Free-ranging systems and wildlife: overview of shared and emerging infectious diseases in Europe

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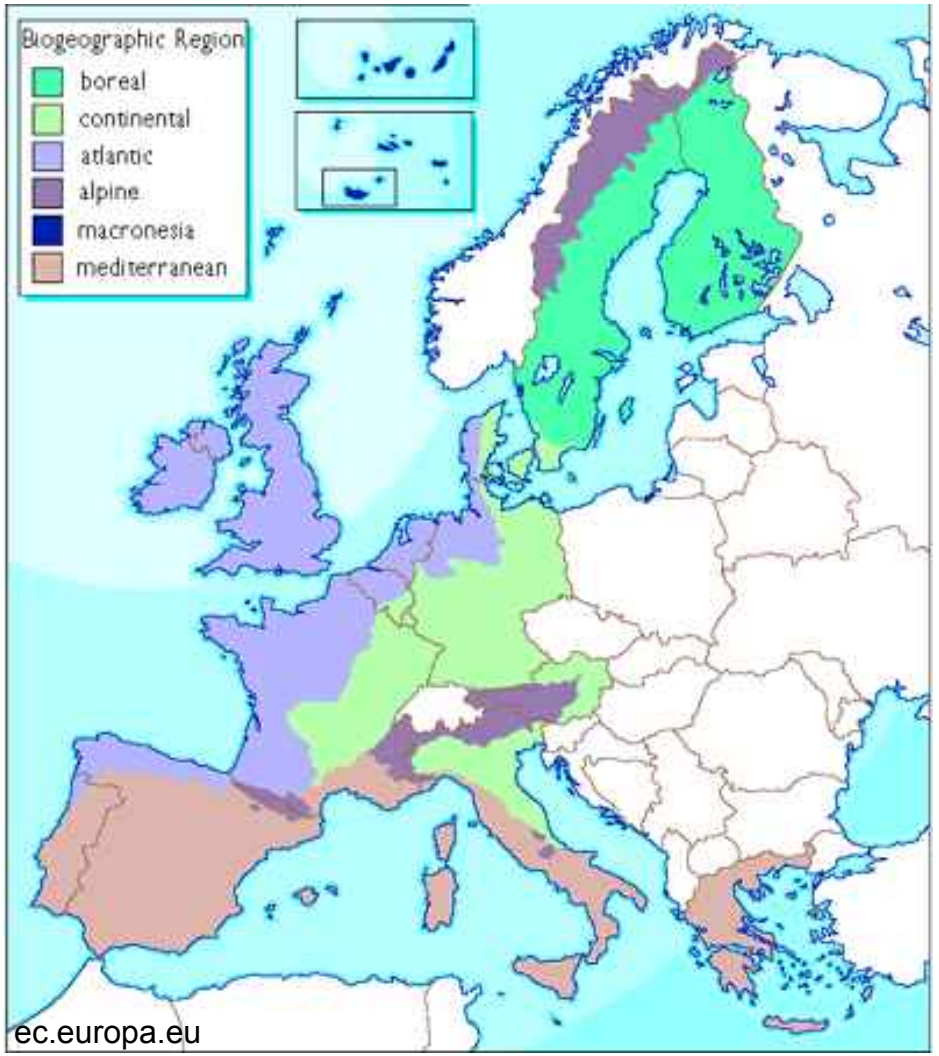
I.Shared spaces



