

# An Ecohealth / One Health Perspective on Avian Influenza in South-East Asia

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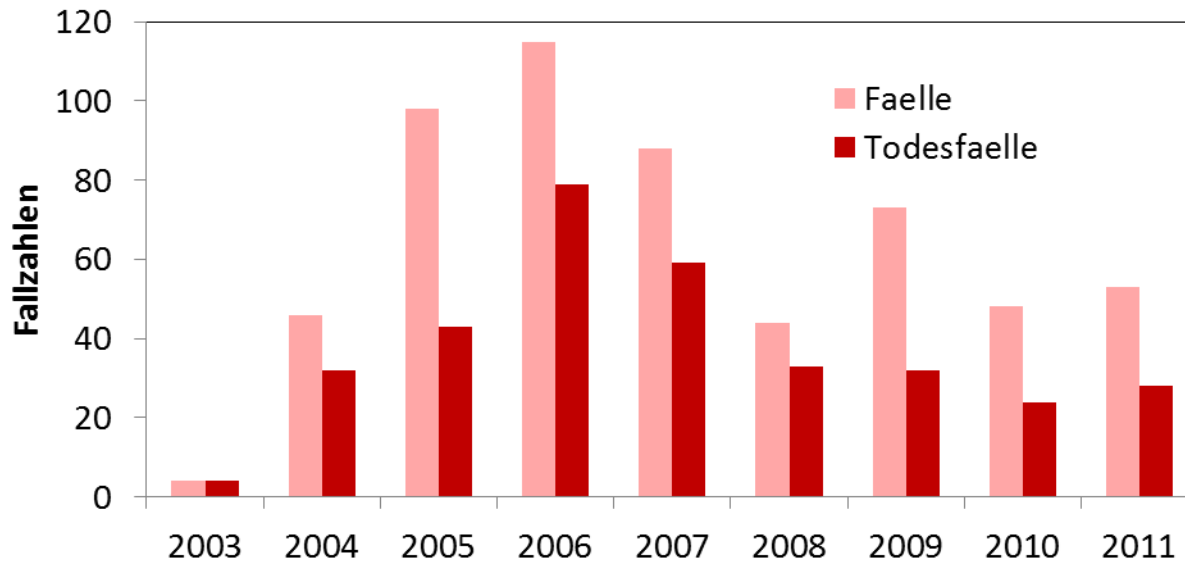
*International GRIPAVI Conference, Montpellier, 22-24 November, 2011*

