



Rabies eradication programmes in Europe

***The Global Anti-rabies Efforts:
Human and Animal Vaccines
and Eradication Programs,
2021***

Dr Florence CLIQUET
Research Director

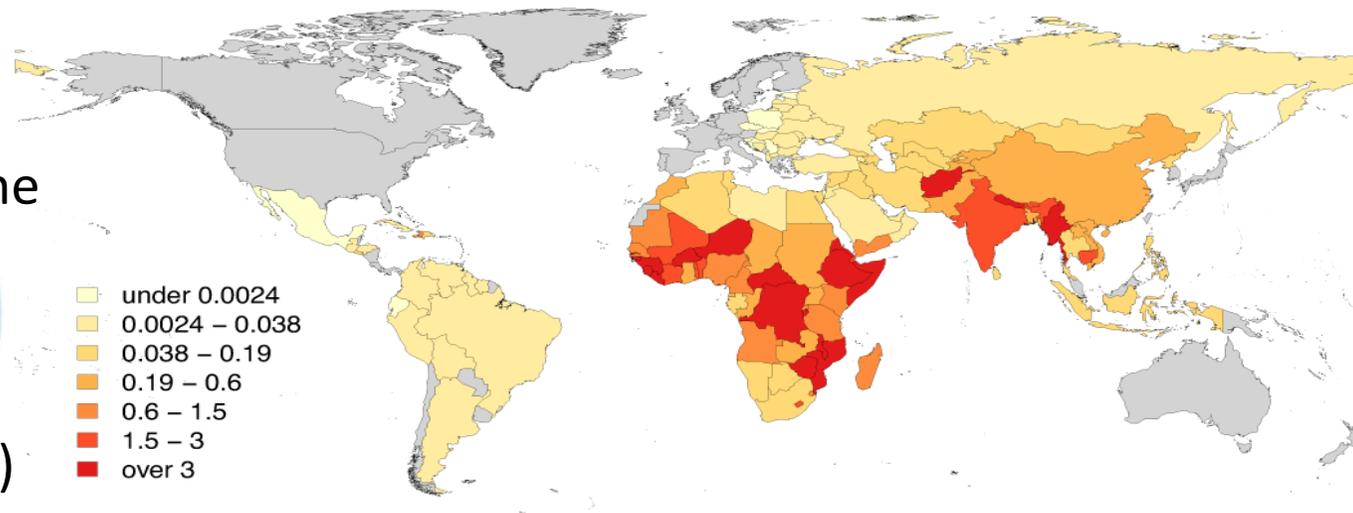
OIE / WHO / EU Reference Laboratory for rabies,
Anses-Nancy Rabies and Wildlife Laboratory



DISEASE GLOBAL IMPACT

- Rabies is a neglected, vaccine-preventable disease
- 100% fatal
- ~60,000 *deaths* per year (one person every 9 minutes, ~100 children each day)
- Dog bites cause ~ 95-99% of human cases
- Weak data and under-reported
- Impacts animal AND human health and welfare
- Elimination of dog-to-dog transmission of rabies is possible

Distribution of the global burden of rabies per capita death rates (per 100,000 persons)



Source: Hampson *et al.*, 2015



WORLD RABIES DAY
SEPTEMBER 28

The Global Anti-rabies Efforts: Human and Animal Vaccines and Eradication Programs, 2021

RABIES RESERVOIRS IN EUROPE

Cycle on non-flying mammals (classical rabies)