ec.europa.eu

- Biogeographic regions
  - Climate
  - Elevation
  - Landuse


www.aoc-bareges-gavarnie.com/


Jean HARS ONCFS


www.parc-camargue.fr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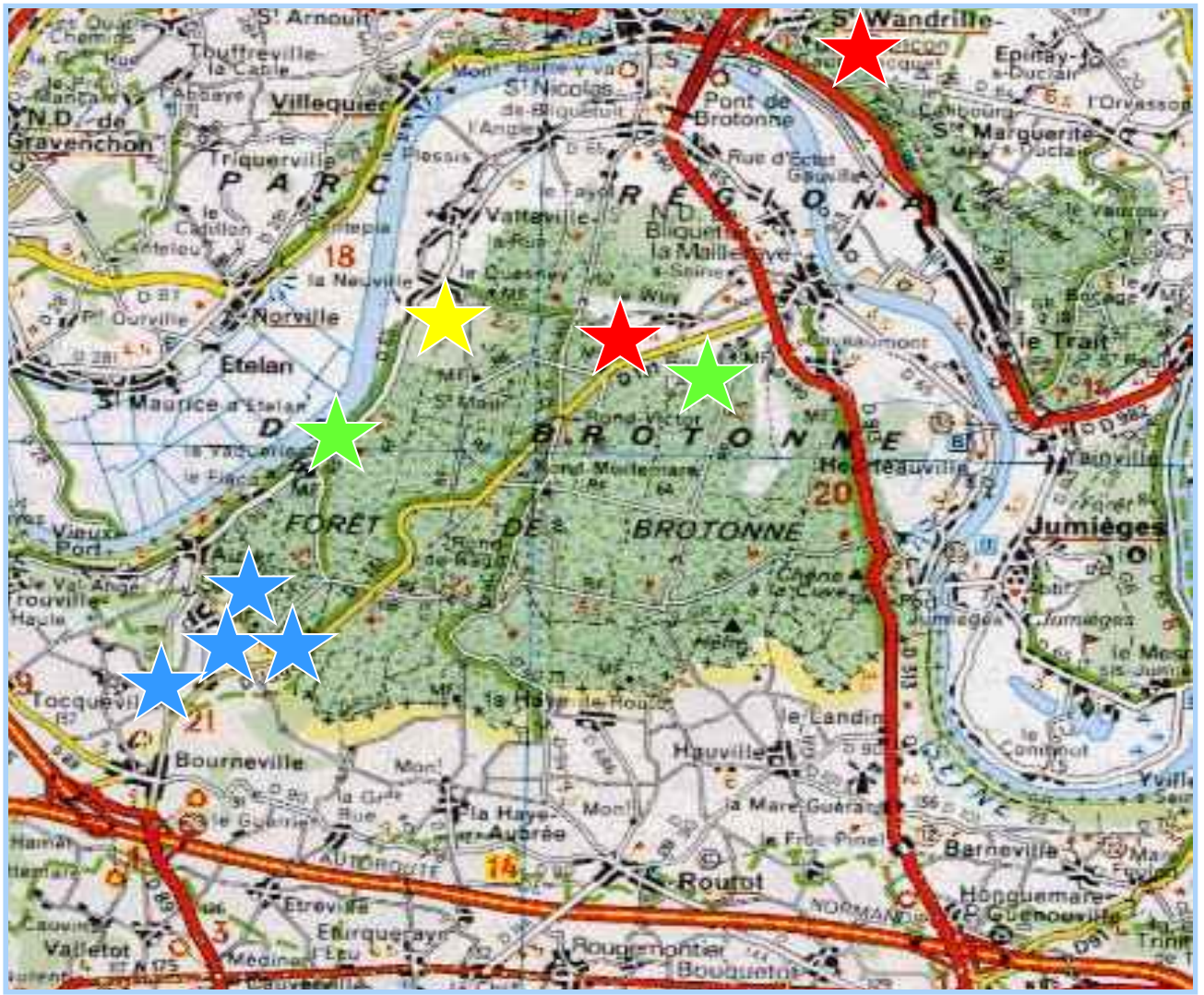
II.Shared diseases

- A few examples of OIE notifiable diseases
  - Bovine tuberculosis (BT)
  - Brucellosis
  - Classical Swine Fever (CSF)
  - Avian influenza
  - Blue-Tongue Virus (BTV)

Bovine tuberculosis

- *Mycobacterium bovis*

A case in France (Normandy)