# Outline

- context
- risk factors
- ecohealth / one health perspective
- conclusions

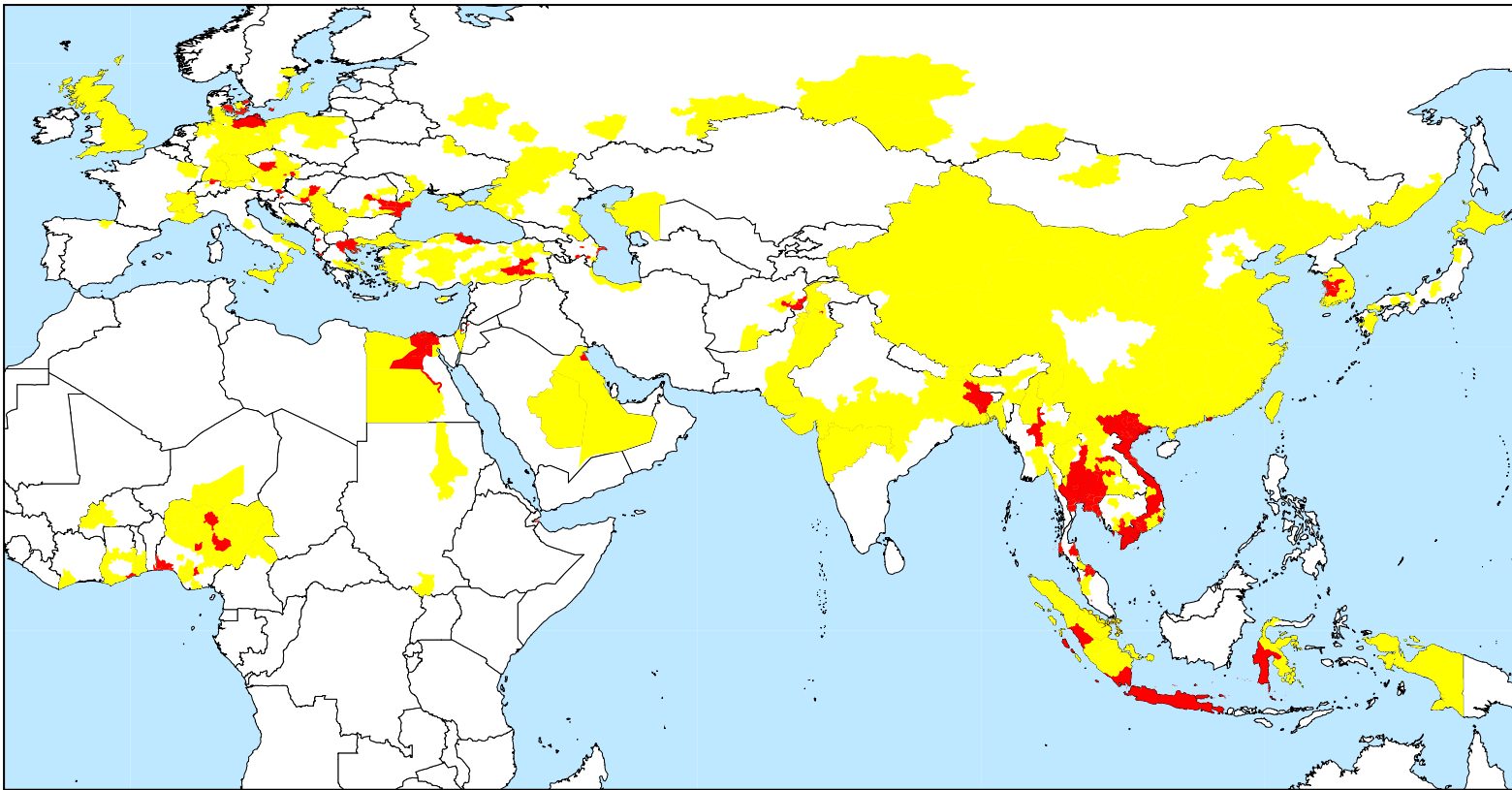
# CONTEXT

# Worldwide HPAI H5N1 Morbidity and Mortality in Humans

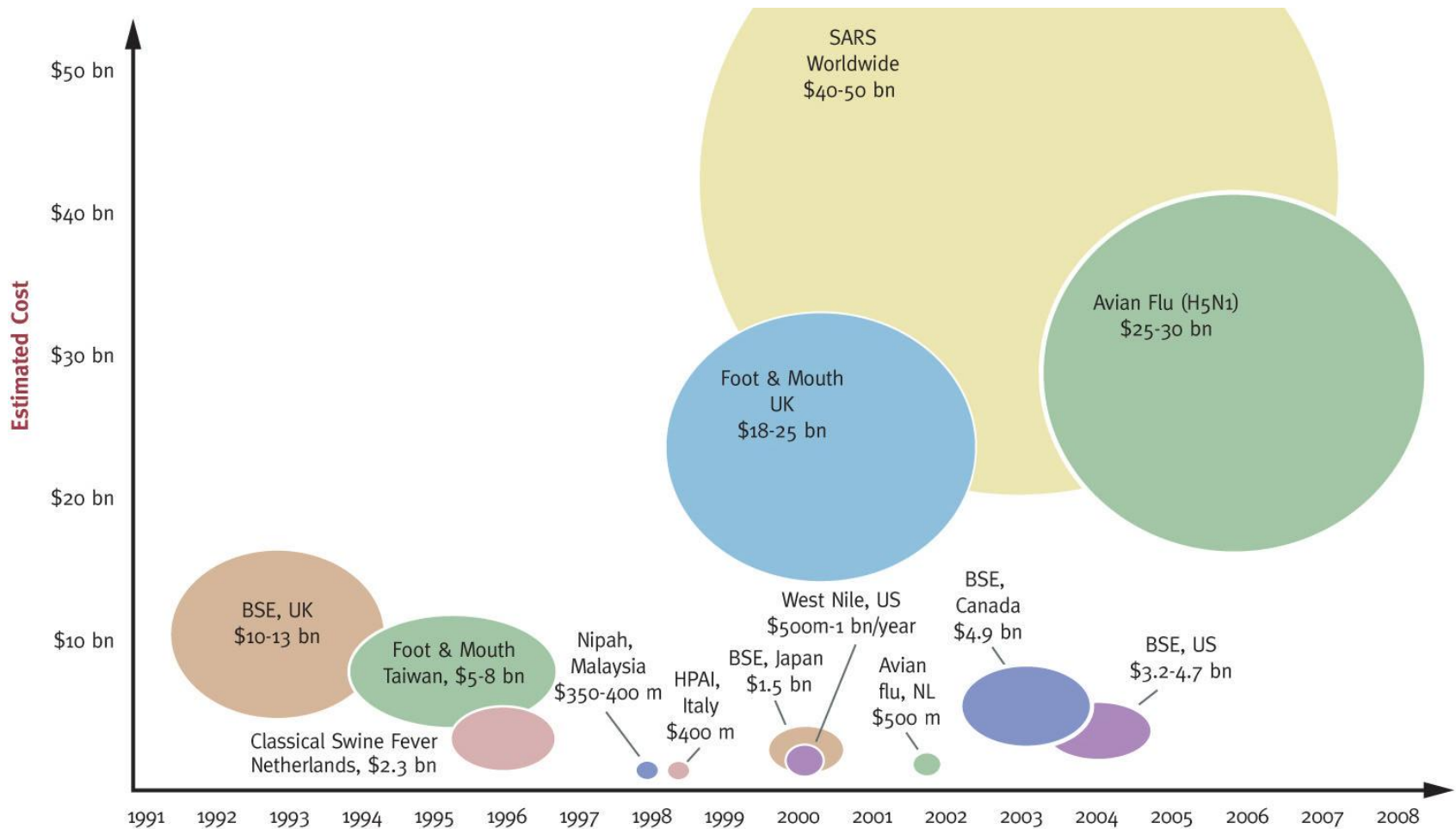


Quelle: WHO – Nov 2011

# HPAI H5N1 Outbreaks in Wild Birds and Domestic Poultry (2003- Okt 2011)



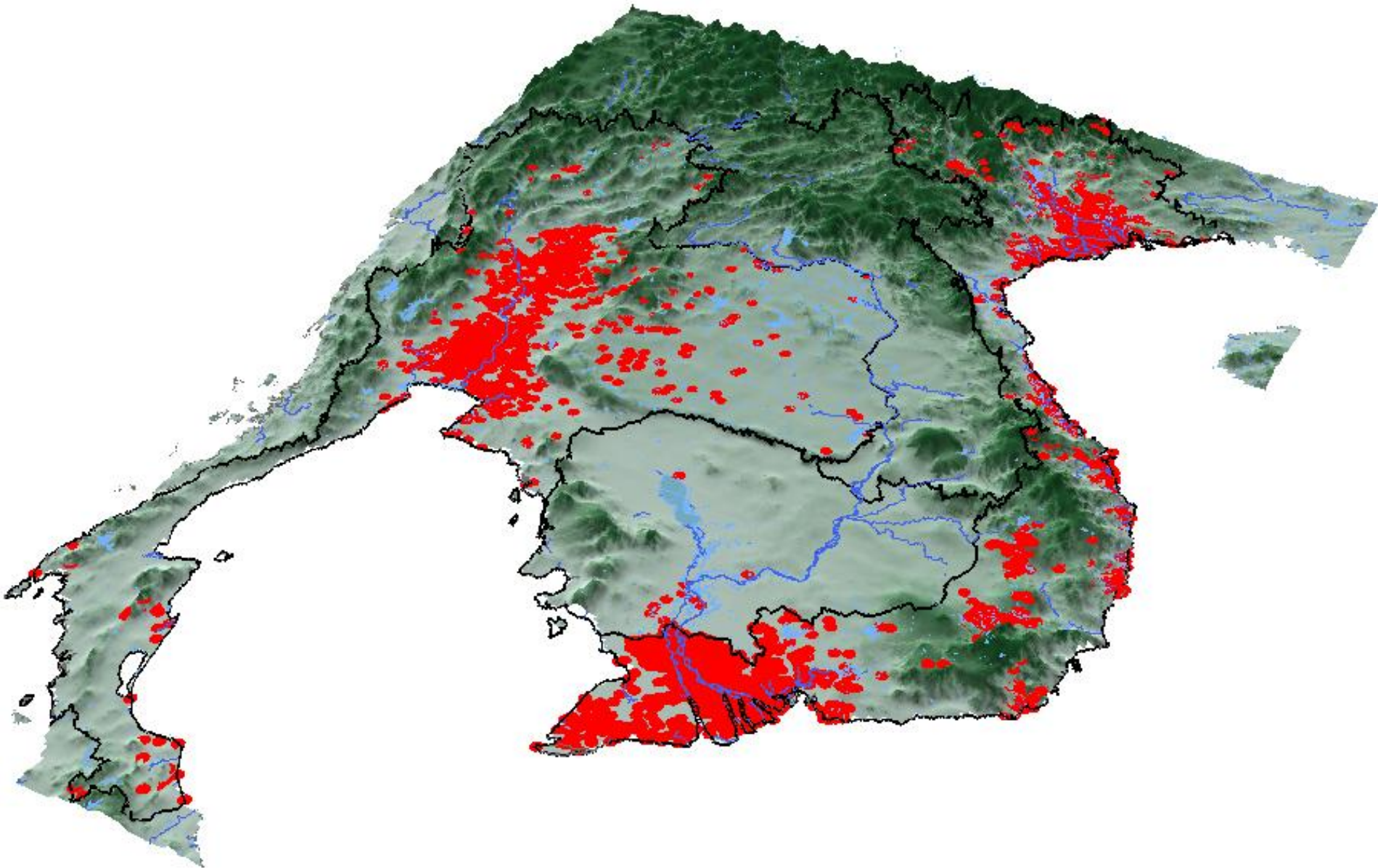
# Global Costs of Animal Disease Outbreaks (1991-2008)



Figures are estimates and are presented as relative size.