Red fox



Raccoon dog

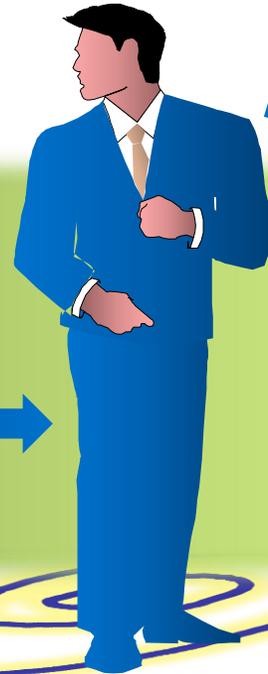
Lyssavirus
RABV virus species

Cycle on flying mammals

Lyssavirus
Virus species
EBLV-1, EBLV-2,
BBLV and LLBV



Insectivorous
bats



**WORLD RABIES DAY
SEPTEMBER 28**

The Global Anti-rabies Efforts: Human and Animal Vaccines and Eradication Programs, 2021

BACKGROUND : SOME KEY DATES

- **At the end of the 1970s** : First oral vaccination campaigns (ORV) in Switzerland
- **In the 1980s** : Involvement of Western European countries in ORV
- **1989** : Highest peak on rabies cases – Introduction of the first EC co-financing policy for disease eradication – First ORV initiated in Central Europe
- **From 2004** : Inclusion of 10 north and east European countries in EU - First ORV initiated in these countries
