REMESA-EFSA Potential collaborations

Faro, 14 June 2013

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Animal Health and Welfare Unit

Outline presentation

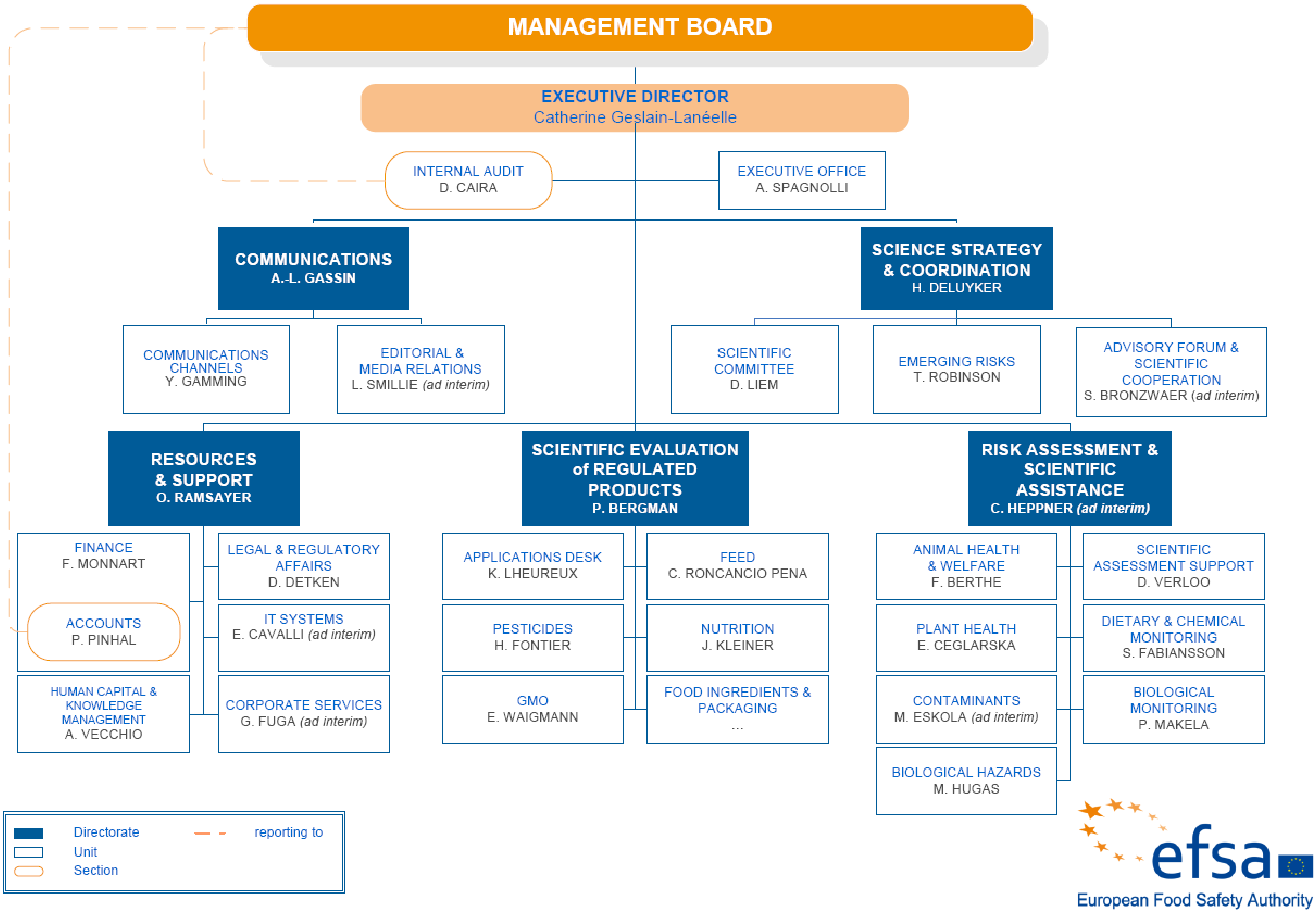
1. What is EFSA's?
2. The AHAW Panel
3. Risk analysis
4. How is an scientific opinion produced?
5. Examples of risk assessments for animal health in a regional context
6. How can EFSA contribute to REMESA' s objectives?

1 WHAT IS EFSA?

Creation of EFSA in 2002

- Set up by Regulation (EC) No 178/2002
- Provide scientific advice, opinions, information, and technical support for EU Community legislation and policies
- Collect and analyse data to allow characterisation and monitoring of risks
- Promote and coordinate development of uniform risk assessment methodologies
- Communicate risks related to all aspects of EFSA's mandate

Organisational Structure on 16/05/2012



2 The Animal Health and Welfare (AHAW) Panel

AHAW Panel - July 2012

Scientific Panels

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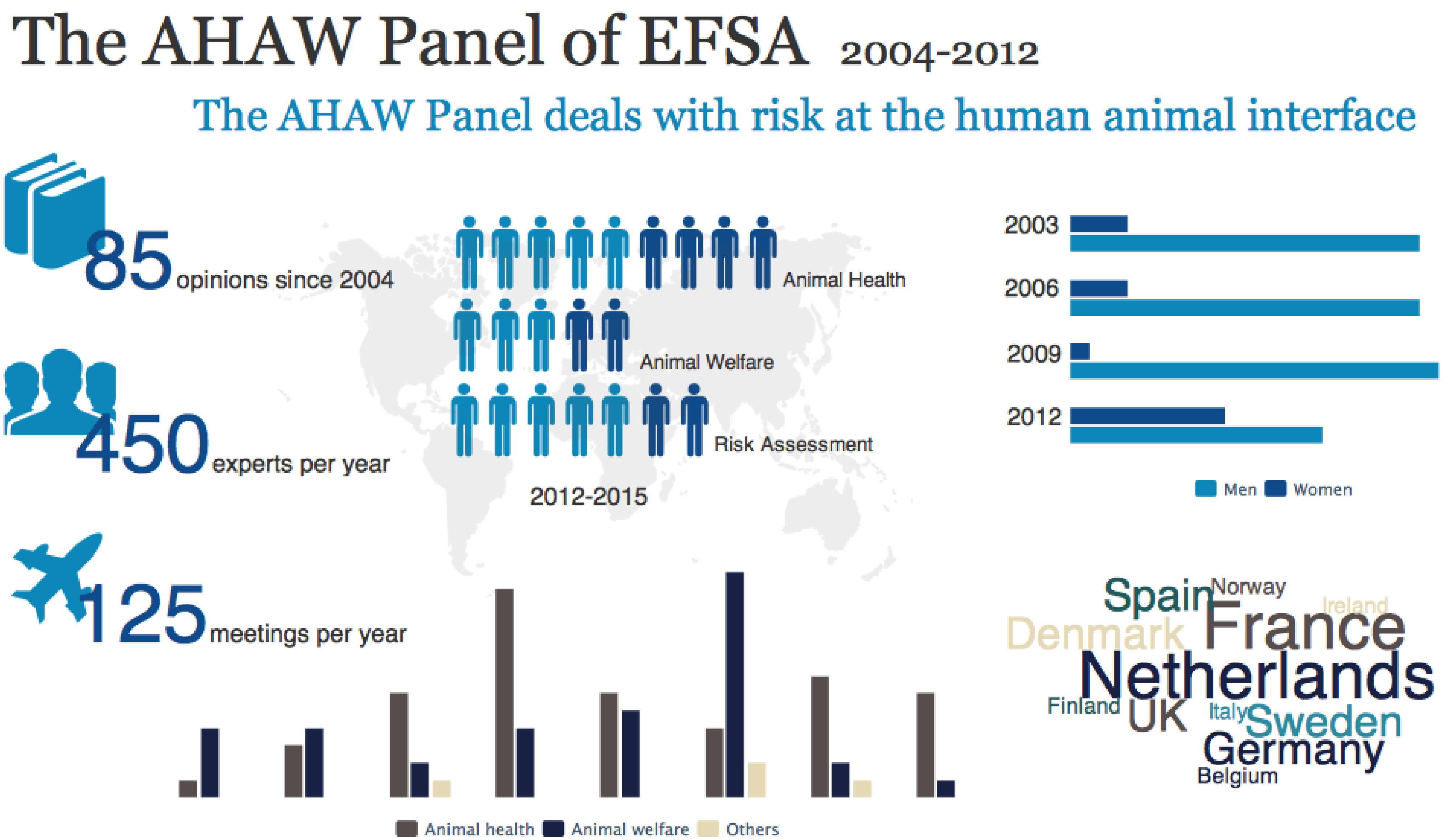
1. Additives and products or substances used in animal feed (FEEDAP)
2. **Animal health and welfare (AHAW)**
3. Biological hazards (BIOHAZ)
4. Contaminants in the food chain (CONTAM)
5. Dietetic products, nutrition and allergies (NDA)
6. Food additives and nutrient sources added to food (ANS)
7. Food contact materials, enzymes, flavourings and processing aids (CEF)
8. Genetically modified organisms (GMO)
9. Plant health (PLH)
10. Plant protection products and their residues (PPR)
11. Scientific Committee (SC)

Outputs of AHAW Panel



3 RISK ANALYSIS

What is Risk Analysis?

