IN TIME PERIOD
1991. – September 2008.**
(total No tested samples – 59.090)



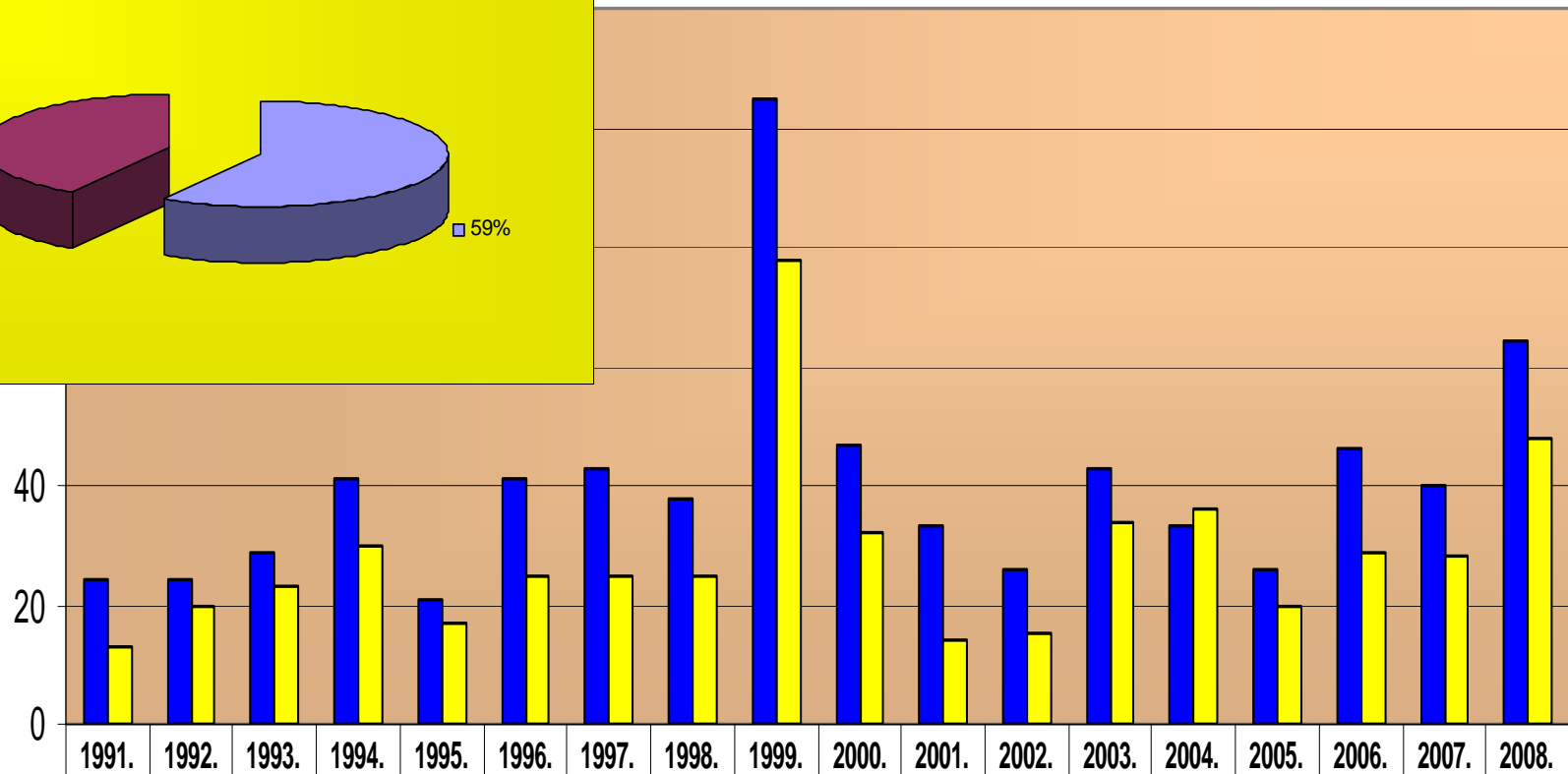
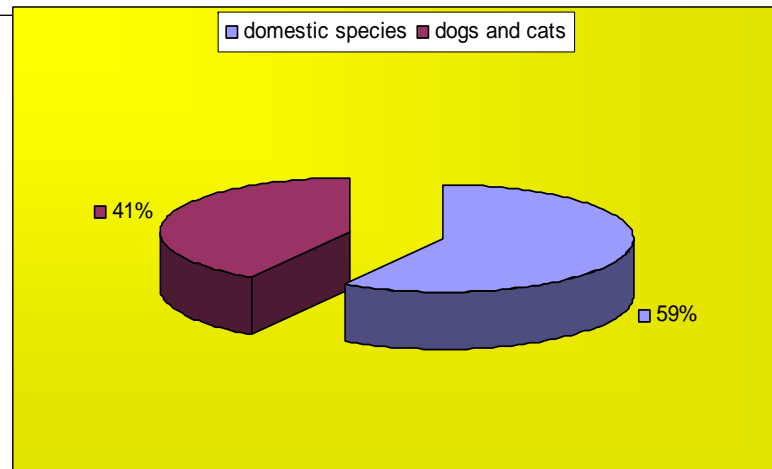
RATIO:TOTAL POSITIVE CASESE WILD/DOMESTIC ANIMALS;