- **From 2007** : First ORV programmes in Romania and Bulgaria (2009) and in several non-EU countries (Ukraine, Belarus, Turkey, Kaliningrad, etc)
- **From 2010** : Instrument for Pre-accession Assistance (IPA) for potential accession of Western Balkans to the EU



**WORLD RABIES DAY
SEPTEMBER 28**

The Global Anti-rabies Efforts: Human and Animal Vaccines and Eradication Programs, 2021

ORAL VACCINATION METHOD: A UNIQUE CONCEPT FOR BEST COST-BENEFIT RATIO

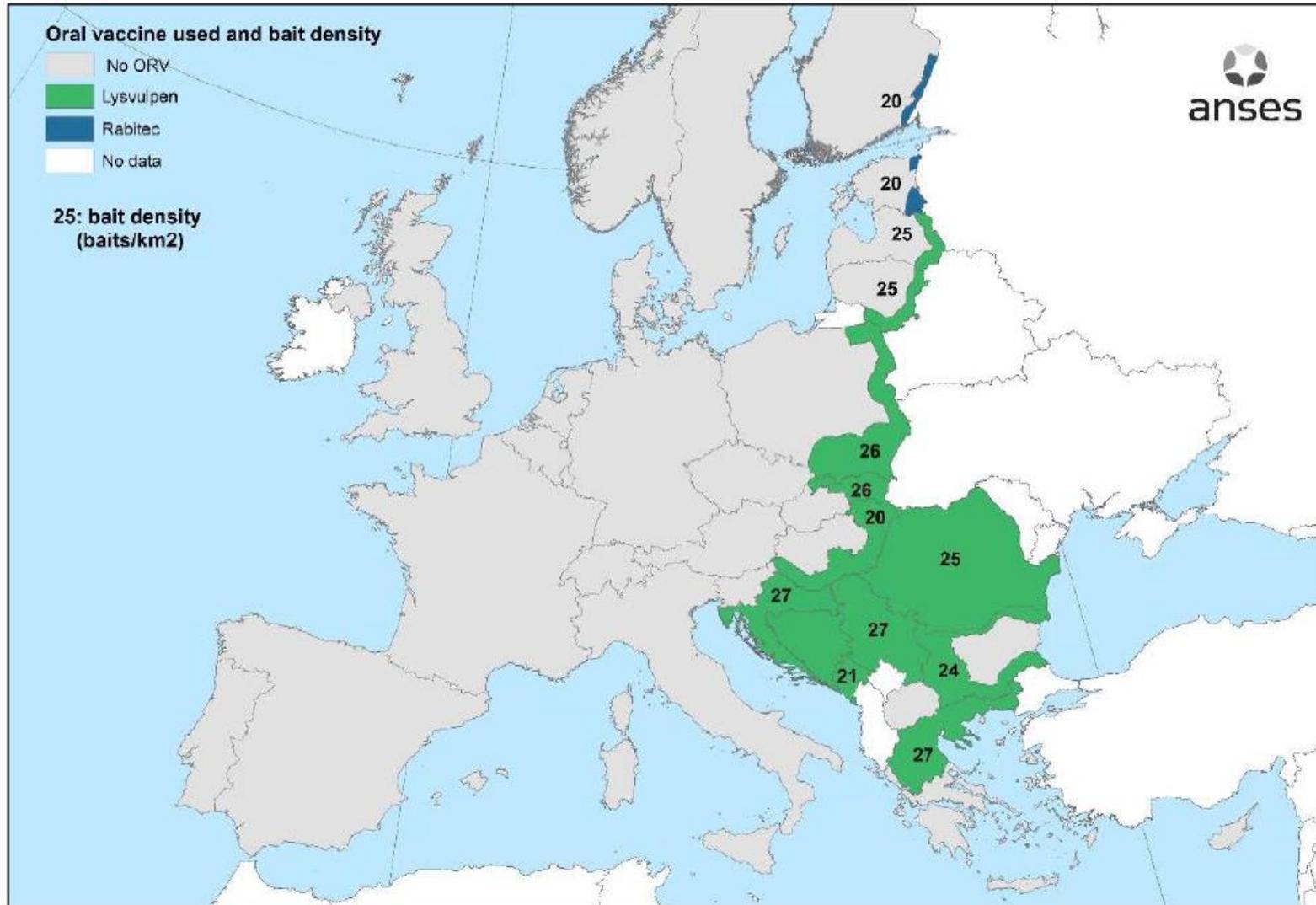
- Bait: rabies vaccine + biological marker (tetracycline)
- Distribution of baits in spring (April - May) and in Autumn (September – November)
- Regular distribution of 20 baits/km²
- Distribution by helicopter or by fixed-wing aircraft
- Choice of the area to be vaccinated : whenever feasible, it is preferable to vaccinate as a whole the totality of the infected area.