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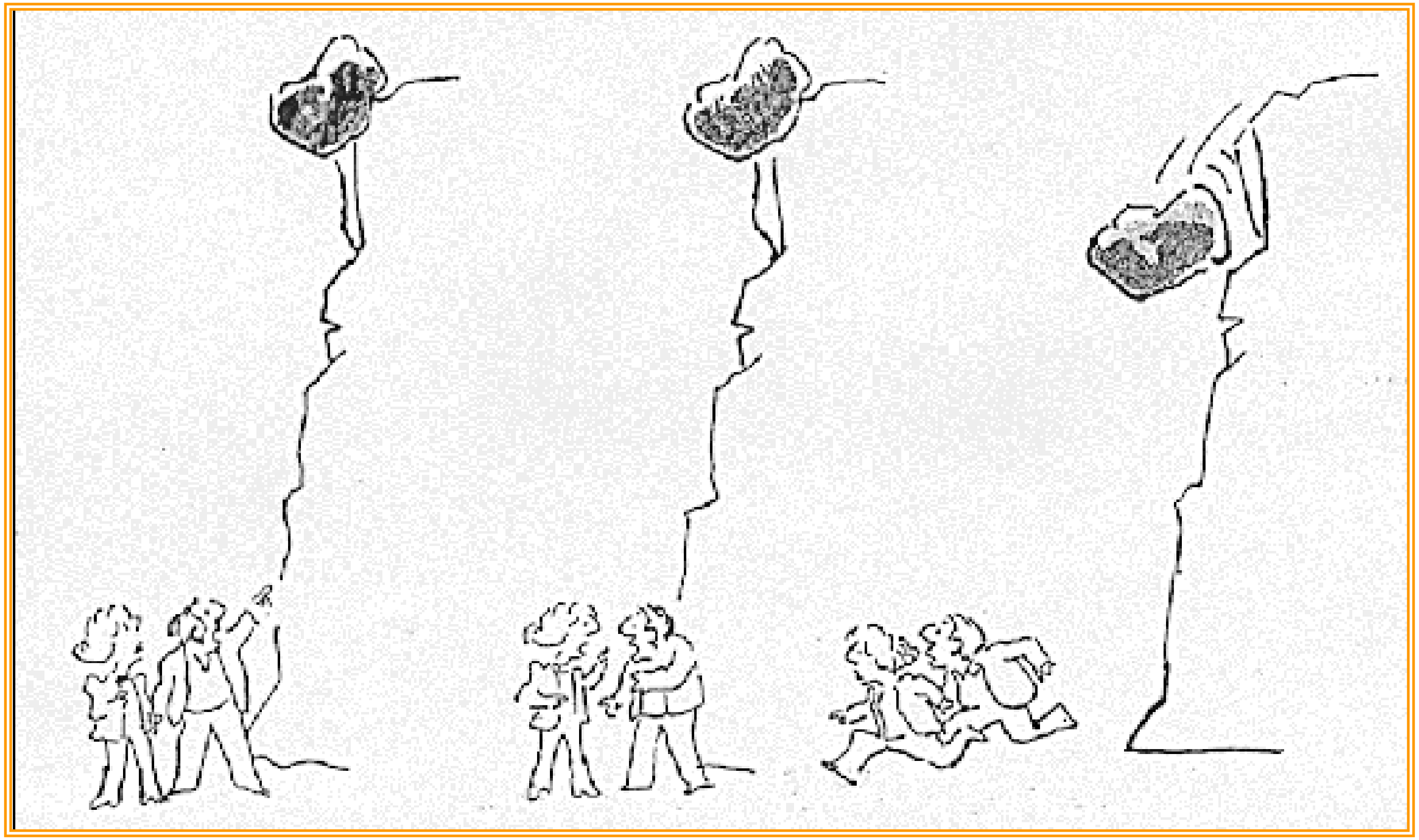
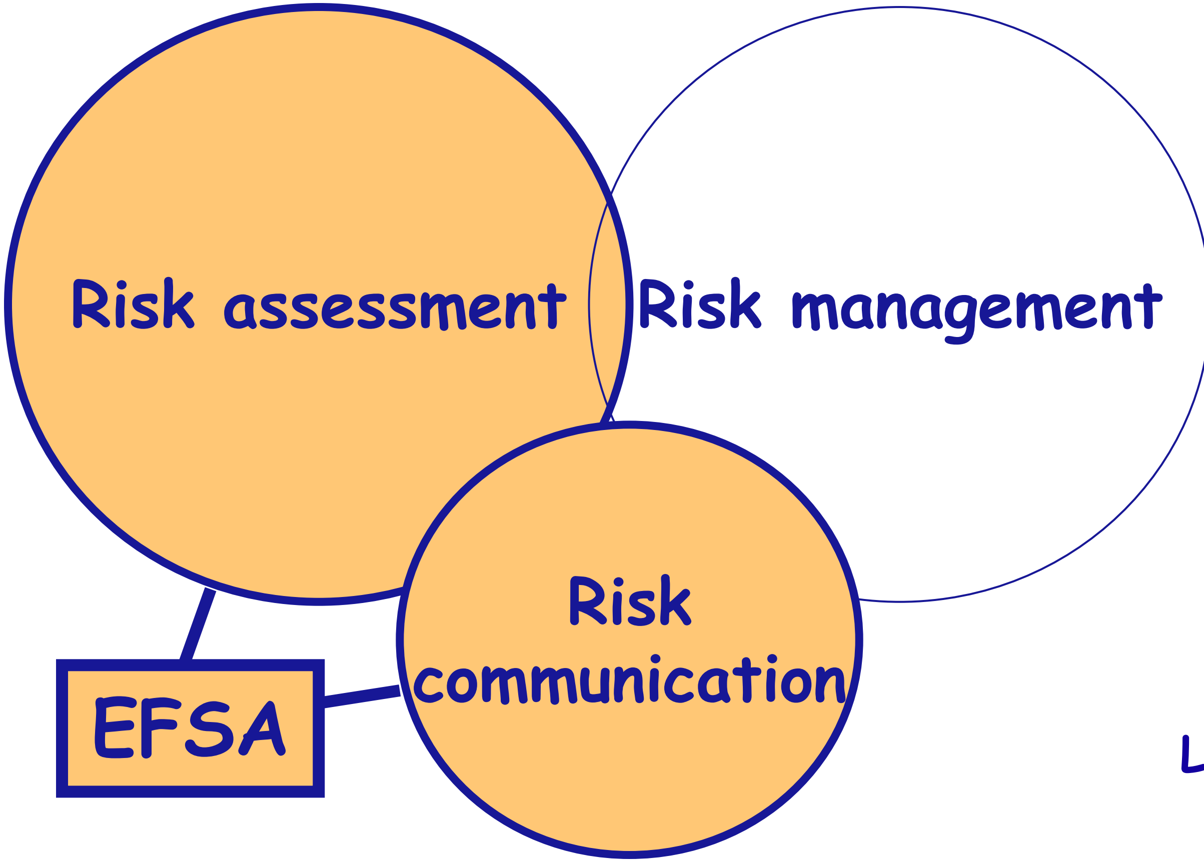
A process consisting of three components

risk assessment | risk communication | risk management



The EFSA paradigm

Hazard identification, Risk assessment, Risk management, Risk communication *(Covello & Merkhofer, 1993)*



adapted from Lammerding (1996)

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HOW IS AN EFSA OPINION PRODUCED?

From "question" to "answer"

European Commission

European Parliament

Member States

EFSA ("self mandate")

Question?