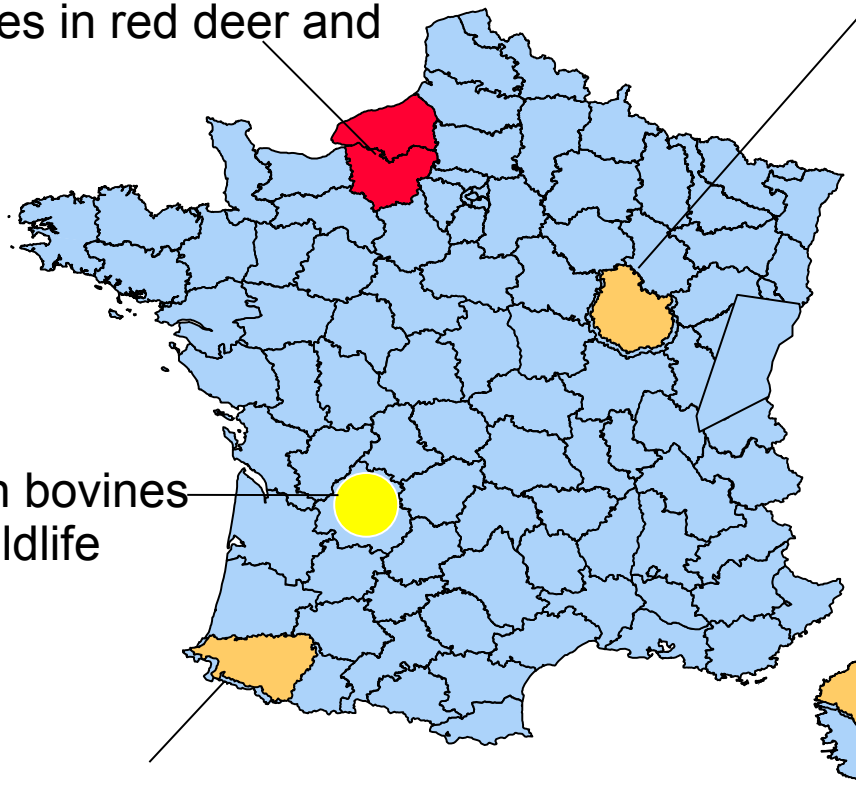


98-99 2000 2003 2006

Same strain in wildlife and bovines :

Spoligotype SB0134

Tuberculosis in ungulates in France



Brotonne outbreak 2001
Clinical cases in red deer and wild boar

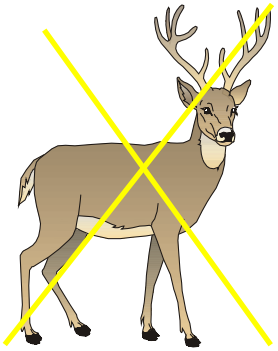
Côte d'Or
Low prevalence in bovines
Spill-over in wild ungulates ?

Dordogne
Low prevalence in bovines
No TB found in wildlife

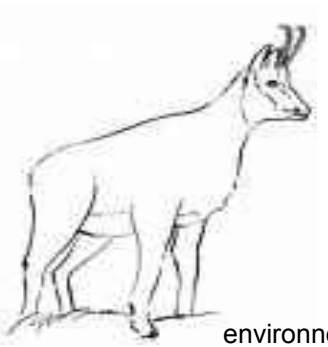
Corsica
Clinical cases in wild boar

Pyrénées Atlantiques
Clinical cases in wild boar

Brucellosis

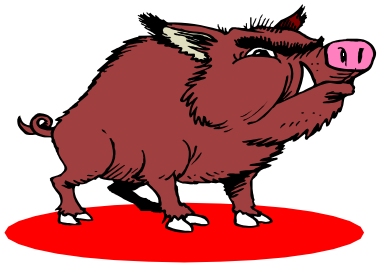


Cervids : no infection to date in France



environnement.ecoles.free.fr

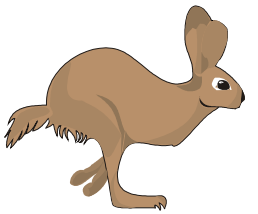
Mountain ungulates (Chamois : *B. melitensis* and *abortus)*



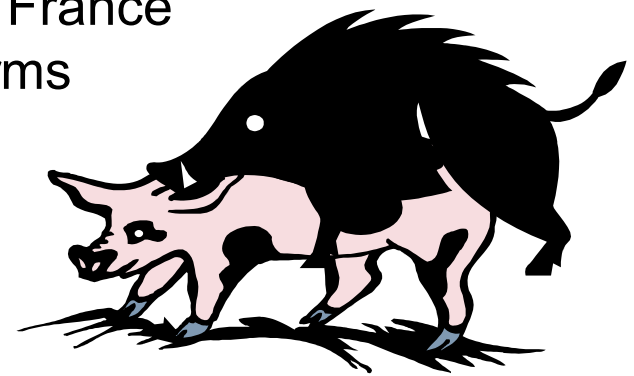
Wild boar : ***B. suis 2***

Seroprevalence 40-50% in France

56 outbreaks in outdoor farms between 1996 and 2008



Hare : *B. suis 2*



www.efsa.europa.eu

European Food Safety Authority

The EFSA Journal (2009) 1144, 1-112

Porcine brucellosis (*Brucella suis*)[1]