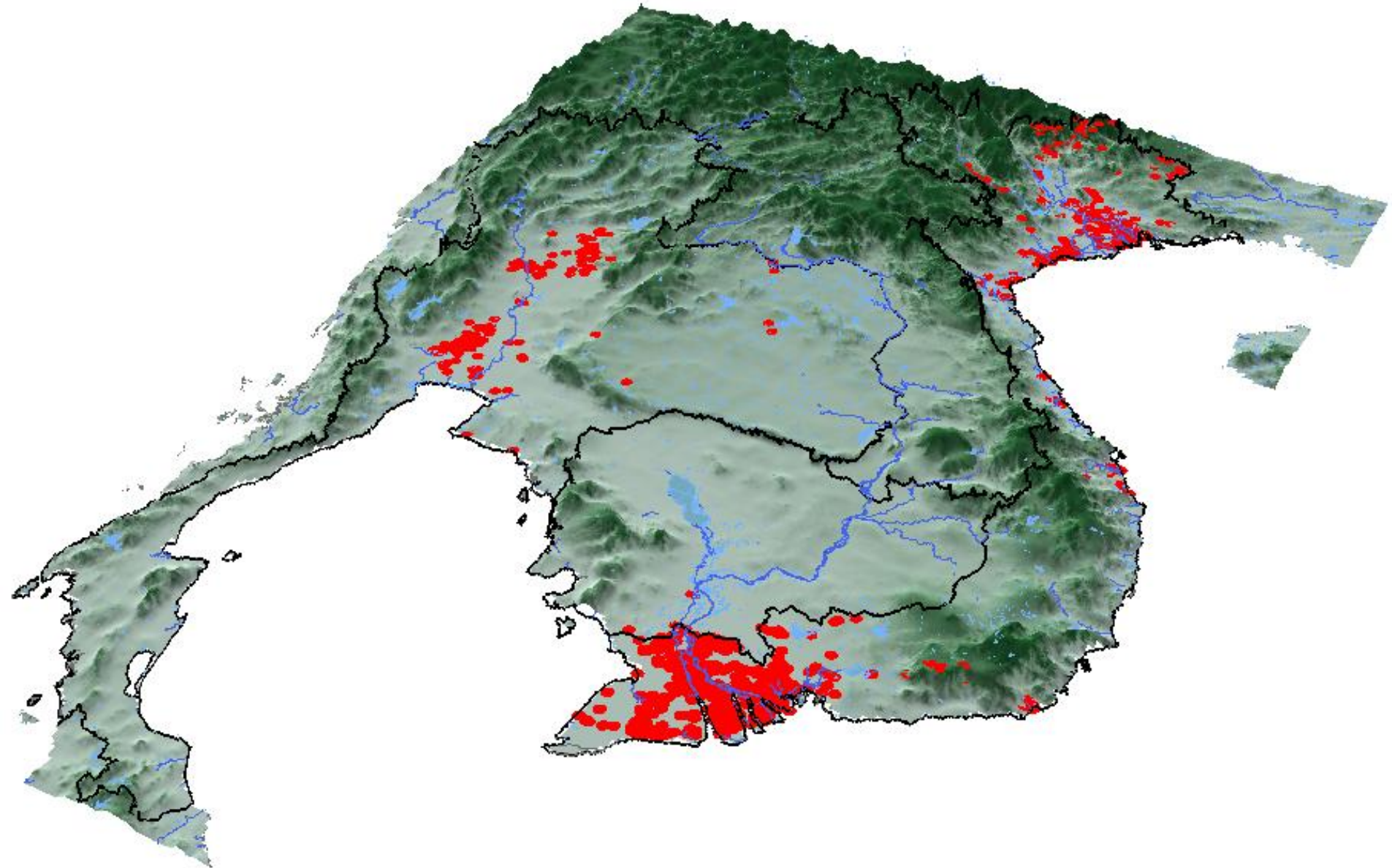
# RISK FACTORS

# HPAI H5N1 Outbreaks in GMS in 2004

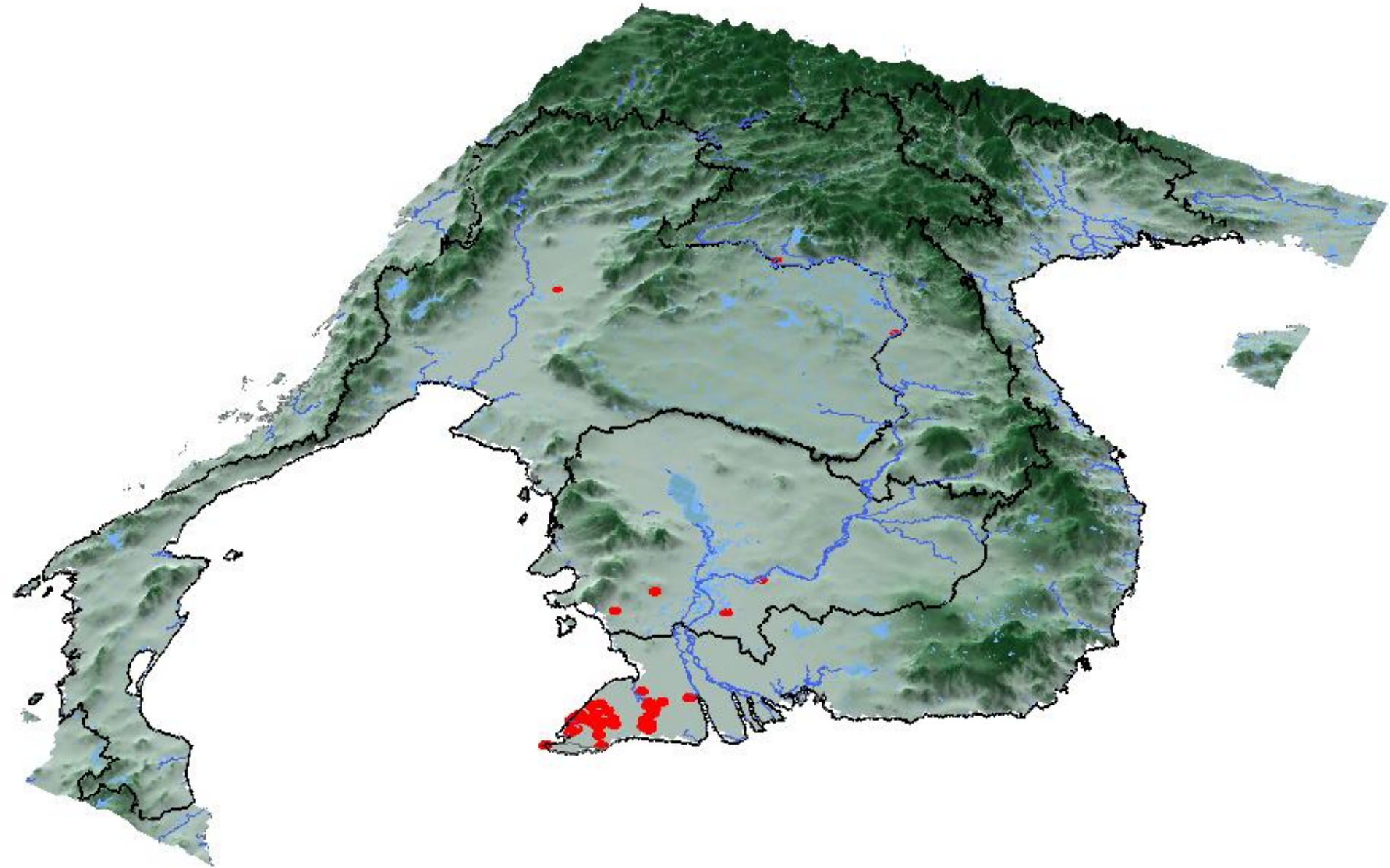




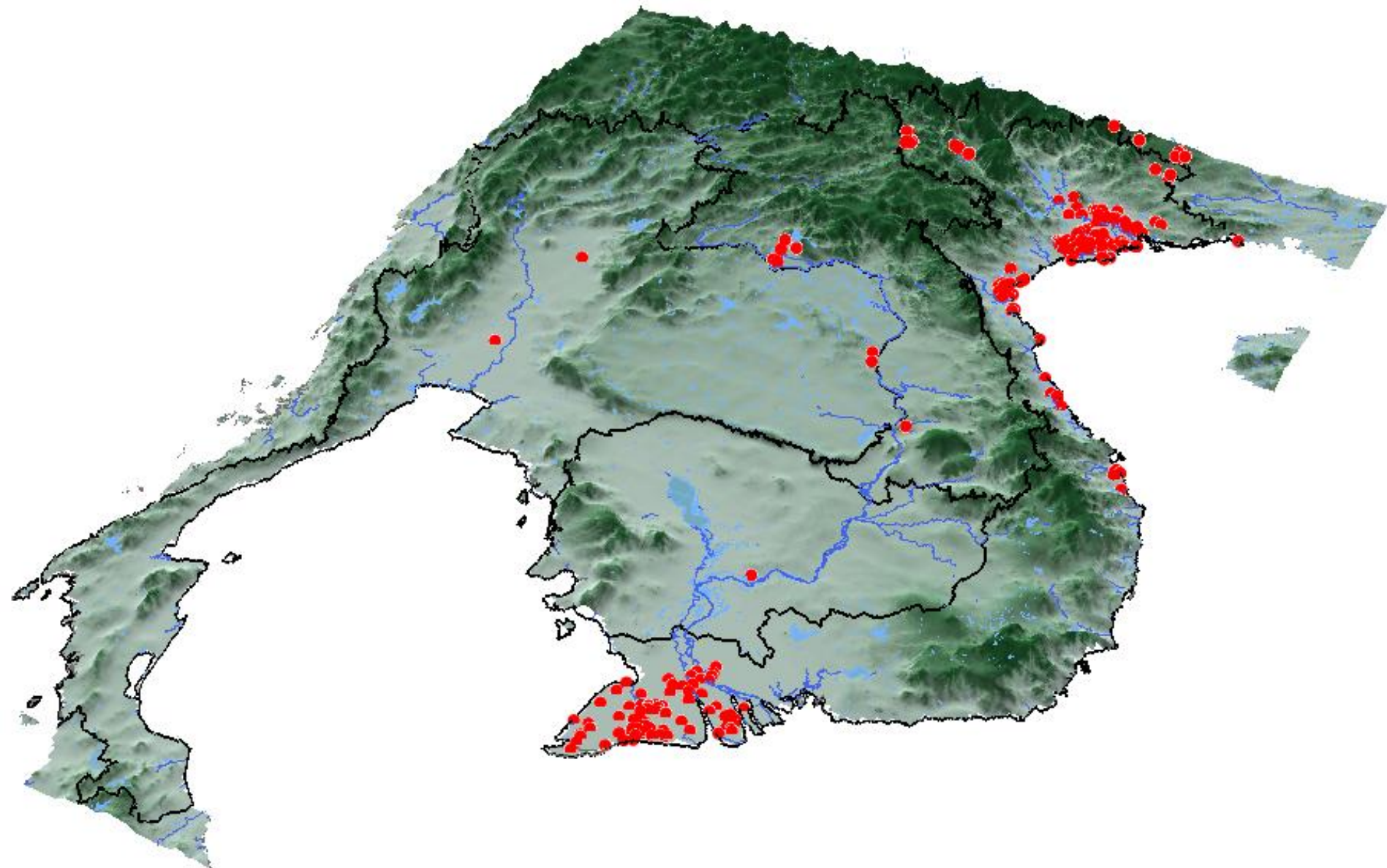
# HPAI H5N1 Outbreaks in GMS in 2005



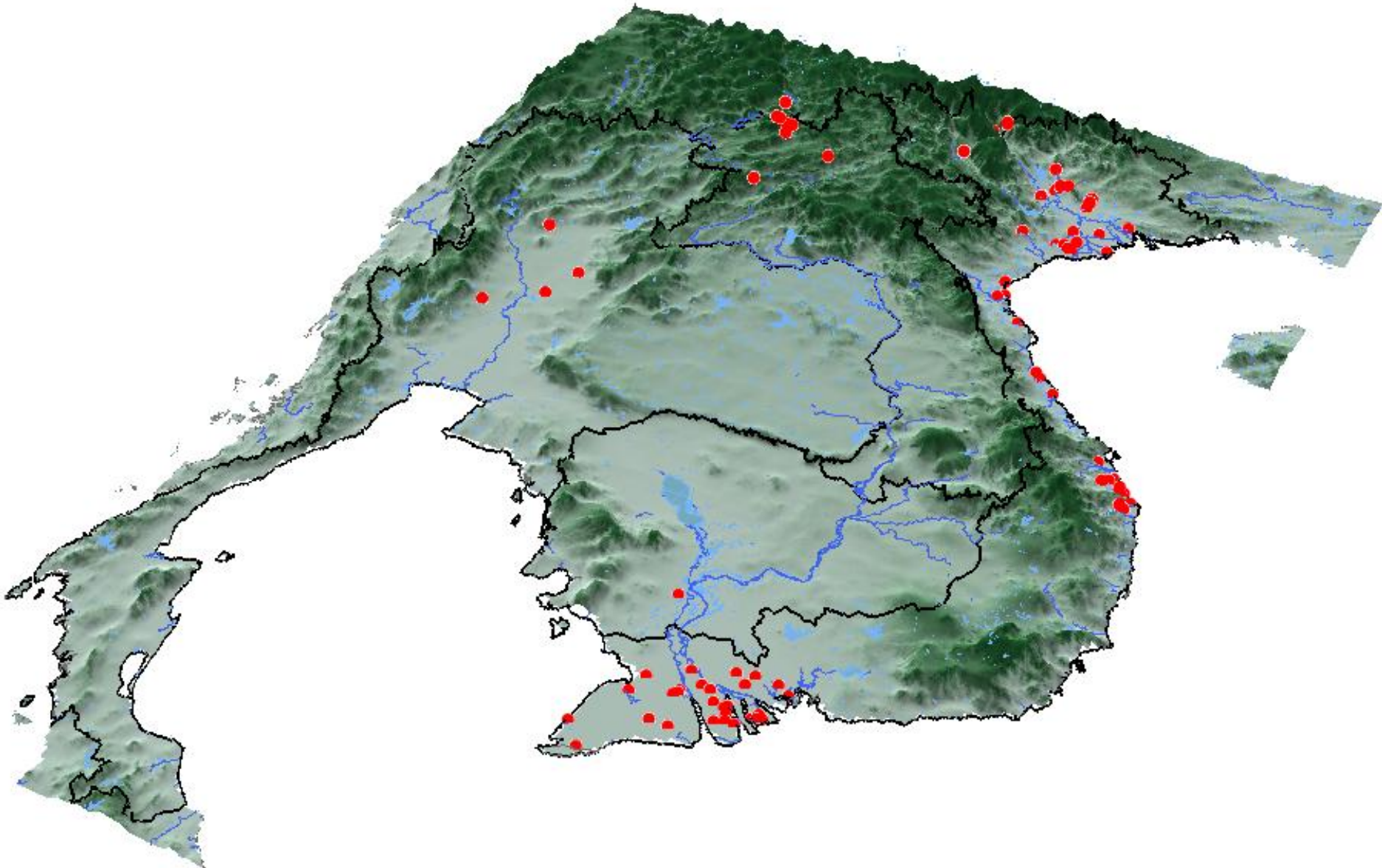
# HPAI H5N1 Outbreaks in GMS in 2006



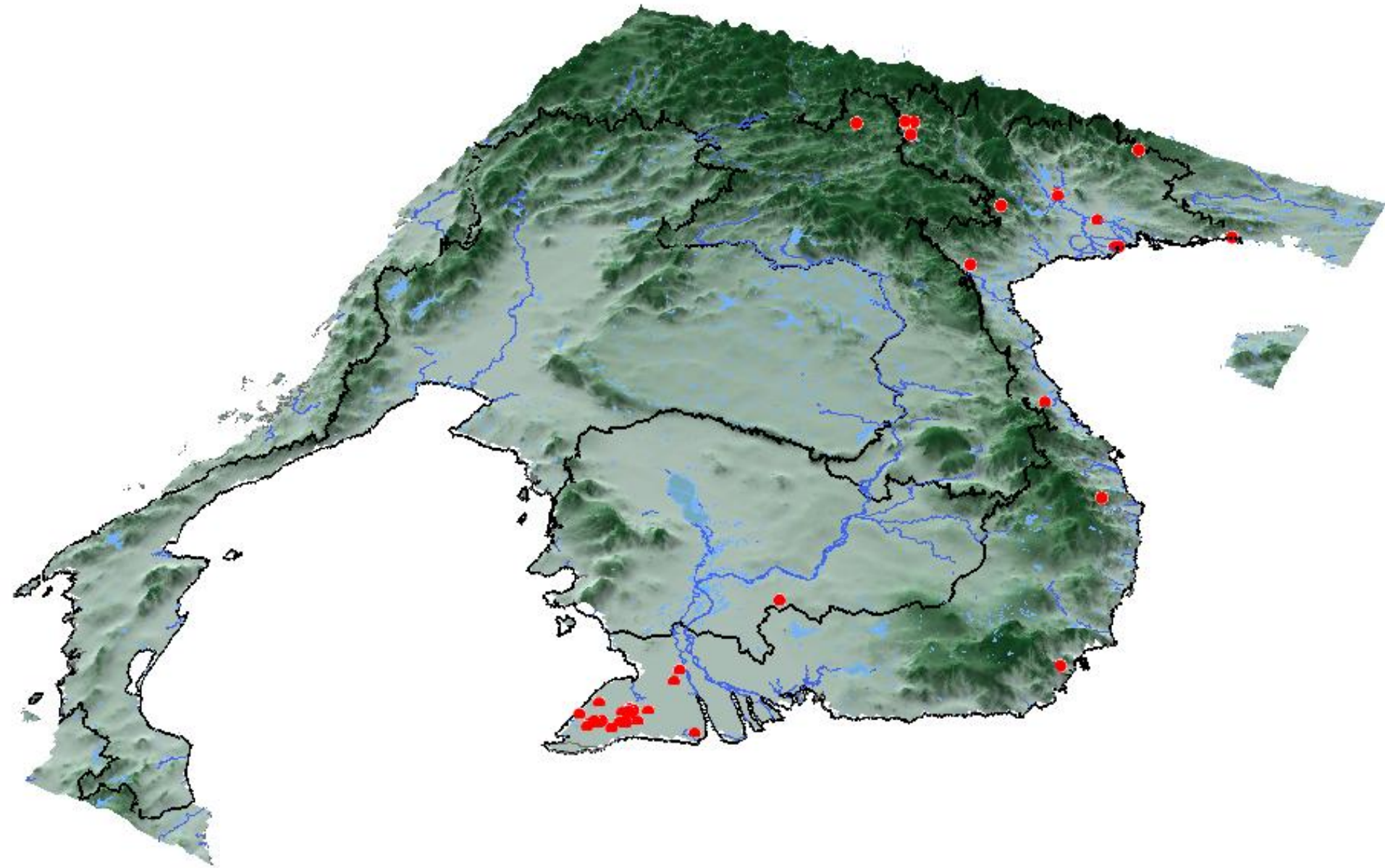
# HPAI H5N1 Outbreaks in GMS in 2007



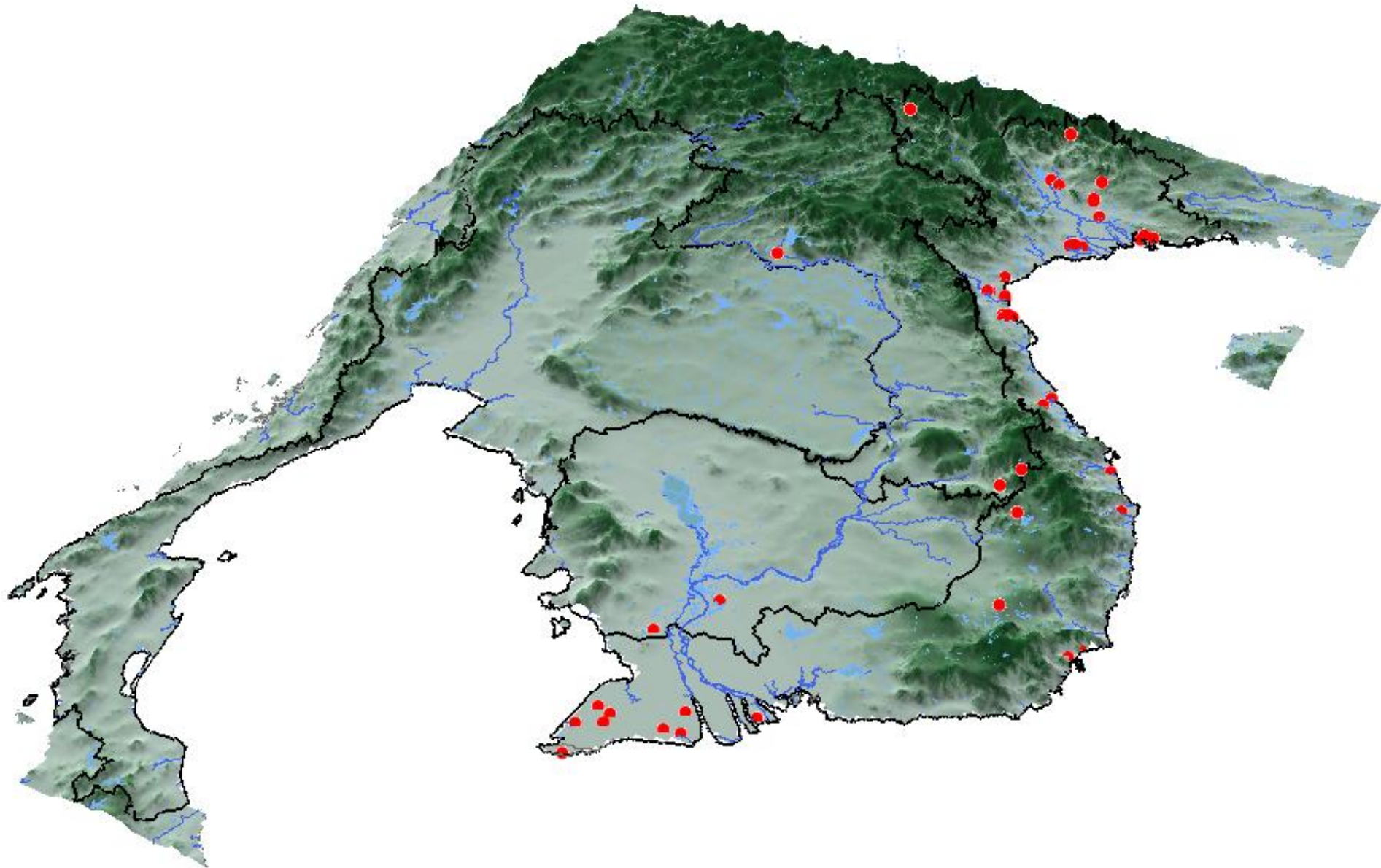
# HPAI H5N1 Outbreaks in GMS in 2008



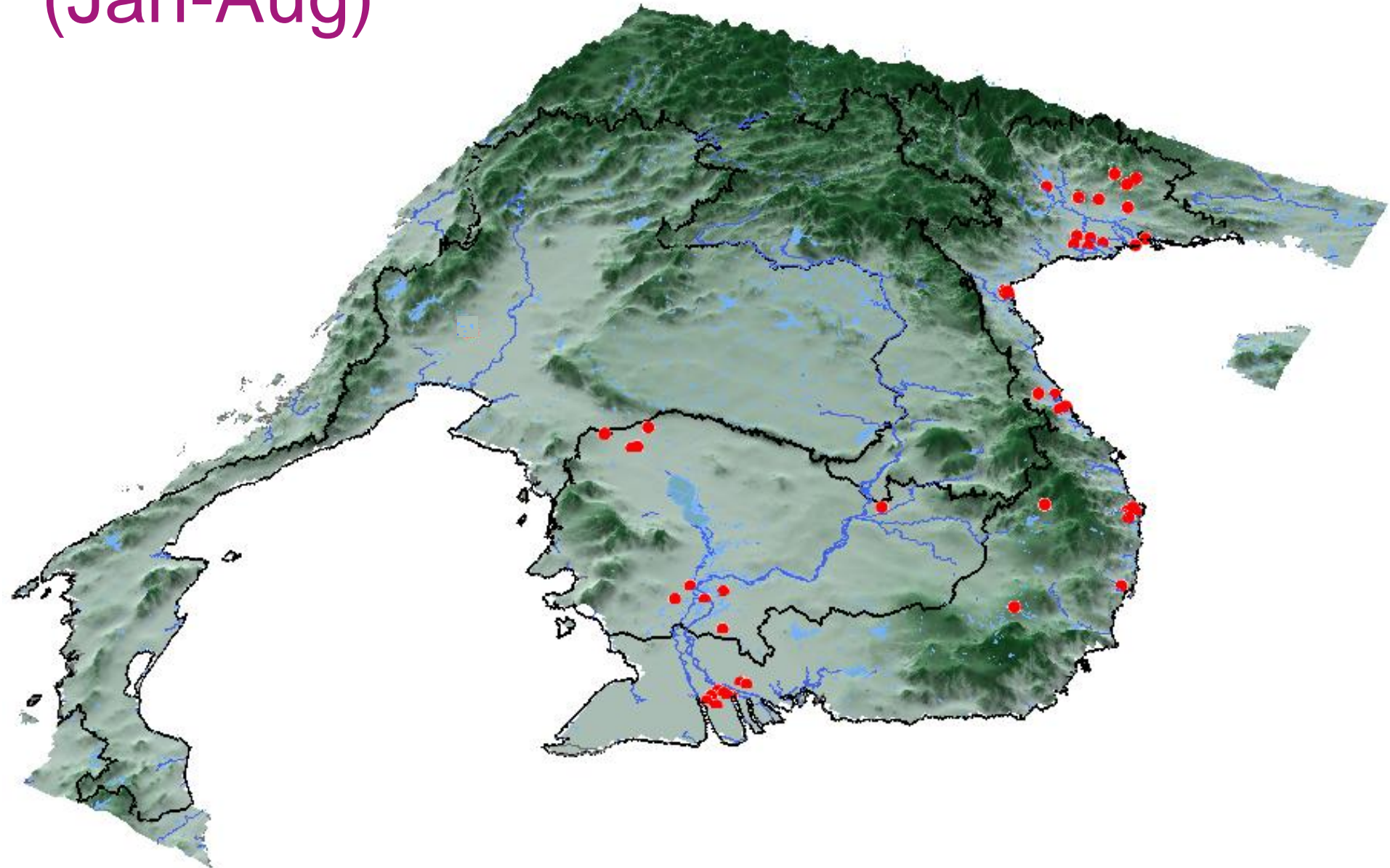