Risk Assessment

From “question” to “answer”

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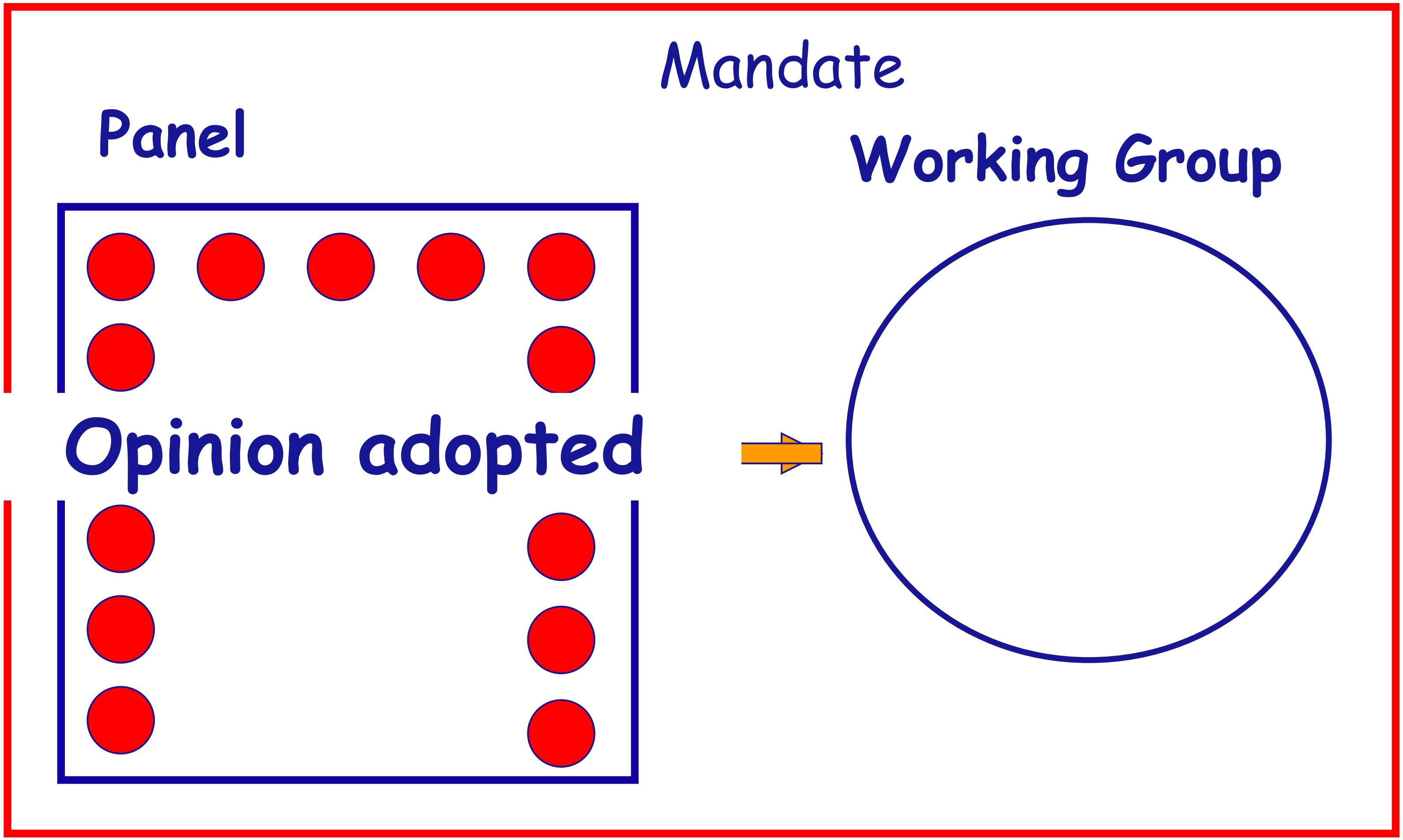
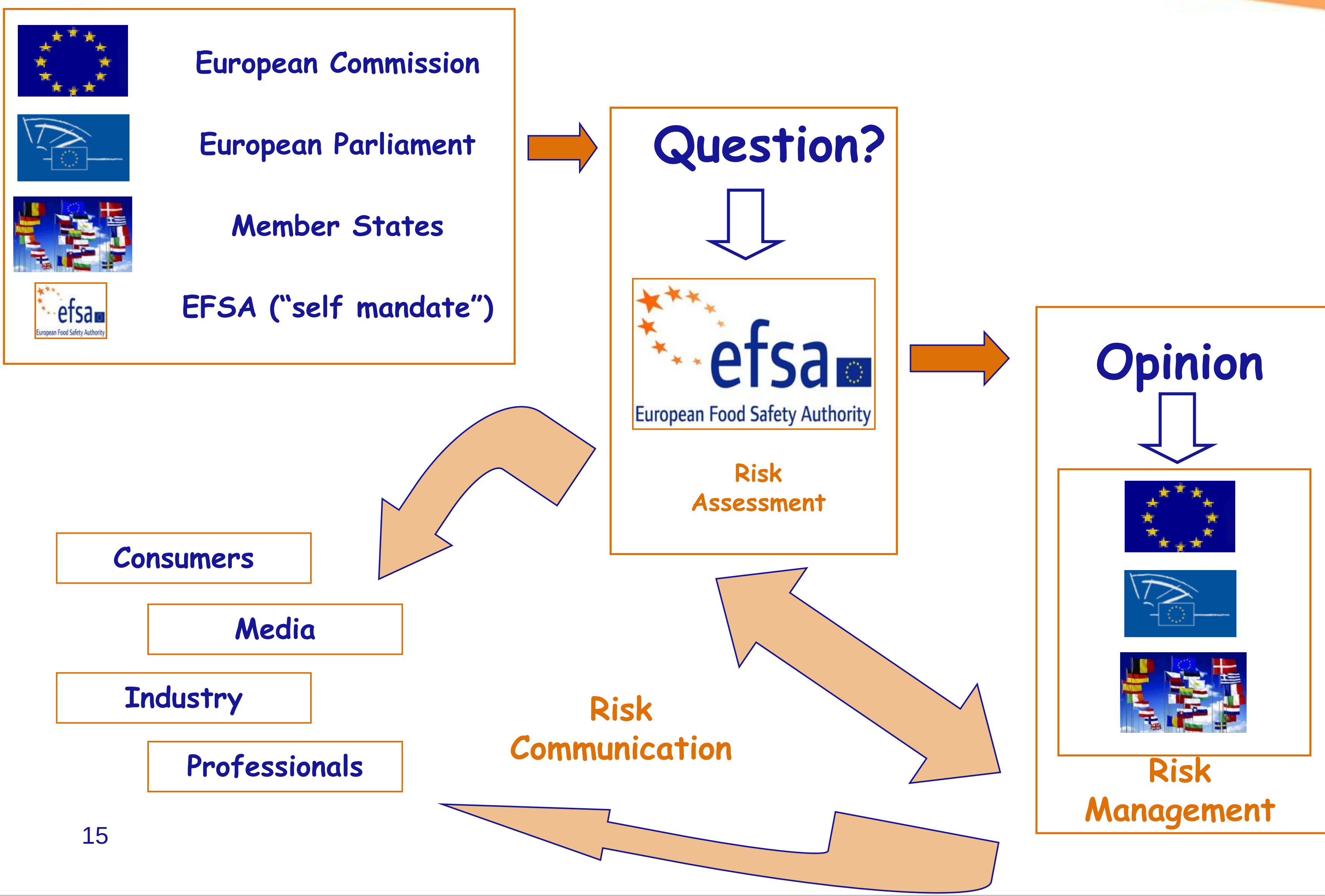


From "question" to "answer"



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EXAMPLES OF RISK ANALYSIS IN A REGIONAL CONTEXT

One examples:

1. Foot and mouth disease (FMD) in Thrace

1. Foot and mouth disease

EFSA Journal 2012;10(4):2635

SCIENTIFIC OPINION

Scientific Opinion on foot-and-mouth disease in Thrace[1]

EFSA Panel on Animal Health and Welfare[2, 3]

European Food Safety Authority (EFSA), Parma, Italy

ABSTRACT:

Background

- In January 2011, Bulgaria notified OIE of a case of FMD in a wild boar in the region of Burgas.

- This index case was followed by 11 outbreaks of FMD in domestic animals kept in that mountainous forest area, which stretches into Turkish Thrace and is inhabited by a large population of susceptible wild and feral fauna

- Two series of outbreaks were observed. The first series of outbreaks (outbreaks 1 to 3) occurred in January 2011 in the southeast of the Burgas region. The second series of outbreaks (outbreak 4-11) occurred in the southwest of the Burgas region in March and April 2011

Background

Locations of the place where the FMDV-positive wild boar (wb) was shot and the 11 outbreaks/IP codes declared by Bulgaria (1-11)

Background

- The causative FMD virus for the index case and each of the outbreaks in domestic animals was of serotype O, which belongs to the PanAsia~2- lineage, and is widespread in the Anatolian Part of Turkey and other countries in western Eurasia, (Valdazo-Gonzalez et al., 2011).