**WORLD RABIES DAY
SEPTEMBER 28**

The Global Anti-rabies Efforts: Human and Animal Vaccines and Eradication Programs, 2021

ORAL RABIES VACCINATION CAMPAIGNS CONDUCTED IN 2020



Twelve Member States are currently involved in ORV (Bulgaria, Croatia, Estonia, Finland, Greece, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia)

Lysvulpen vaccine (Bioveta, Czech Republic) : attenuated strain of the rabies virus SAD Bern composed of two dominant subpopulations of viruses, namely SAD Bern and SAD B19 “like”viruses

Rabitec vaccine (CEVA Santé Animale, France) : genetically modified organism (GMO), attenuated rabies vaccine. The vaccine strain SPBN GASGAS is a recombinant rabies virus derived by site directed mutagenesis from SAD B19

Source: Anses, 2021 and Courtesy of Dr. Rosalind Munnis, DG SANTE, European Commission

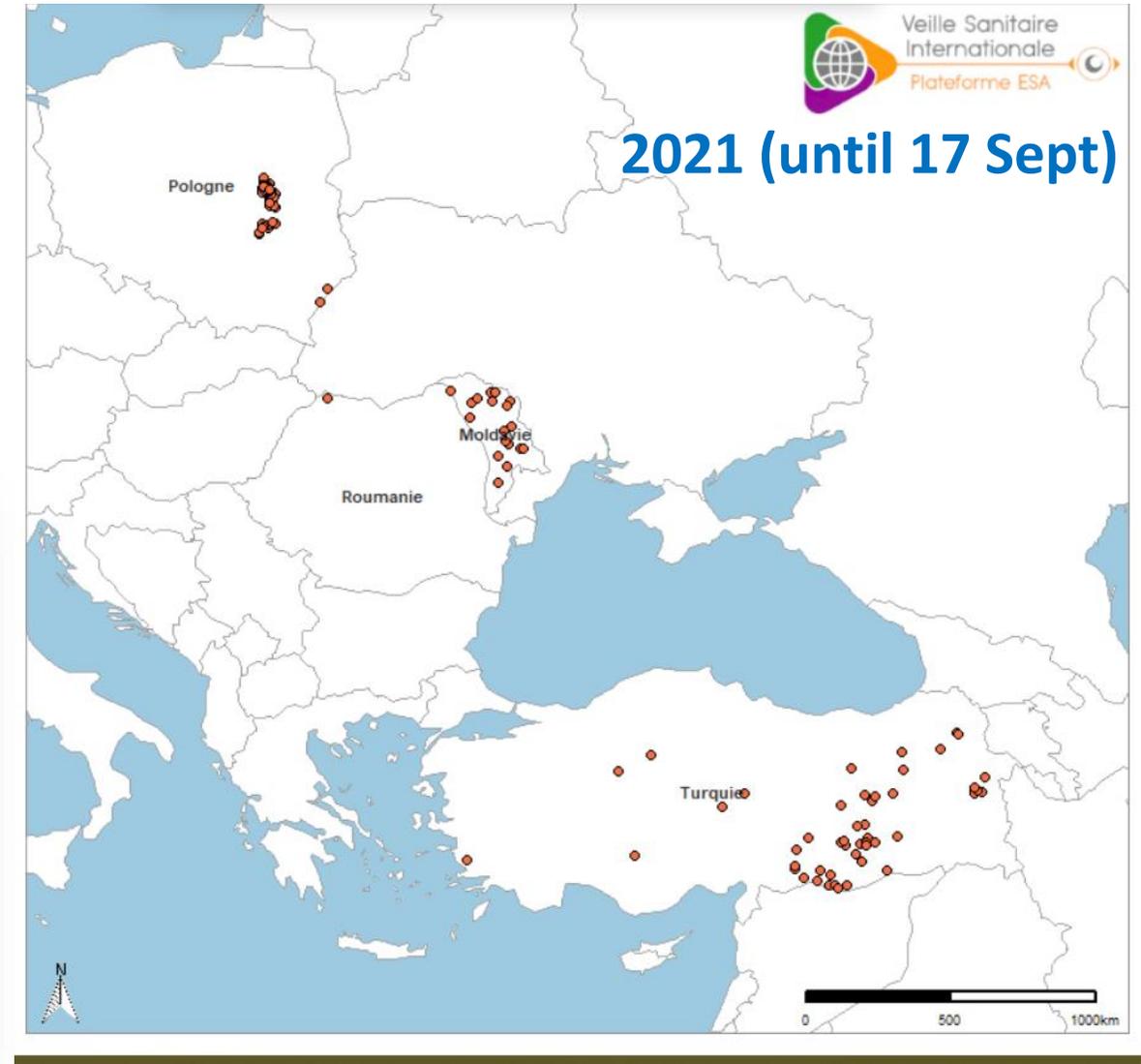


WORLD RABIES DAY
SEPTEMBER 28

The Global Anti-rabies Efforts: Human and Animal Vaccines and Eradication Programs, 2021

RABIES IN INDIGENOUS ANIMALS IN EUROPE IN 2020 AND 2021*

- **In 2019** : 4 cases in Romania, 1 case in Poland
- **In 2020** : 5 cases in Romania, 7 cases in Poland
- **In 2021 (until 17 September)** : 1 case in Romania, 56 cases in Poland
- In Moldova and Turkey (up to 17 September 2021, 19 and 72 cases, respectively)