(time period 1991. – September 2008.)



	1991.	1992.	1993.	1994.	1995.	1996.	1997.	1998.	1999.	2000.	2001.	2002.	2003.	2004.	2005.	2006.	2007.	2008.
TOTAL No POSITIVE	422	205	358	540	419	491	429	389	1040	917	489	501	633	502	403	545	656	820
FOXES	394	177	326	488	390	436	373	338	914	840	449	468	583	463	372	497	606	750
DOMESTIC SPECIES	24	24	29	41	21	41	43	38	105	47	33	26	43	33	26	46	40	64
OTHER WILD SPECIES	4	4	3	11	8	14	13	21	21	17	7	7	7	8	5	2	7	5

RATIO: POSITIVE CASES; domestic animals/dogs and cats



■ domestic species	24	24	29	41	21	41	43	38	105	47	33	26	43	33	26	46	40	64
■ dogs and cats	13	20	23	30	17	25	25	25	78	32	14	15	34	36	20	29	28	48

Control of animal rabies in Croatia

- Legal base
- Monitoring & Surveillance
 - Preventive measures
- Laboratory diagnostic
- Measures for control and eradication





Legal base

- Veterinary Act (OG 41/07);
- Ordinance on measures for the control and eradication of rabies in animals (OG 32/00);
- Ordinance on the manner and notification procedure for suspected infectious animal disease, notification and notice of withdrawal of infectious animal diseases, including the form and content of stipulated forms (OG 179/04);
- Ordinance on the manner of monitoring Zoonoses and Zoonotic agents (OG 52/05);
- Ordinance on the marking of dogs (OG 162/03, 114/04);
- Annual order on measures to protect animals from infectious and parasitic diseases and the financing thereof in 2008 (OG, 134/07, 10/08, 106/08).



Monitoring & Surveillance

- Monitoring and surveillance programme for control and eradication of rabies is systematically conducted-annually on the territory of whole Croatia
 - Since 1977.
 - Proscribed by Annual Order
- All foxes (caught or found dead), and all other domestic or wild animals for which it is suspected that they were in contact with an infected animal or exhibiting clinical signs of disease must be forwarded for examination to the authorised laboratory of the Croatian Veterinary Institute.
- Owners of grazing animals are obliged to prevent contact between wild and domestic animals.
- Lysacan-electronic software system for registration of dogs
 - also functions as a record of dogs vaccinated against rabies.

Preventive measures

- According to annual order mandatory vaccination is prescribed for;
 - All dogs older than three months
 - vaccination against rabies in the entire territory of the Republic of Croatia by 31 March of the current year.
 - Any dog reaching three months of age throughout the year
 - must be vaccinated in the following 14 days, while a dog which has not been vaccinated earlier, must be vaccinated within 14 days of its acquisition.
- Vaccination of other species of animals is not mandatory
 - Carrying out of the same is based on a decision of the animal's owner.
 - Recommendations for vaccination of cats and ferrets (*lat. Mustela putorius furo*)
- If required by epi-situation of disease the Minister of Agriculture, Fisheries and Rural Development may also order vaccination of other species of animals against rabies.
- For vaccination of all species of animals only monovalent vaccine manufactured from dead, highly virulent immunogenic strains of the rabies virus is prescribed and approved.