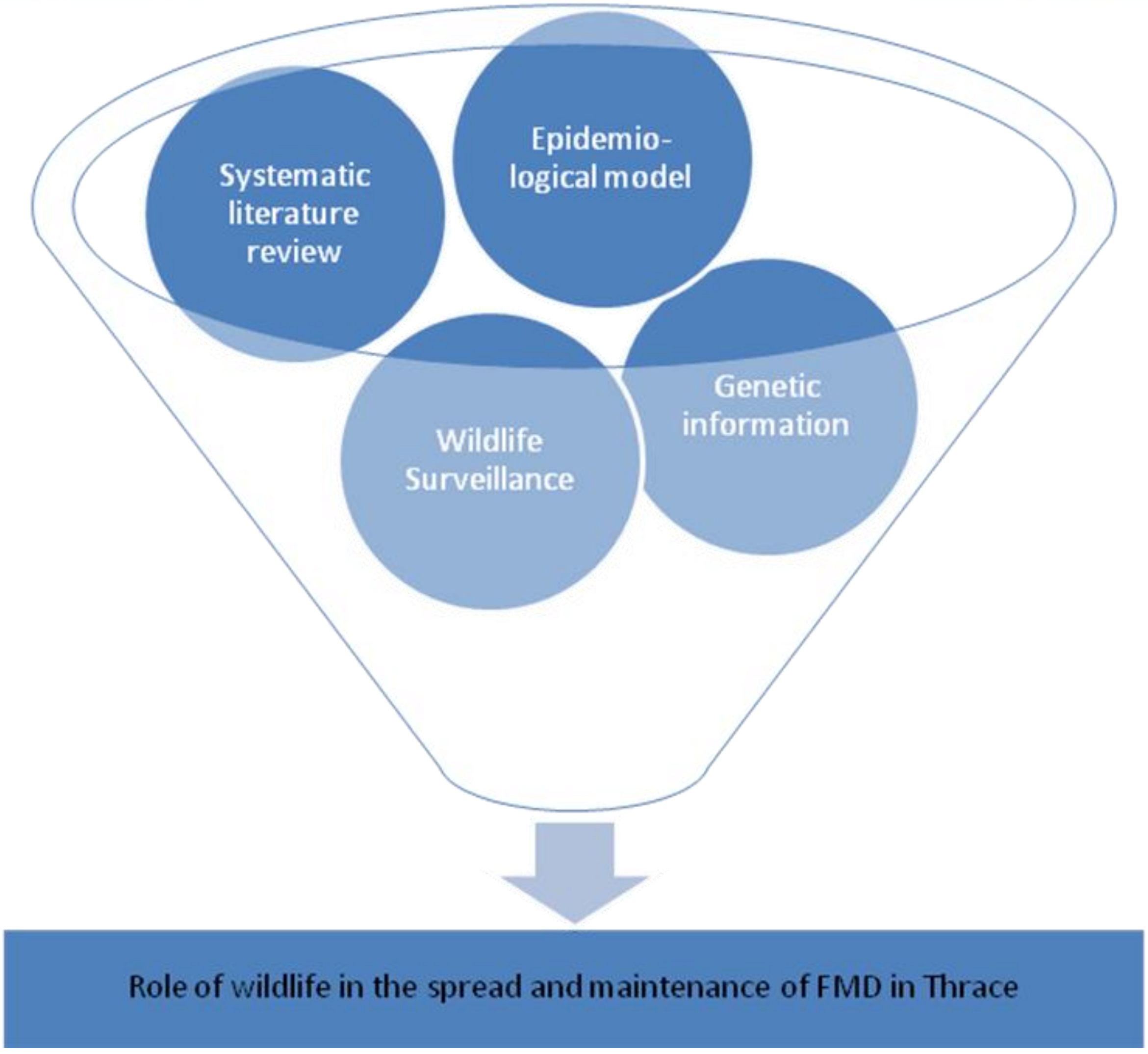
- Serological investigations carried out in that biotope in Thrace revealed wild boar which tested positive for antibodies to non-structural proteins of the FMD virus, however, no FMD virus could be isolated from wild boar.

Background

- Circulation of FMDV in wildlife may pose a threat for introduction of the virus into neighbouring areas
- The epidemiological characteristics of sylvatic FMDV infections in a European context are not well known. It was unclear whether maintenance of the FMDV infection in the wild boar population in Thrace was likely to occur.

→ What is the likelihood of spread and maintenance of the FMDV infection in a population of wild ungulates with similar ecological characteristics as the susceptible wildlife population of Thrace.

The assessment was based 4 aspects:



1. Systematic review

- **Experimental infections in wild boar and deer:**
  - transmission from wild boar or deer to domestic animals, et vice versa, can occur
  - FMDV infection did not cause reduced mobility in wild boar and some deer species (i.e. roe deer), so wildlife may play a role in the spread of the disease
  - some deer species (i.e. fallow deer) may play a role as carrier of the virus
  - there is no experimental evidence for transmission of the disease from such carrier animals to other domestic animals.

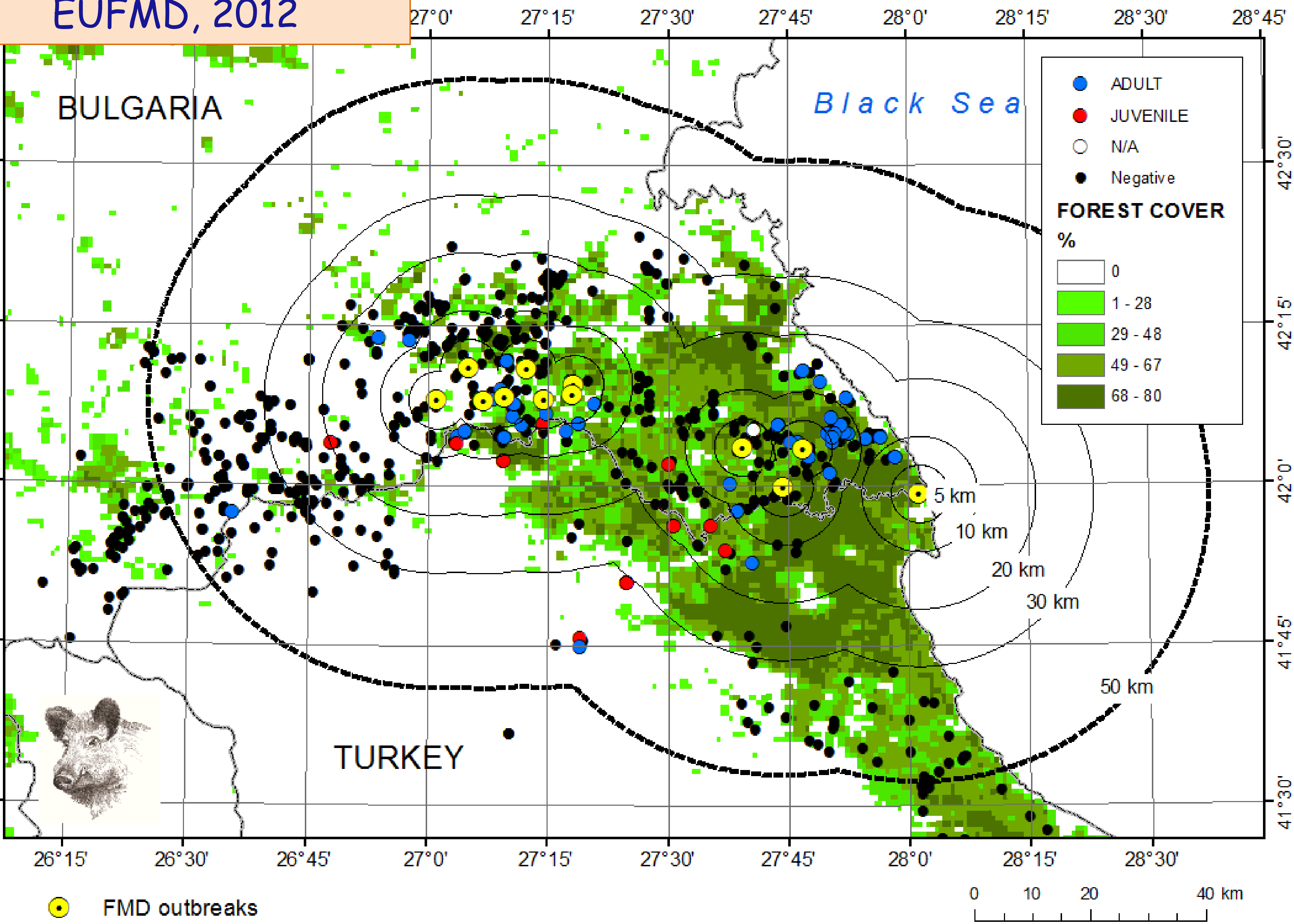
1. Systematic review

- **Observational studies in wild boar and deer:**
  - no evidence for maintenance of infection within wildlife in Europe during earlier FMD outbreaks
  - seropositive wildlife was usually considered to be the result of transmission from domestic animals rather than stand-alone epidemics in wild boar or deer species

2. Active wildlife surveillance

- **Results from Oct. 2011 - Jan. 2012**
  - 1077 individuals from four susceptible wild species were tested serologically and virologically for FMD
  - no FMDV detected in the samples obtained from the wildlife surveillance
  - seropositive animals were found only amongst wild boar and roe deer
  - all seropositive animals were found within 50 km zone around FMD outbreaks
  - the decreasing seroprevalence during this period of time and lack of further outbreaks in domestic animals indicated that the wildlife population was most likely not able to sustain the virus circulation.