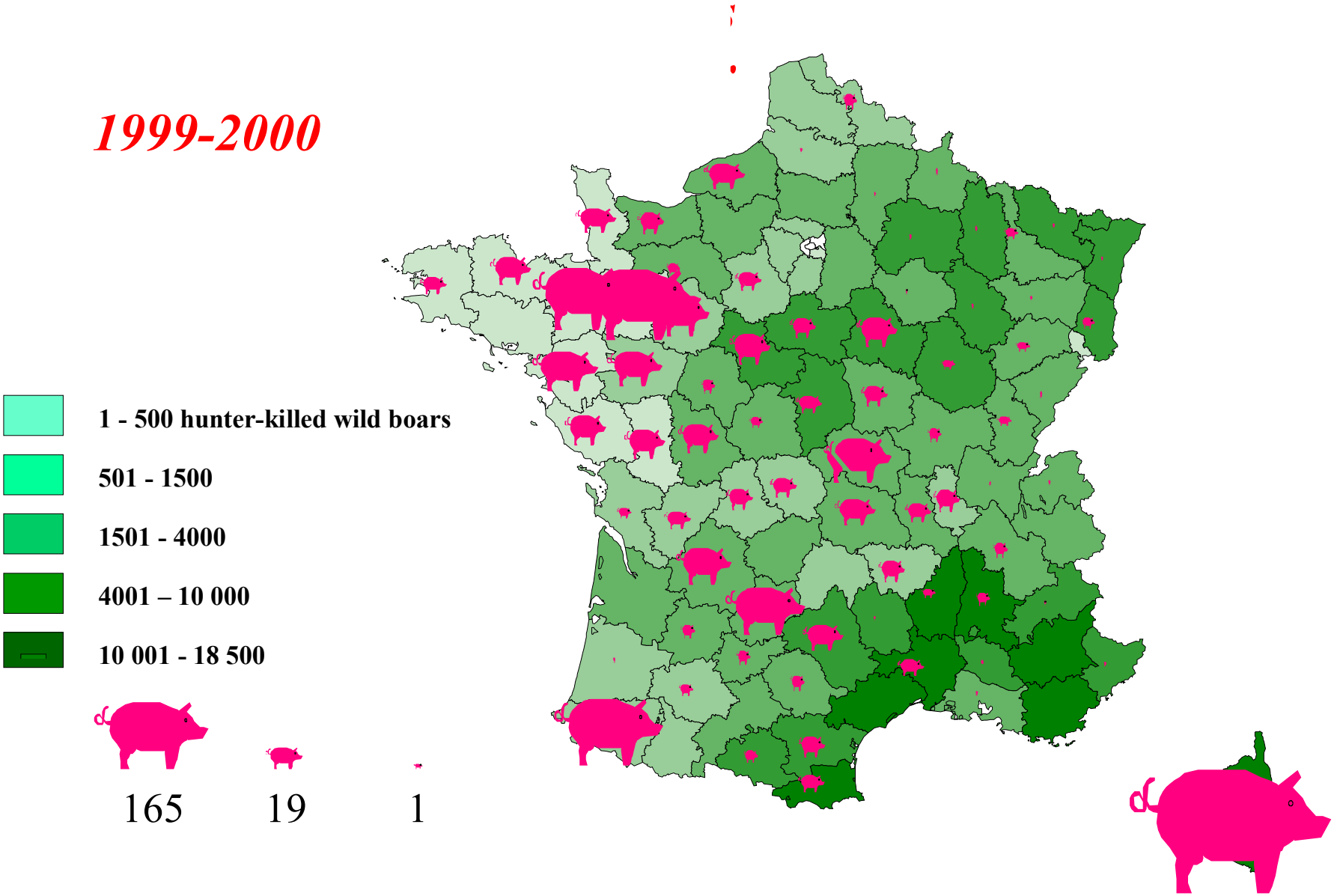
Scientific Opinion of the Panel on Animal Health and Welfare

(Question No EFSA-Q-2008-665)