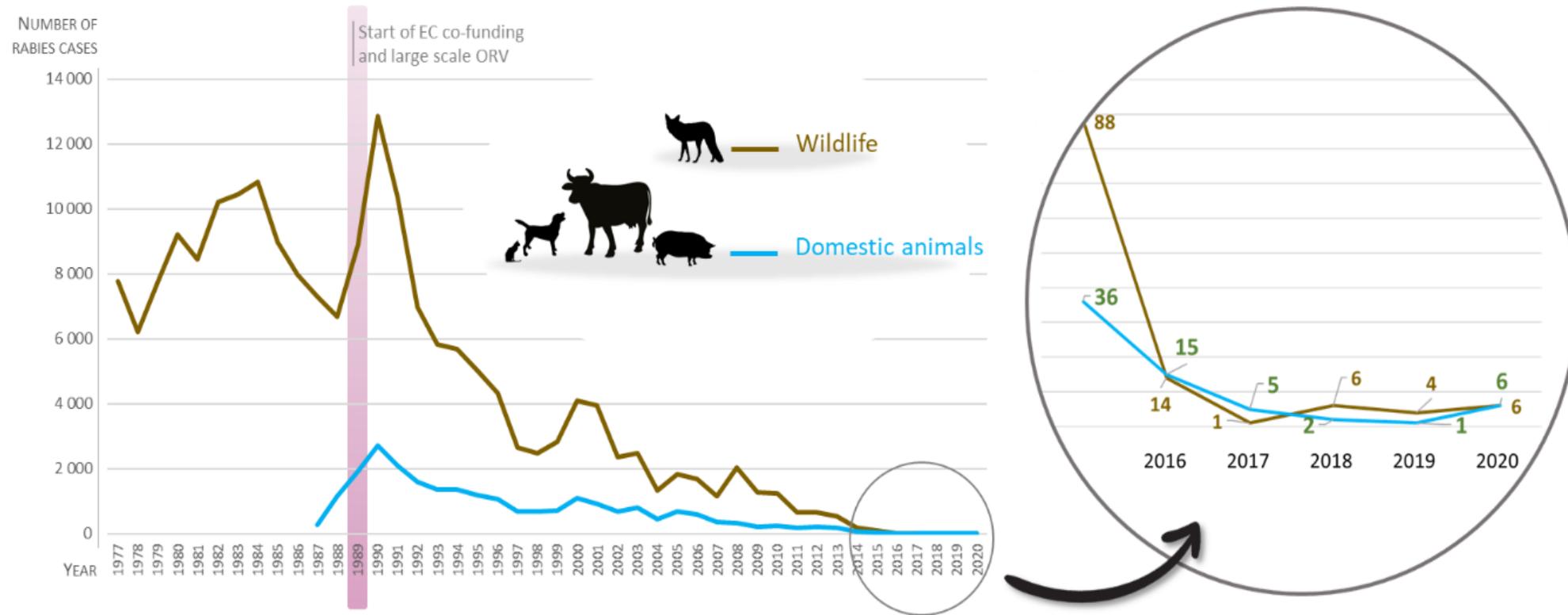
* Source : ADIS, OIE, Rabies Bulletin Europe, Rabies Information System of the WHO



WORLD RABIES DAY
SEPTEMBER 28

The Global Anti-rabies Efforts: Human and Animal Vaccines and Eradication Programs, 2021

EVOLUTION OF RABIES IN INDIGENOUS ANIMALS IN THE EU 1977 - 2020



As a result :

- Regular decrease of the areas vaccinated in the Member States
- Increase of the areas vaccinated in non-EU bordering countries

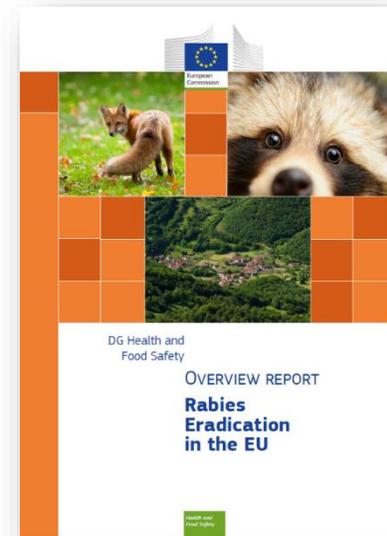


**WORLD RABIES DAY
SEPTEMBER 28**

The Global Anti-rabies Efforts: Human and Animal Vaccines and Eradication Programs, 2021