EUFMD, 2012



Sero-surveillance in wild boar in 5 to 50 km buffer zones around outbreaks in livestock.

3. Epidemiological model

- **The model indicated that:**
  - FMD will not be sustainable within a wild boar and deer host system alone, but limited spread of FMDV in time and space may occur
  - deer play a marginal role in spreading and maintaining FMDV following incursion into the model population
  - the chance of virus fade-out from the susceptible populations dramatically increases in the summer months
  - continued cross-over of FMDV between domestic and wildlife population will prolong FMDV circulation.

3. Epidemiological model

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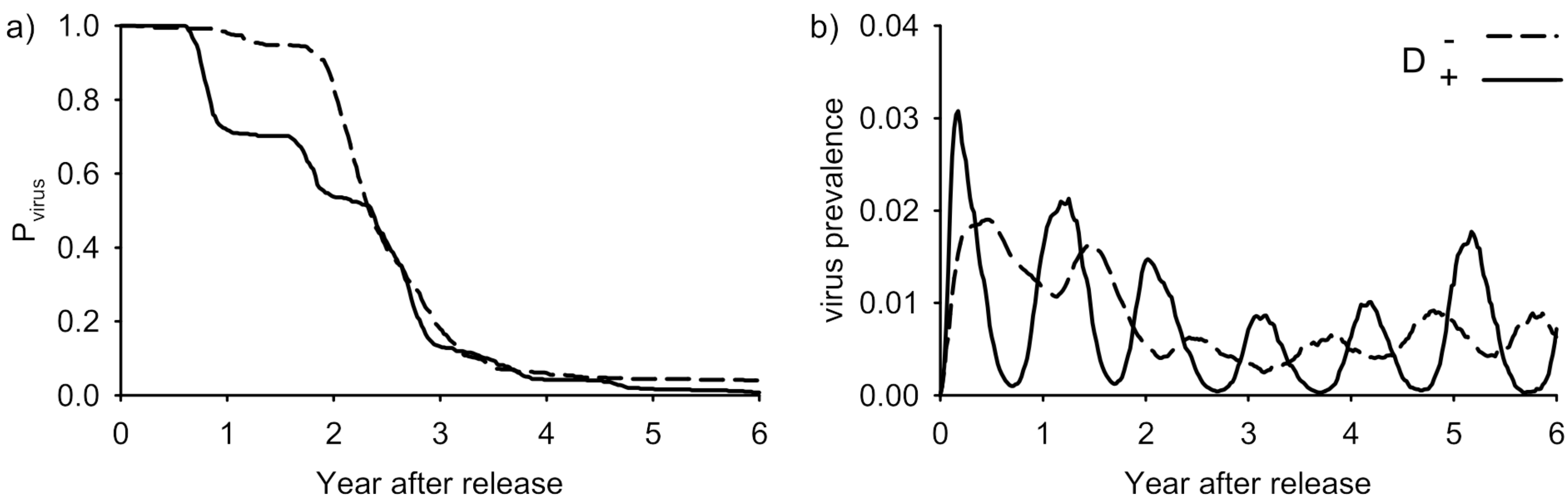
Potential spread and maintenance of FMD in wildlife in Thrace



From: Lange 2012

3. Epidemiological model

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- **The model indicated that:**
  - low population density may also have supported both the limited spatial spread as observed in the sero-surveillance
  - Only high uptake of FMDV is sufficient to guarantee the full range of spread through the simulation area for most simulations

3. Epidemiological model

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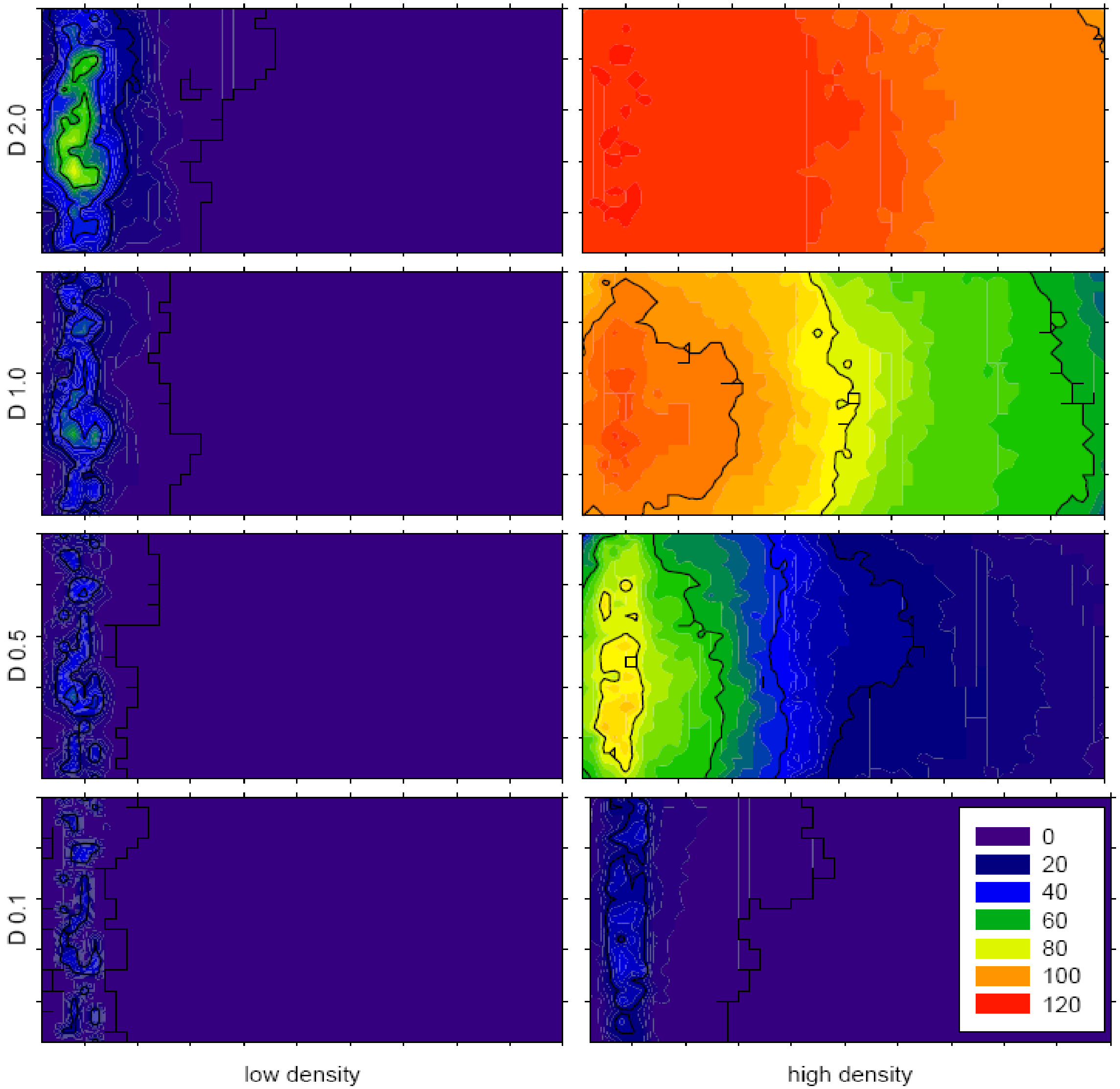


The average spatial spread achieved by different dosages acquired from each 1,000,000 TCID50 of FMDV accumulated within the environment at the different population densities

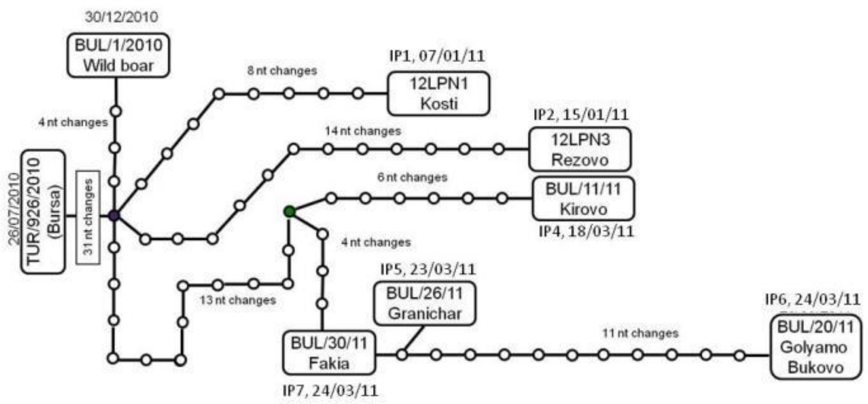
From: Lange, 2012

4. Combining genetic and epidemiological information

- The assessment was based on full genome sequences of virus samples obtained from seven isolates within Bulgaria in 2011 performed by (Valdazo-González et al., 2011, 2012),
- There are significant “gaps” in the genetic linkages derived from the full genome sequences identified by Valdazo-González et al.