Adopted on 5 June 2009

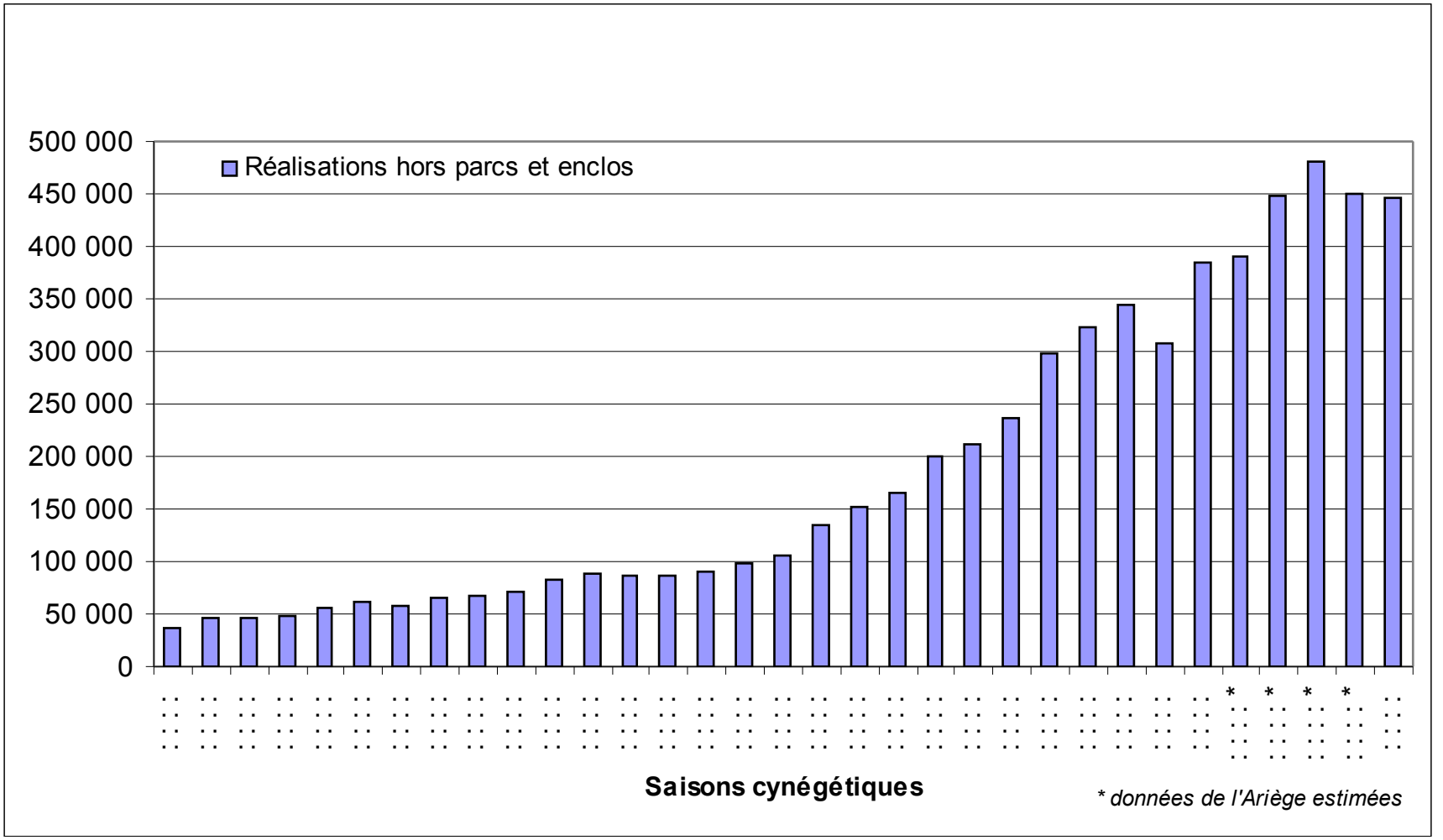
Density of farms and wild boars

1999-2000



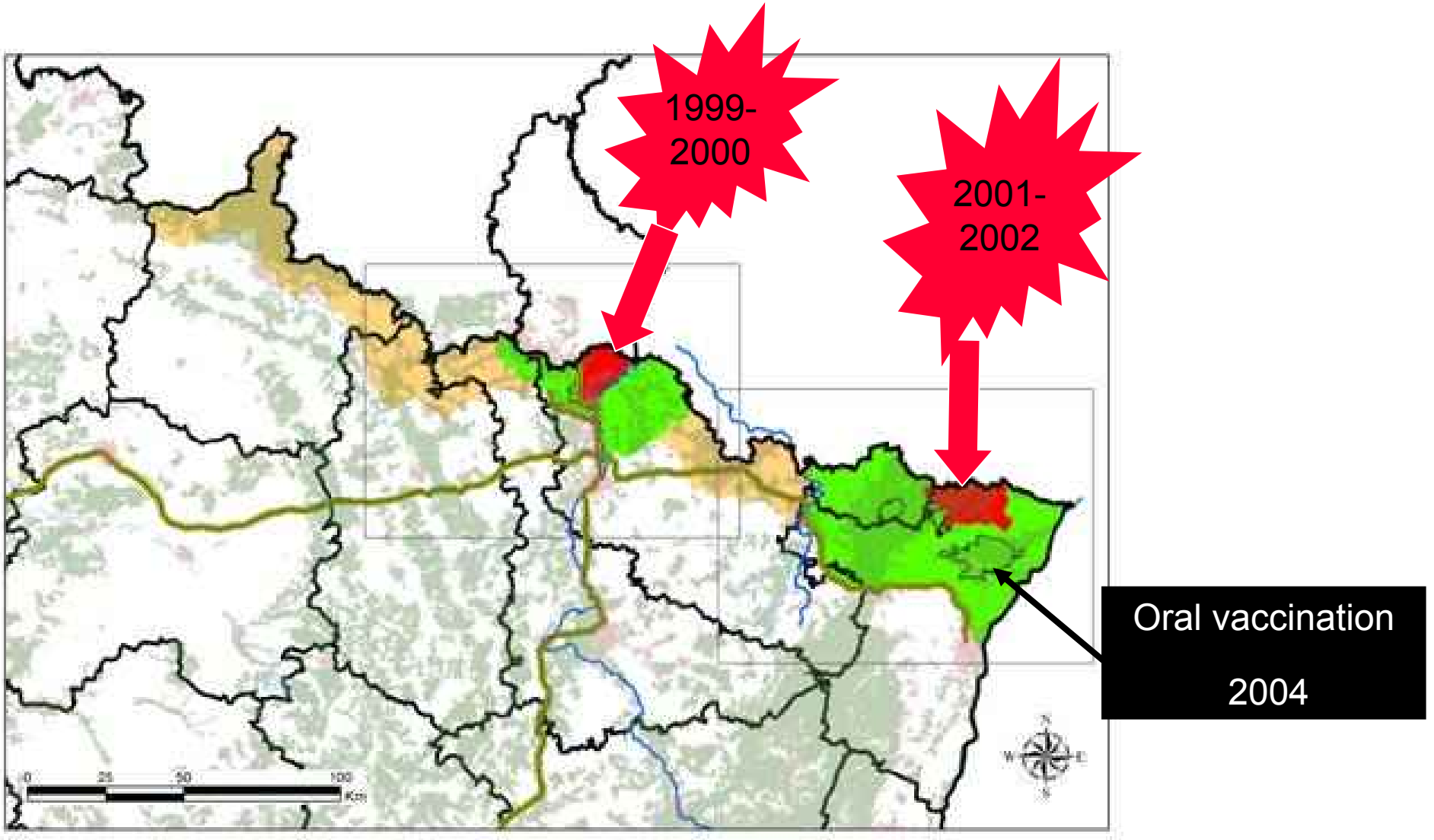
