European experience in the use of ORV to control rabies in wildlife

Thomas Müller
Conrad Freuling
Elimination of rabies

Fox rabies

Conventional rabies control = Decimation of fox population
- Culling
- Trapping
- Poisoning
- Destruction of fox cubs

ineffective
Oral Rabies Vaccination of Wildlife

Only Solution

Susceptible

Immune barrier

Protected
Oral rabies vaccination
Rabies situation in Europe
Oral rabies vaccination

Technical milestones

- Bright idea & experimental approach
- Proof of concept under field conditions
- Efficacious & safe oral rabies virus vaccines
  - attenuated - recombinant
- Vaccination strategy – Basic principles
  - Timing, bait density, duration, cessation, surveillance, monitoring
- Large-scale vaccination
  - Machine-made baits
  - Implementation of aerial distribution of baits
  - Computer supported automatic dropping devices
- ORV strategy for foxes also effective for raccoon dogs
Oral rabies vaccination

Political milestones

- Pioneering spirit of a few countries
- Strong long term political commitment of governments
  - Legal basis
  - Involvement of all stakeholders
- Commitments of WHO / OIE
  - Rabies expert committees
  - Scientific rabies conferences
  - Informal meetings on rabies control & ORV
  - Recommendations
- Support of European Union:
  - (50%) 75% co-financing of ORV campaigns
  - Pet Travel Scheme
  - Task force rabies
Oral rabies vaccination
Implemented programmes (1978-2014)
Oral rabies vaccination
Elimination of fox rabies in the EU

ORV implementation

area ever vaccinated

rabies free countries

30 countries

Coherent area: 2.73 Mio km²
Cumulative area: 38.5 Mio km²

15 countries
Oral rabies vaccination
Cumulative area vaccinated (1978 - 2018)

The elimination of fox rabies from Europe: determinants of success and lessons for the future

Conrad M. Freuling¹, Katie Hampson², Thomas Selhorst³, Ronald Schröder³, François X. Meslin⁴, Thomas C. Mettenleiter³ and Thomas Müller¹

35 Mio km²
Oral rabies vaccination
Vaccination areas & rabies prevalence
Oral rabies vaccination
Vaccine virus strains used (1978 - 2014)

Spatio-temporal Use of Oral Rabies Vaccines in Fox Rabies Elimination Programmes in Europe

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- SAD Bern
- SAD B19
- SAG 1
- SAG 2
- SAD P5/88
- V-RG
- SAD VA1
- Vnukovo 32
- RV 97
- ERA-G333
- KMIEV-94
- SPBN GASGAS
Oral rabies vaccination of foxes
Vaccines used in Europe (1978 - 2018)

823 Mio. baits
Oral rabies vaccination
Success stories from North America

Elimination of Arctic Variant Rabies in Red Foxes, Metropolitan Toronto
R. C. Rosatte,* M. J. Power,‡ D. Donovan,§ J. C. Davies,* M. Allan,* P. Bachmann,* B. Stevenson,*
A. Wandel,* and F. Muldoon†

ELIMINATION OF RABIES FROM RED FOXES IN EASTERN ONTARIO

Charles D. MacInnes,1,2 Stephen M. Smith,3 Rowland R. Tinling,4 Neil R. Ayers,4
Peter Bachmann,1 David G. A. Ball,1 Laurie A. Calder,1 Sarah J. Crosgrey,2 Carolyn Fielding,7
Peggy Hauschildt,1 Janet M. Honig,1 David H. Johnston,1 Kenneth F. Lawson,3
Christopher P. Nunan,1 Michael A. Pedde,1 Bruce Pond,3 Robert B. Stewart,1 and
Dennis R. Voigt1


Thomas J. Sidwa, DVM; Pamela J. Wilson, ME; Guy M. Moore, MS; Ernest H. Oertli, DVM, PhD, DACVPM;
Bradley N. Hicks, BS; Rodney E. Rohde, MS; David H. Johnston, BS

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Conclusions

- Oral vaccination is an effective tool to control rabies in wildlife
- Wildlife rabies cannot be eradicated(!)
  - elimination feasible for certain reservoir species only
- A multitude of challenges ahead & problems to be solved
  - will be a long, stony road and will take decades
  - need for sustained political and financial support
  - development of alternative, more potent or species-specific oral rabies vaccines
  - more applied research needed