MAJOR SETBACKS ENCOUNTERED IN EUROPE

- Procurements for vaccines or lack of funding : Missing campaigns
- Oral vaccination stopped too early after the last recorded case or not applied on a regular basis (twice a year)
- Too small vaccination zone around residual foci
- Delayed or lack of coordination between neighbouring countries
- Inappropriate strategy in the fields (flight lines, bait dropping, etc...)
- Inappropriate monitoring of the vaccination efficacy (not enough samples, samples analysed years after the campaigns, etc...)
 - Incidence of rabies
 - Bait uptake
 - Seroconversion



WORLD RABIES DAY
SEPTEMBER 28

The Global Anti-rabies Efforts: Human and Animal Vaccines and Eradication Programs, 2021

CHALLENGES



- Maintaining a high rank of priority by the national authorities for continuing ORV until complete elimination is achieved in the country and in the bordering infected countries
- Maintenance of an adequate surveillance despite a context of disappearance of the virus
- European countries not already involved in ORV should rapidly initiate it
- Illegal importation of rabid pets and indigenous and travel-acquired human rabies cases : promoting both awareness and behaviours which can help to prevent the disease
- Improve the vaccination coverage of dogs and cats and management of stray dog populations



Department for Environment, Food and Rural Affairs
Animal and Plant Health Agency
Advice Services - International Disease Monitoring

Preliminary Outbreak Assessment

Rabies in a cat in Italy

1 July 2020

Disease report

DISPATCHES

European Bat Lyssavirus Transmission among Cats, Europe

Laurent Dacheux, Florence Larrous, Alexandra Mailles, Didier Boisseleau, Olivier Delmas, Charlotte Biron, Christiane Bouchier, Isabelle Capek, Michel Muller, Frédéric Ilari, Tanguy Lefranc, François Raffi, Maryvonne Goudal, and Hervé Bourhy

The Study

In November 2003, a 6-month-old female stray cat (cat no. 1) was found ill in a public garden in Vannes (Morbihan District) in western France and taken to a veterinary clinic. This animal had convulsions and moderate dehydration and was emaciated. It was infected by feline immunodeficiency virus, which was compatible with the clinical symptoms. The veterinarian was bitten while providing veterinary care to the cat. After a few days, the cat recovered and was impounded for veterinary surveillance. It died suddenly the following night. No information about potential contact with bats was available.

On November 8, 2007, an 18-month-old female cat (cat no. 2) was taken by its owner to a veterinarian in Fontenay-le-Comte (Vendée District) in western France because of abnormal behavior. The owner reported having been bitten by the cat. The next day, the cat showed severe central neu-



**WORLD RABIES DAY
SEPTEMBER 28**

The Global Anti-rabies Efforts: Human and Animal Vaccines and Eradication Programs, 2021

CONCLUSION

Rabies is a trans-boundary disease

Political and administrative borders are not barriers to rabies spread

- Oral vaccination is a powerful method for rabies control and elimination in wild animals. EU is close to rabies elimination. ORV method is fully standardized (OIE and EU standards).
- Securing long term funding is the most important point to achieve rabies elimination
- Greater effort required in the final phase for effectively eliminating the last foci
- Reasonable hope to achieve rabies elimination in EU in the next years
 - Political engagement from countries, with associated co-funding from EC
 - Efficient EU network – Efficient quality controls and indicators
- Collaborations between EU and Eastern Europe are highly desirable across political borders to achieve rabies elimination in Europe



WORLD RABIES DAY
SEPTEMBER 28

The Global Anti-rabies Efforts: Human and Animal Vaccines and Eradication Programs, 2021



THANK YOU FOR YOUR ATTENTION

Спасибо большое



**WORLD RABIES DAY
SEPTEMBER 28**

The Global Anti-rabies Efforts: Human and Animal Vaccines and Eradication Programs, 2021