Full genome sequencing: TCS analysis

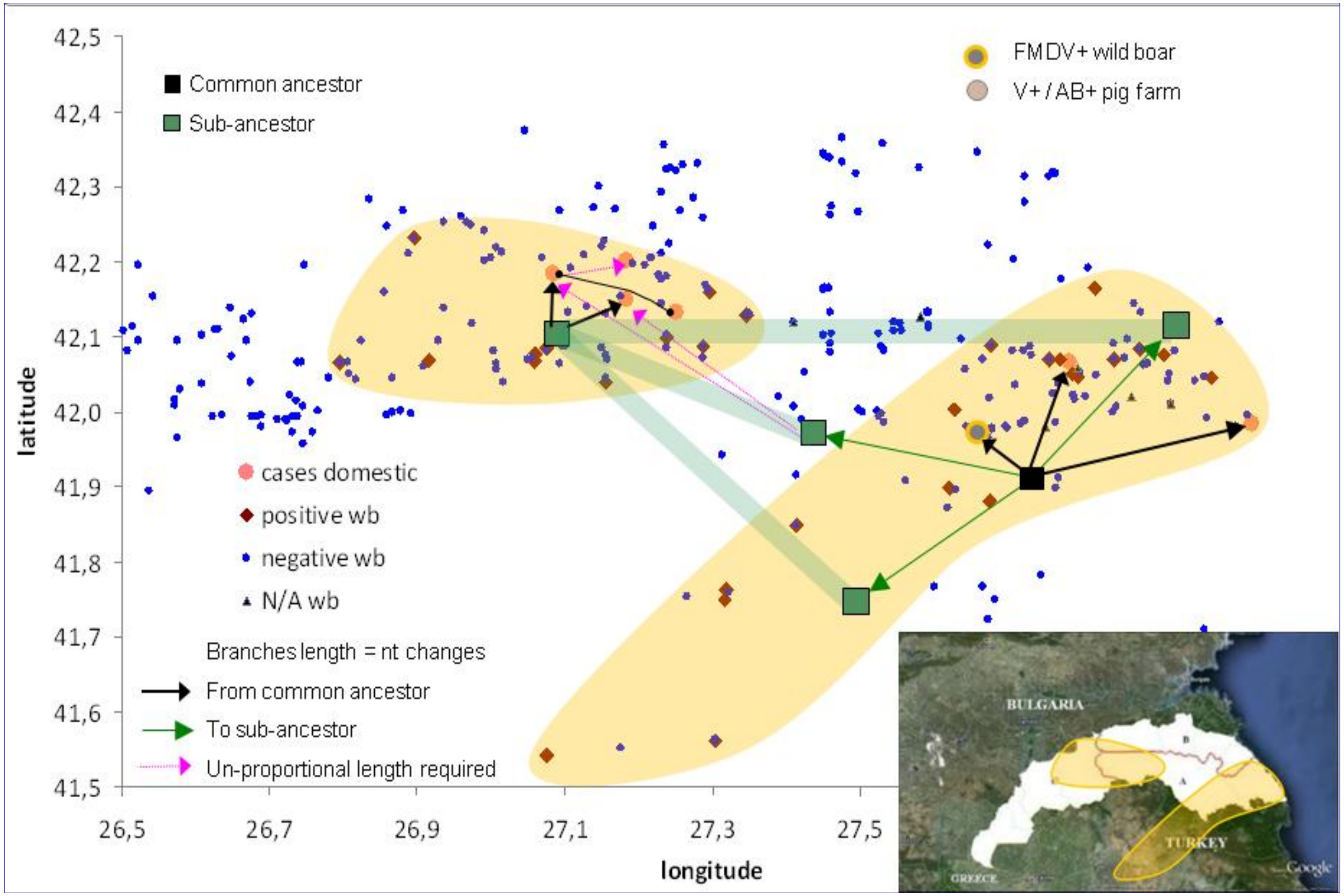
Preliminary results: 7087 nt (most L-fragment)



4. Combining genetic and epidemiological information

- The average time needed for nucleotide changes was used as an indicator for assessing potential spread of the virus through the wildlife population
- From the average time that would have been needed for the nucleotide changes observed between the first series of outbreaks (in January 2011) and the second series (March-April 2011), it can be concluded that it is not likely that spread of FMDV between the first and the second series happened by spread through the wildlife population alone, but that it also involved human transportation.

4. Combining genetic and epidemiological information



Conclusions based on all 4 aspects

- Limited spread of FMDV in time and space in the wildlife populations does occur.
- FMD will not be sustainable in the wildlife population in Thrace but cross-over of FMDV from domestic to wildlife population may be prolonged the virus circulation
- It is most likely that human transportation of infected animals or their products has been involved in the spread of FMDV between the two series of outbreaks in livestock.

Acknowledgements: working group:

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Ad hoc experts:

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- Helen Chondrokouki (Foot and mouth disease institute, Athens)

AHAW Panel:

- Anette Bøtner (chair)
- Hans-Hermann Thulke
- Mo Salman

Procurement:

- Martin Lange

EFSA:

Sofie Dhollander, Wilgert Katriina, Zancanaro Gabriele, Jose Cortinas, Diane Lefebvre (SAS)

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HOW COULD EFSA CONTRIBUTE TO REMESA' S OBJECTIVES?

Two examples:

1. Peste de petits ruminants
2. Lumpy skin disease

1. Peste des petits ruminants

Evolution of PPR in Africa, the Middle East and Asia between 2005 and early 2013, and vaccination strategies reported for 2011/2012

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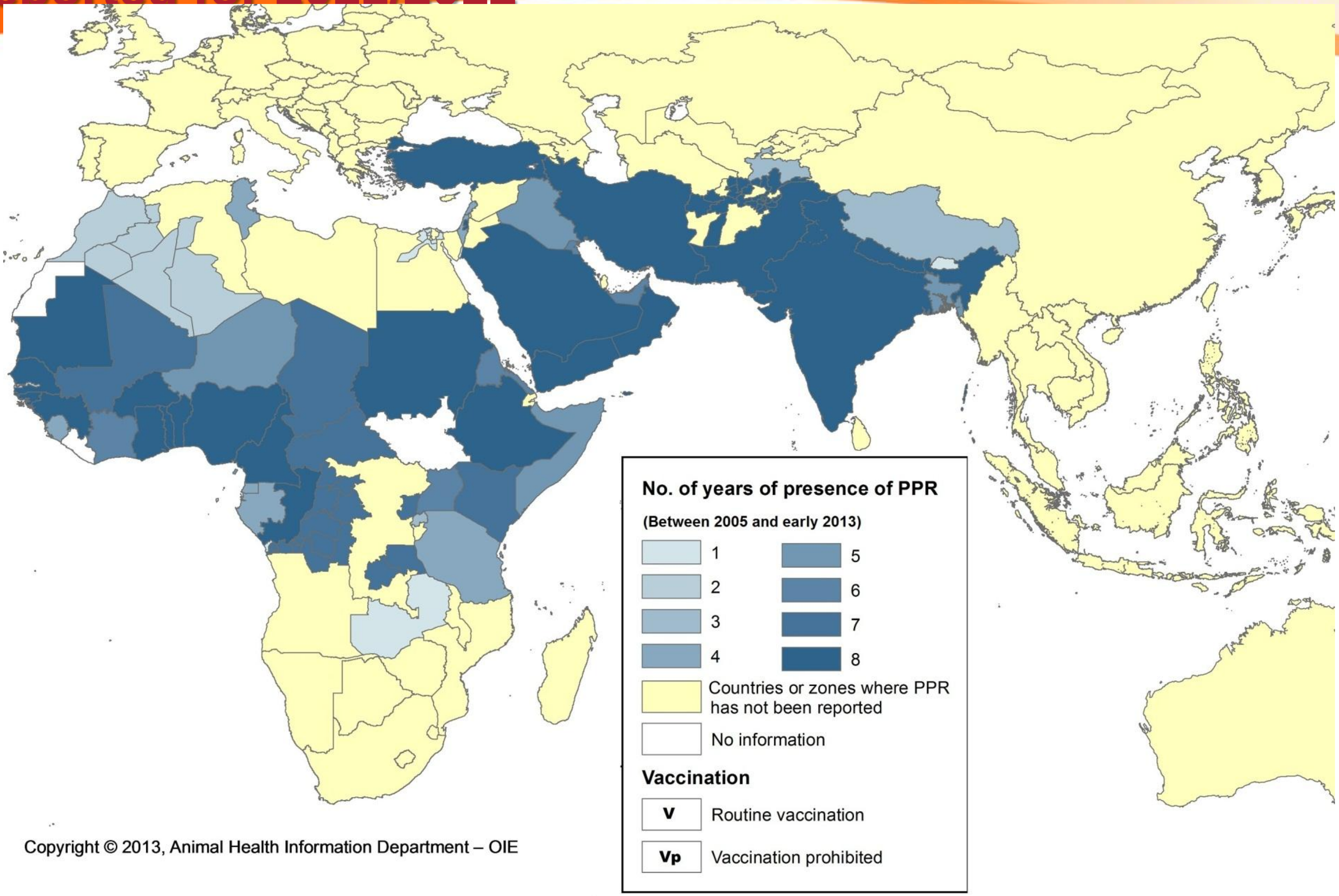