Proliferation of hunted species

e.g. Evolution of number of hunted wild boars in France

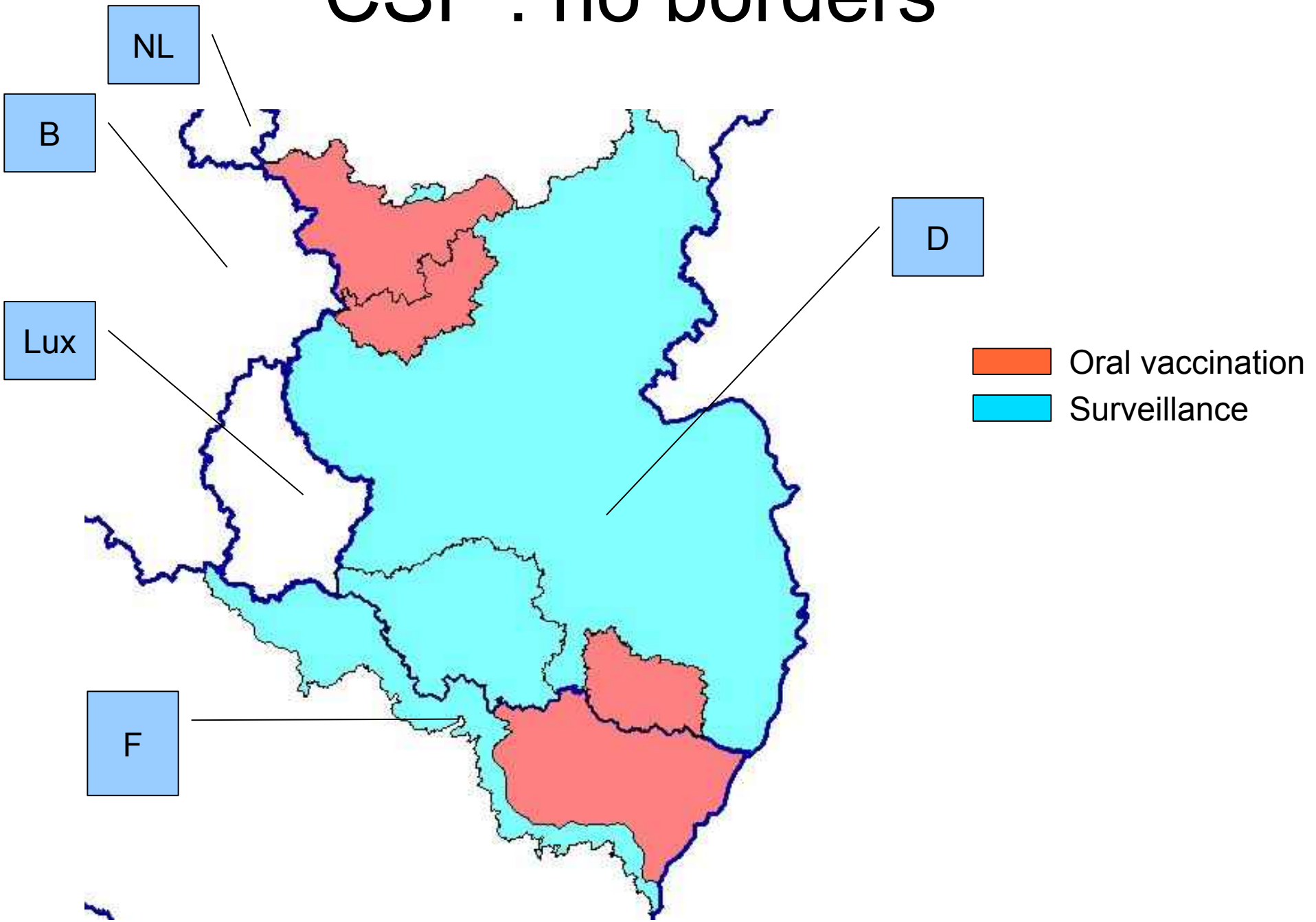


ONGULÉS SAUVAGES le réseau

Classical Swine Fever in wild boars : dense populations



CSF : no borders



Oral vaccination



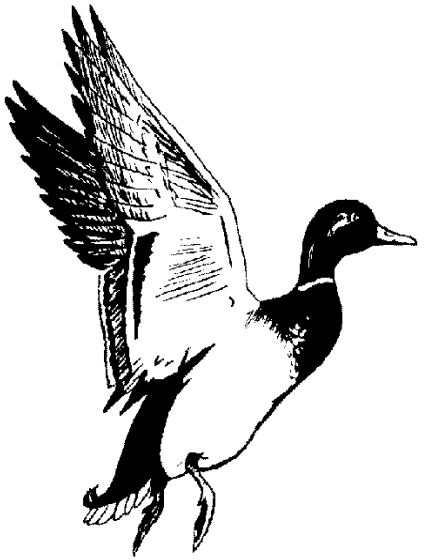
Approx. 550.000 baits distributed per year