# HPAI H5N1 Outbreaks in GMS in 2009



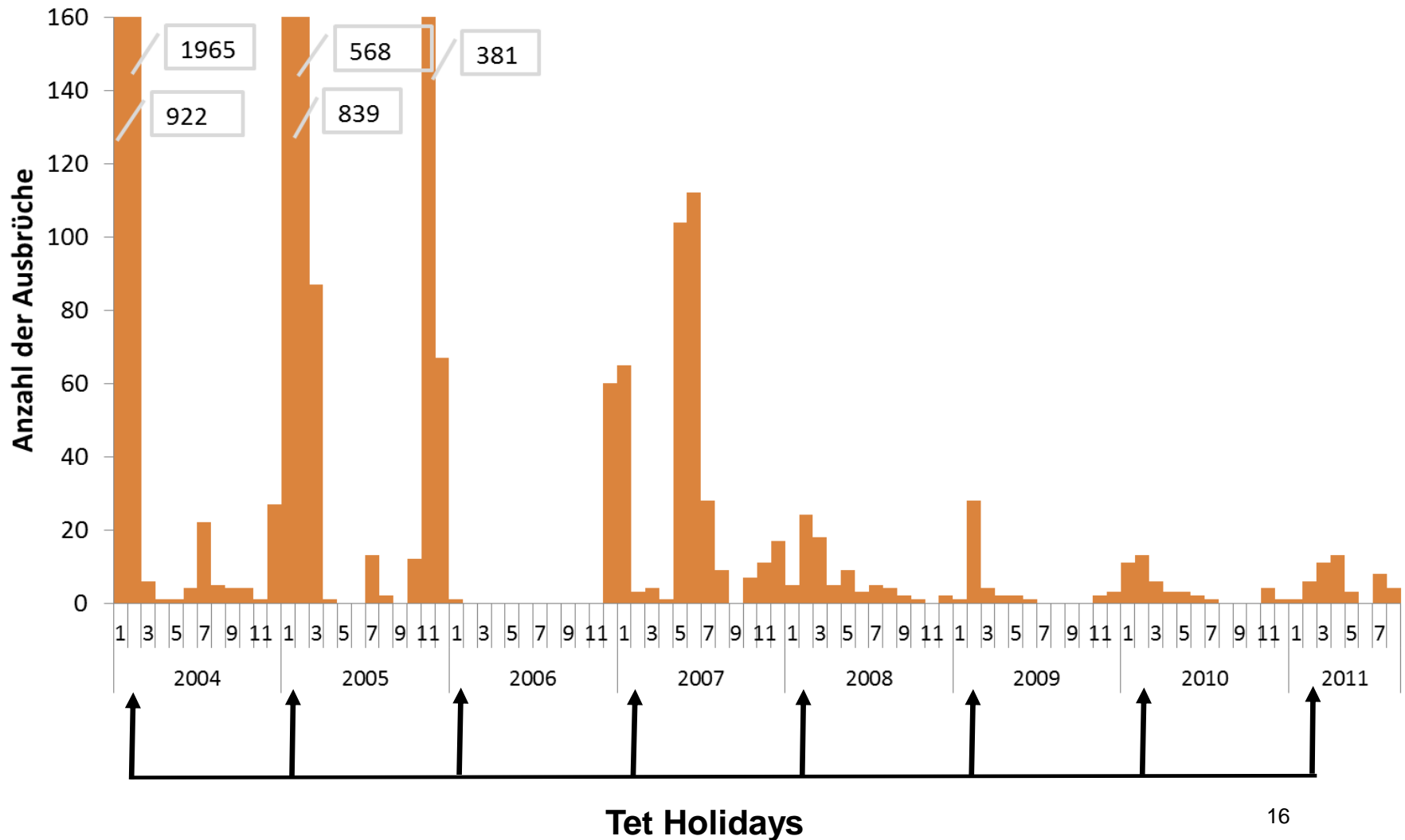
# HPAI H5N1 Outbreaks in GMS in 2010



# HPAI H5N1 Outbreaks in GMS in 2011 (Jan-Aug)

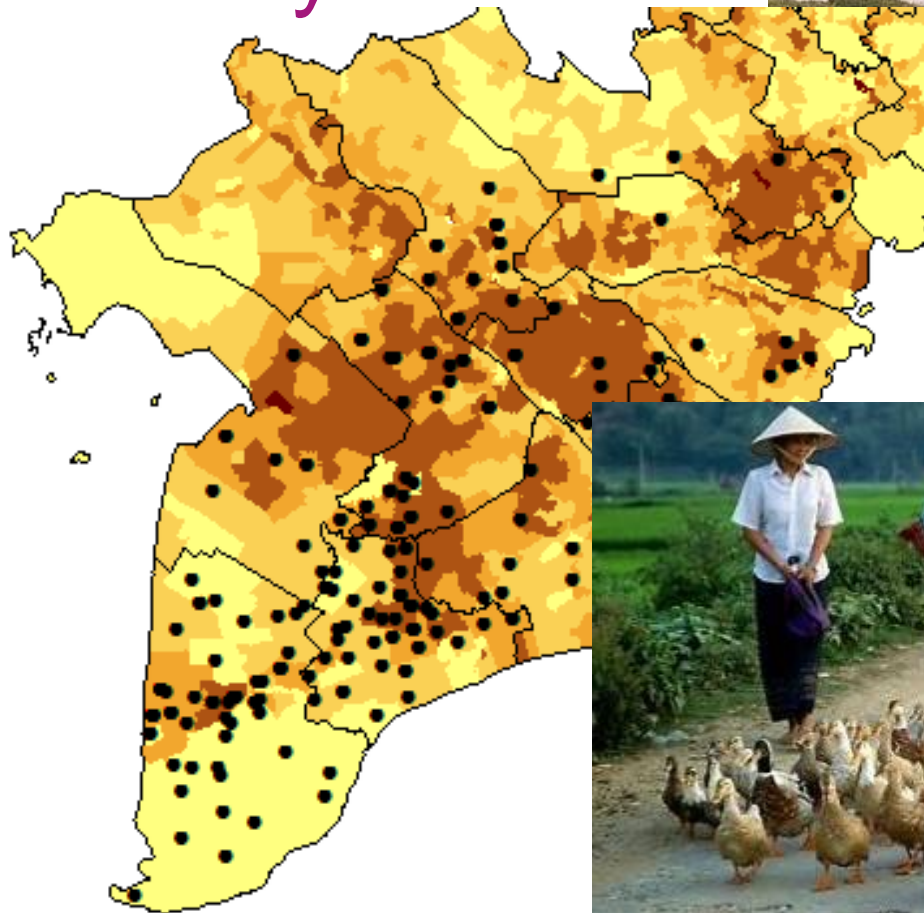


# Temporal Pattern of AI Outbreaks in Viet Nam (2004-2011)

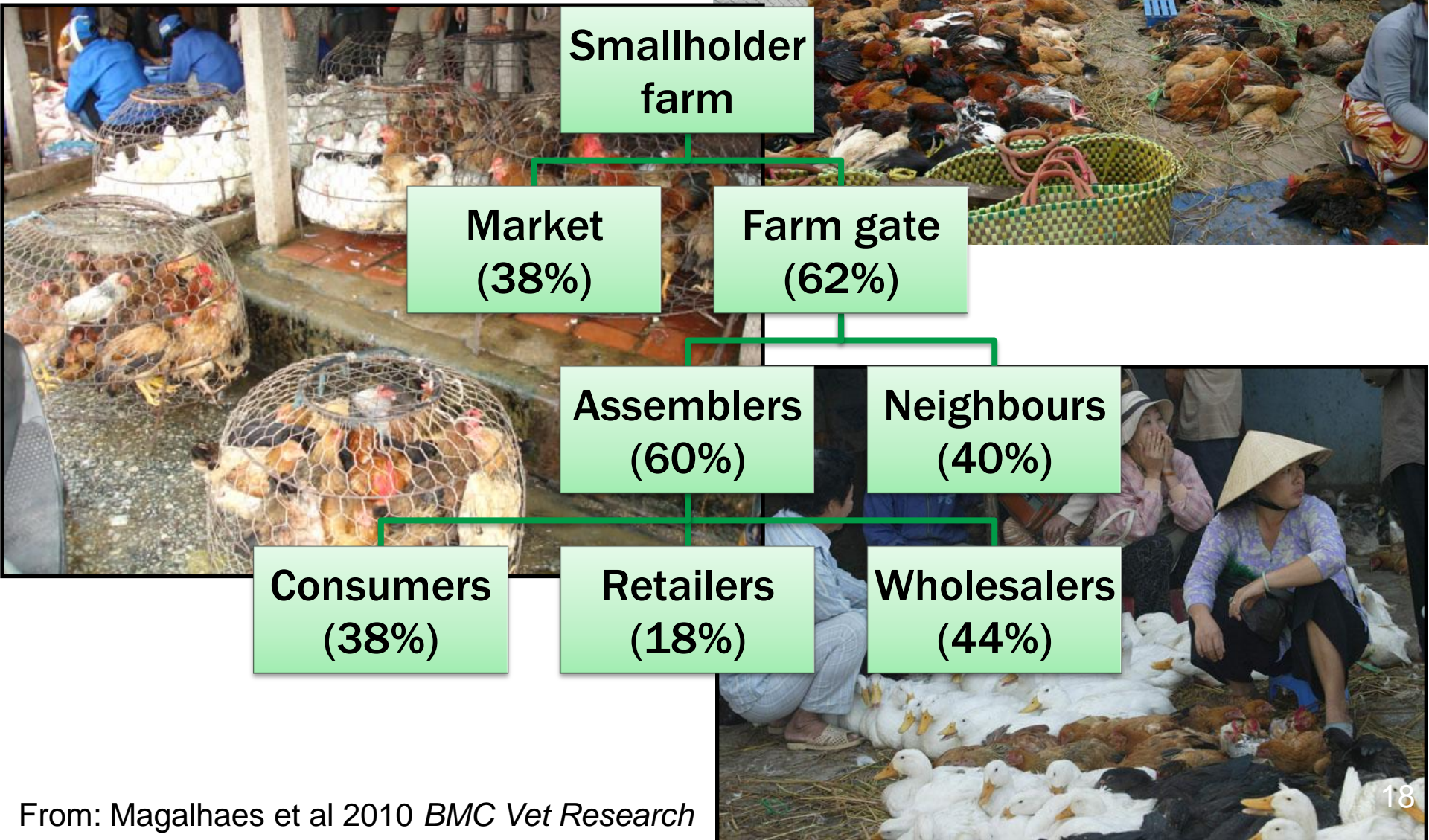




# HPAI H5N1 Outbreaks 2006-10 in Southern Viet Nam and Duck Density



# Poultry Trade in Northern Viet Nam

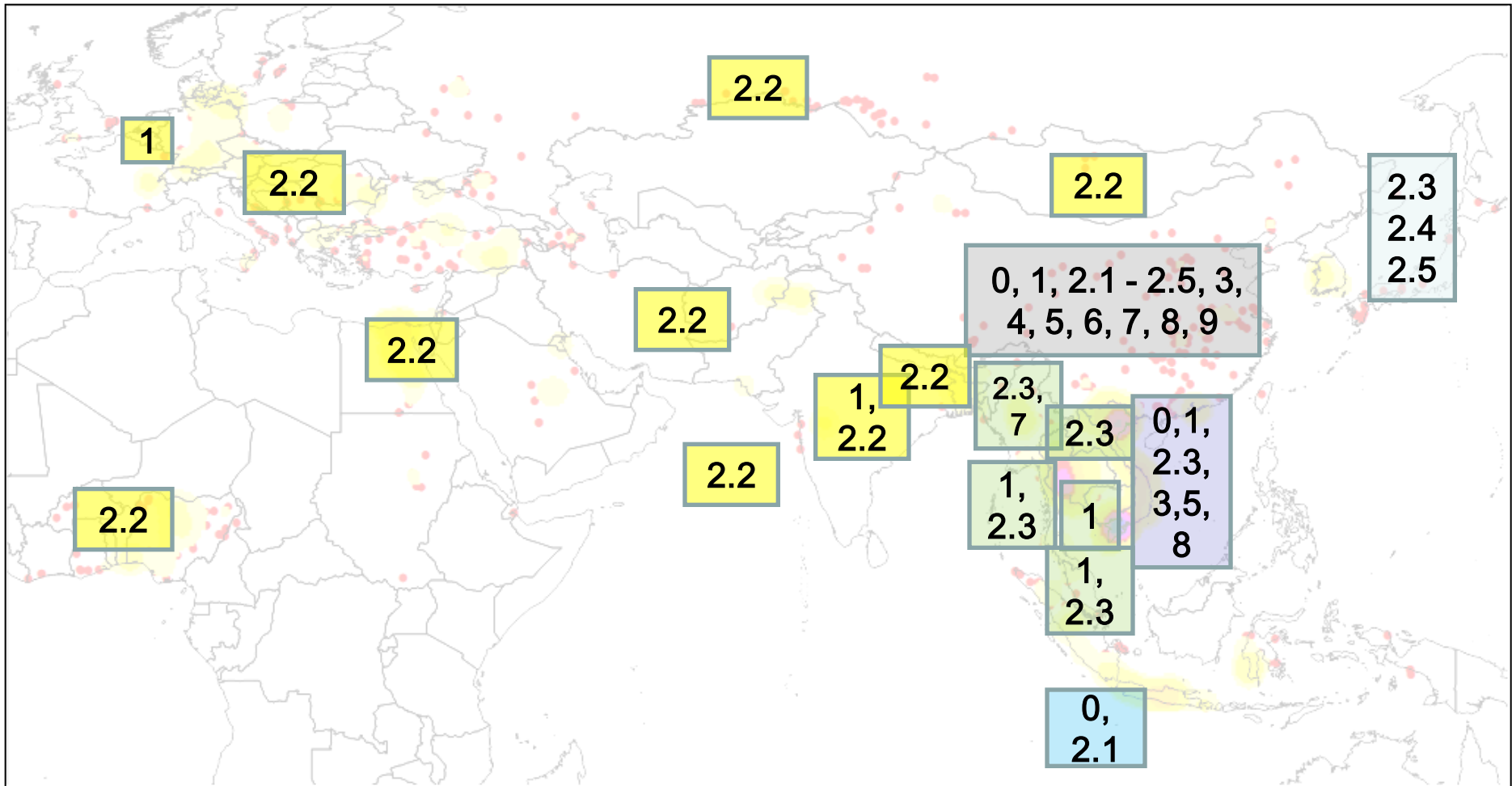