Karim Benjebara at the OIE GS June 2013

Evolution of PPR in Africa, the Middle East and Asia between 2005 and early 2013, and vaccination strategies reported for 2011/2012

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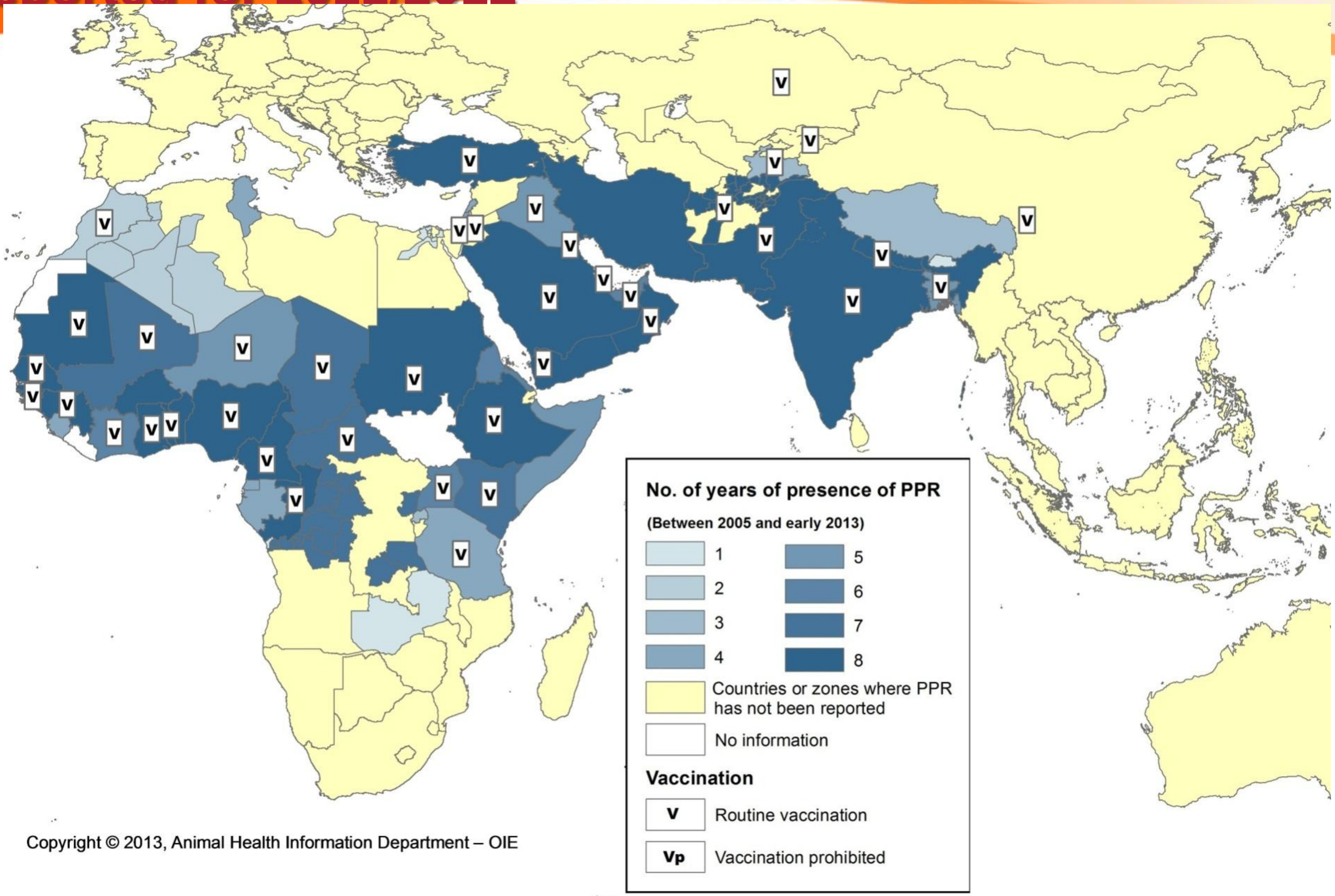

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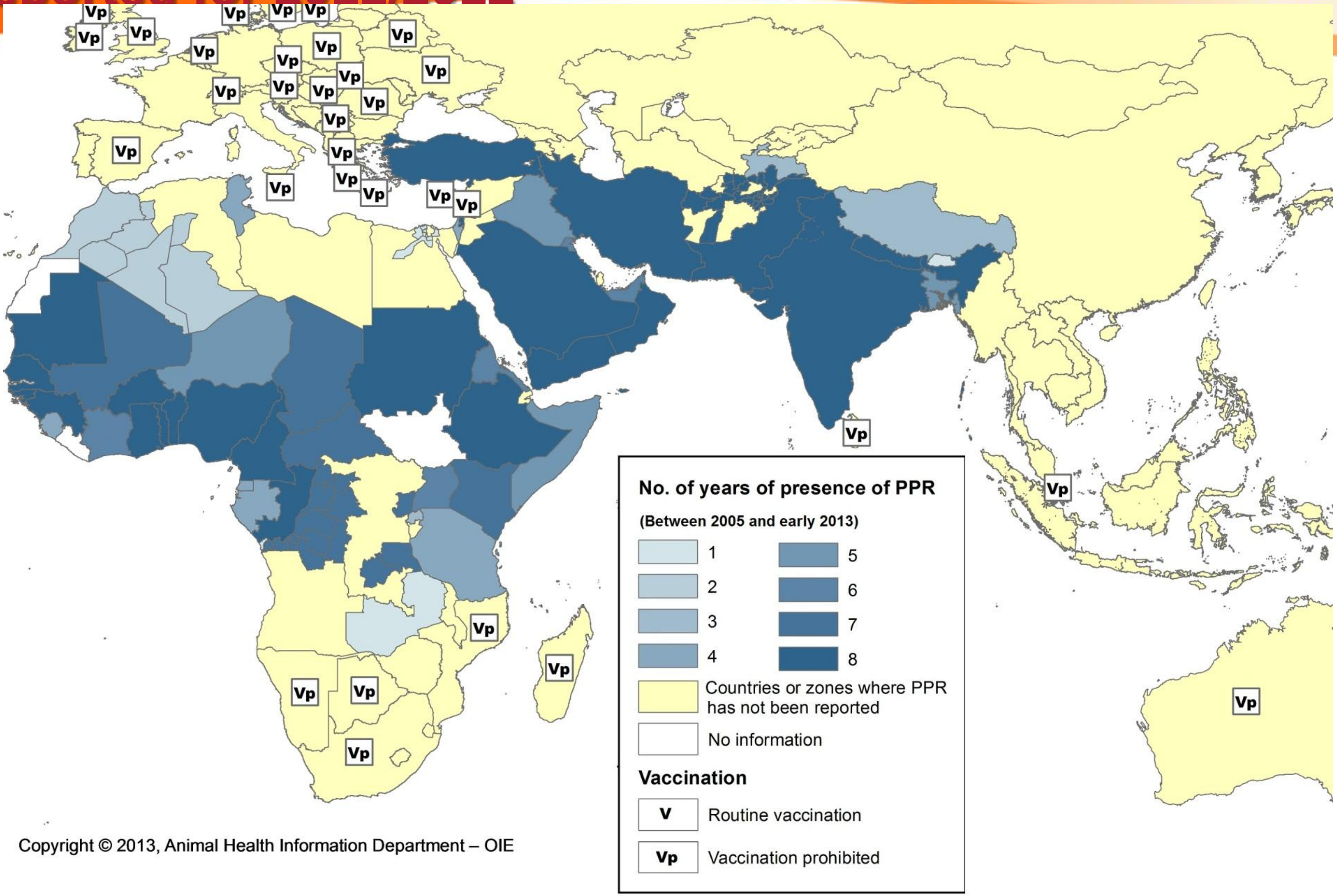