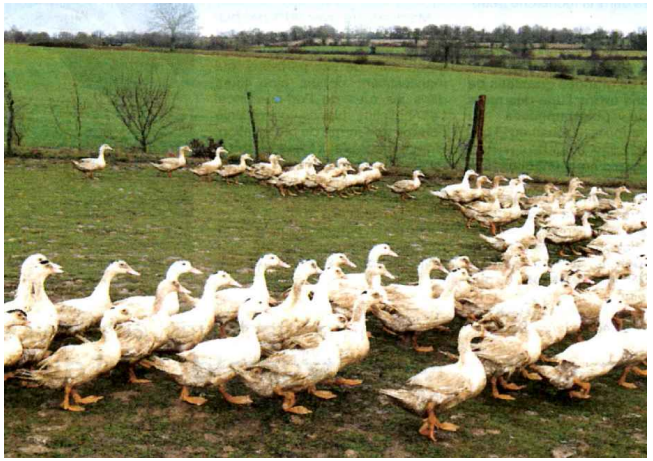
Avian influenza – where do the HP strains come from ?

HP

Migratory birds

Trade





LP reservoir

Emergence of HP strain

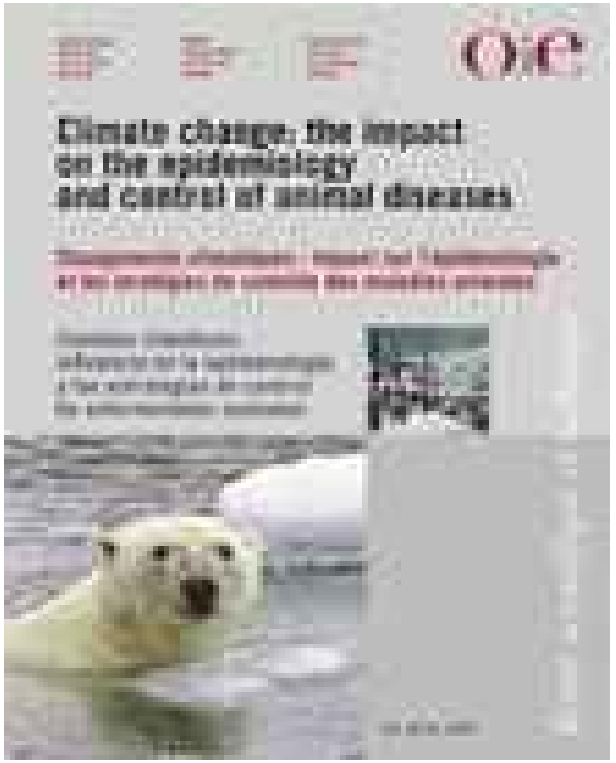
BTV has epizooty reached wildlife ?

- Surveillance 2008 in France (Rossi *et al*. GEESFM 2009)
  - 8%-70% seroconversion in Red deer, no lesions
  - Next to no seroconversion in Roe deer
  - Wild mountain ungulates : not yet ?
- Vector-borne disease:

wildlife reservoir would impair limitation measures

III.Emerging infectious diseases

- What's an emerging disease ?
  - Change in patterns
  - Change in pathogens



- Causes **: global** change
  - Climate
  - Transport and trade (domestic, exotic, game)
  - Social and economical factors (e.g. hunting)
  - Landuse – connectivity / fragmentation

Landuse and connectivity

Availability of food and shelter ; probability of contact

Epidemiosurveillance in Wildlife

- What we know (OIE notifiable)
- What may happen (emerging): **anything**

NEED FOR

- Combined, detailed surveillance and monitoring
  - **active/passive**
  - **domestic/wild**
- Prevalence of vectors,
- Molecular epidemiology of pathogens

Challenges of wildlife surveillance

- Methods not always adapted
- Capture difficult and stressful
- Mortalities underreported (*ca.* 1/20)
- Disease underdiagnosed
- Influence of climate and habitat

=>  sampling strategies !!

Sustainable risk management

- Paneuropean cooperation 
- Regional management with all stakeholders
  - Separation of species
  - Vaccination of wildlife when possible
  - Culling or regulation when necessary

Take into account **ecology**
of hosts and vectors,
as well as
social and economical factors

Thank you for your attention

And many thanks to S. Rossi and N. Ruvoen for helpful discussions.