Lysacan-the register of dogs vaccinated against rabies

- Since 2004 – electronic software system
- Data on:
 - Number of dogs vaccinated and marked by
 - Counties
 - Veterinary organizations
 - Epizootiology units and areas
 - Clinical examinations of dogs suspected on rabies
- For each vaccinated dog data on:
 - ID number (microchip and mark) and “*personal*” data
 - Number of International health certificate
 - Owner
 - Vaccination (date, previous vaccinations, serial no of the vaccine used...)



Laboratory diagnostic

- Diagnostic of rabies is carried out by the laboratory of the Croatian Veterinary Institute in Zagreb and regional institutes thereof in Križevci, Rijeka, Vinkovci and Split.
- The ELISA and immunofluorescence are used for diagnostics of the disease.



Measures for control and eradication

Suspicion

(1)

- Clinical examination

- Authorised veterinarian

- ↳ County Veterinary Office

- ↳ Euthanasia and
Laboratory testing

- ↳ Clinical examination of all
animals suspected to be
infected or in contact
with the infected animal

Suspicion

(2)

- Clinically healthy dogs and cats which have wounded people (baits, attacks) are to be put under official control over the period of 10 days


- Three clinical examinations will be carried out
 - The first, fifth and tenth day

- ▶ Suspicion confirmed – Euthanasia and Laboratory testing



Confirmation – “definition”

- The animal is considered to be sick if antibodies for rabies are confirmed by:
 - carrying out laboratory test using the method of immunofluorescence; or
 - the biological test carried out on mice's.



Confirmation (1); control and eradication measures

- Confining of animals suspected to be sick of rabies
- Confining of dogs under three months of age
- Keeping of dogs and cats under control
 - Dogs must be marked (marks or microchip) and held on leash with muzzle
 - Exception: free movement is allowed to herd watchdogs at the pasture with a herd, official dogs of the police and army, rescue team dogs and guide dogs for blind persons
- Prohibition of dogs and cats trading
- Protective vaccination of dogs and, if required, of other animals susceptible on rabies
- Dogs and cats at the shows must have the International health certificate about protective vaccination confirmed by authorised veterinary organisation



Confirmation (2); control and eradication measures

- Euthanasia of unvaccinated dogs and cats as well as of stray dogs and cats
- Organised attenuation of fox population, and if required, of other wild animals
- Euthanasia of sick animals and of animals bitten by sick animal
 - 6 month quarantine of vaccinated animals
 - The owner is obliged to notify any change in animal behaviour to authorised veterinary organisation
- Prohibition to take out animal products, animal raw material and objects through which rabies may be transmitted from the infected holding to the other places
- Prohibition of taking over the skin from carcasses of dogs, cats, foxes, wolves and other furbearing animals
- Daily disinfection of the premises and equipment
- If rabies is confirmed in game, hunting may be prohibited for a specific time



Wild Animals / Rabies Control

- 1991. for the first time the programme of oral vaccination of foxes against rabies was applied in the territory of Croatia

- By autumn 2000. a total of 11 vaccination campaigns were carried out in which 533,900 vaccine baits were used
 - Istarska, Primorsko-goranska, Zagrebačka, Karlovačka, Krapinsko-zagorska, Varaždinska , Međimurska and City of Zagreb

- Due to insufficient financial funds and war time events, the programme for oral vaccination of foxes against rabies has not been conducted in recent years

- Cooperation with hunting grounds
 - Increased shooting of foxes (financial stimulation for hunters)

Strategy 2010.

- Enforcement of proscribed measures for control and eradication of rabies
 - Marking of all dogs with microchips
 - Building of new shelters for abandoned animals

- Oral vaccination of foxes to be carried out on the territory of the whole country

- Financial resources
 - Continuously providing
 - State budget
 - EU Funds
 - Projects
 - Donations





Thank you very much
for your attention !