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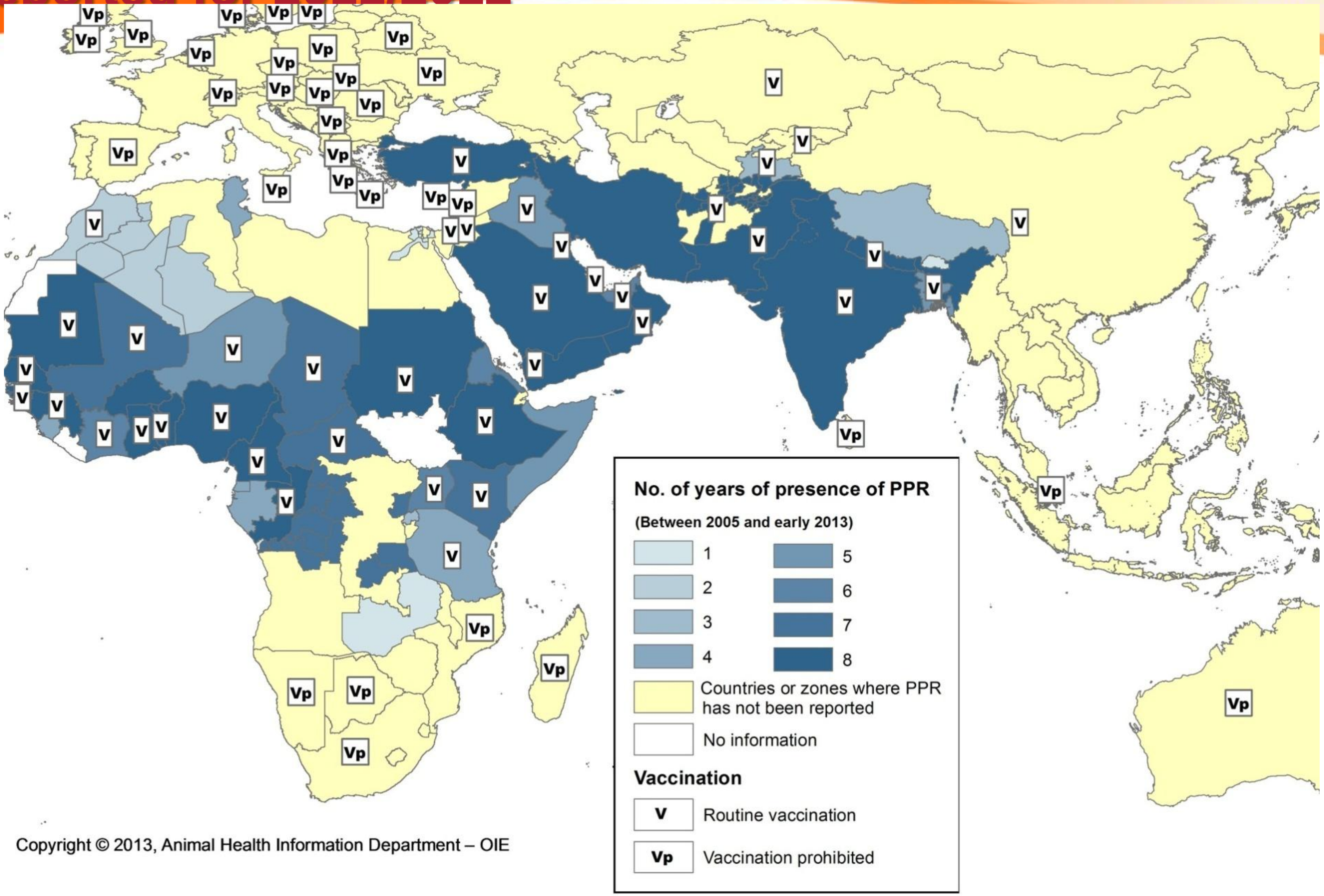


Karim Benjebara at the OIE GS June 2013

- The distribution of PPR has expanded throughout the past eight years

- It is now present over a large part of Africa and in the Middle East and part of Asia, and threatens the food security and livelihood of smallholders by affecting the development of the small ruminants' sector as a result of the high mortality and morbidity it has been causing over a long period

- The cost of vaccines and their administration as well as logistical issues make vaccination campaigns problematic in some regions

- Despite these difficulties, all affected countries should undertake surveillance to allow prompt disease reporting, especially given the availability of sensitive and specific diagnostic tools for PPR

Karim Benjebara at the OIE GS June 2013

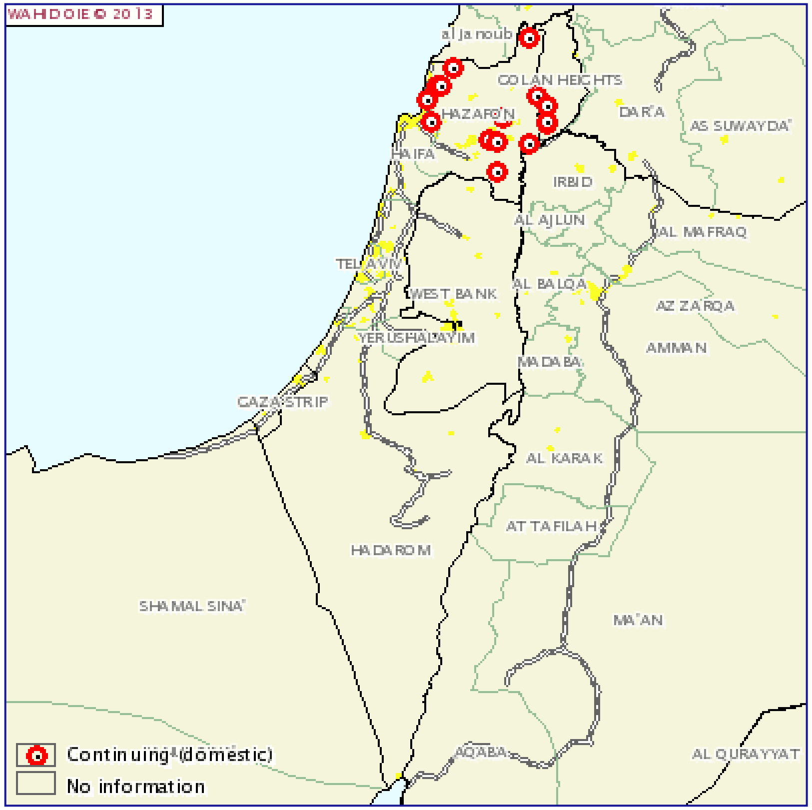
2. Lumpy skin disease

1960s
1929
1990s
Mediterranean Sea
MOROCCO
ALGERIA
TUNISIA
LIBYA
EGYPT
Western Sahara
MAURITANIA
MALI
NIGER
CHAD
SUDAN
ETHIOPIA
SOMALIA
DJIBOUTI
SENEGAL
GUINEA
SIERRA LEONE
LIBERIA
BURKINA
GHANA
TOGO
BENIN
NIGERIA
CAMEROON
CENTRAL AFRICAN REPUBLIC
GABON
CONGO
ZAIRE
UGANDA
KENYA
RWANDA
BURUNDI
TANZANIA
ANGOLA
MALAWI
MOZAMBIQUE
ZIMBABWE
NAMIBIA
BOTSWANA
SOUTH AFRICA
SWAZILAND
LESOTHO
MADAGASCAR
COMOROS
SEYCHELLES
SAUDI ARABIA
YEMEN
IRAQ
IRAN
SYRIA
TURKEY
GREECE
South Atlantic Ocean
Indian Ocean
Equator
Tropic of Capricorn
Tropic of Cancer
Scale 1:48,000,000
Azimuthal Equal-Area Projection
0 500 1000 Kilometers

Outbreaks

Palestinian Map of the Outbreaks

Israeli Maps of the Outbreaks



Possible collaboration ?

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Risk question of common interest

European Commission

European Parliament

Member States

EFSA ("self mandate")

Question?

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Risk Assessment

Role EU members of REMESA

Joint workshop EFSA -REMESA

European Food Safety Authority

Parma: 24-25 Sep. 2013