# Role of Fighting Cocks?

- common throughout South-East Asia
- cultural significance
- organised fighting cock industry, including breeders
  - official gambling industry
- in addition many recruited from backyard chickens
  - less controlled by authorities



# HA Clades of HPAIV H5N1 around Asia, Africa and Europe 2003-09



# ECOHEALTH / ONE HEALTH AND HPAI H5N1

# Scientific versus 'Real World' Problems

- **scientific problem**
  - puzzle a scientist seeks to solve that will advance knowledge within particular scientific discipline or research area
  - typically solution sought in “laboratory” by experiment
- **real world problem**
  - difficulty or trouble faced by society at large
  - may involve solving scientific puzzles but these as well as an overall solution requires combining knowledge of scientific disciplines and that found outside science

# Approaches to Research for solving 'Real World' Problems

(Modified from Tress et al. 2006)

- disciplinary research
  - takes place within bounds of single, currently recognized academic discipline
- multidisciplinary research
  - involves several different academic disciplines researching one theme or problem but with multiple disciplinary goals
- interdisciplinary research
  - involves several unrelated academic disciplines such that they cross subject boundaries to create new knowledge and theory and solve common research goal

# Approaches to Research for solving 'Real World' Problems *cont.*

- participatory research
  - involves academic researchers and non-academic participants working together to solve problem
- transdisciplinary research
  - integrates knowledge from different unrelated disciplines and non-academic knowledge to create new knowledge and theory toward solving real world problems
  - combines interdisciplinarity with participatory approach

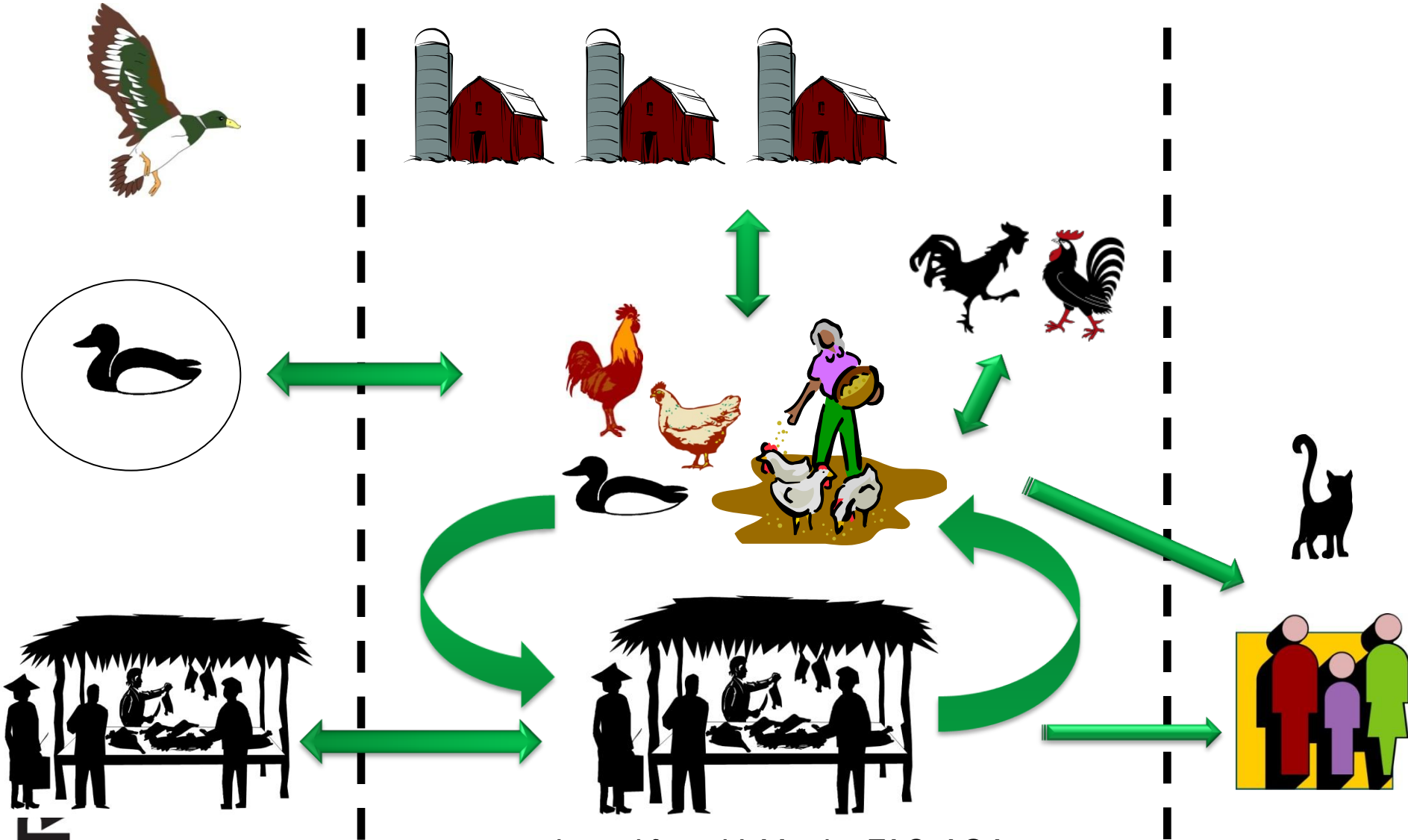
(Modified from Tress et al. 2006)



# EcoHealth and One Health/Medicine Concepts

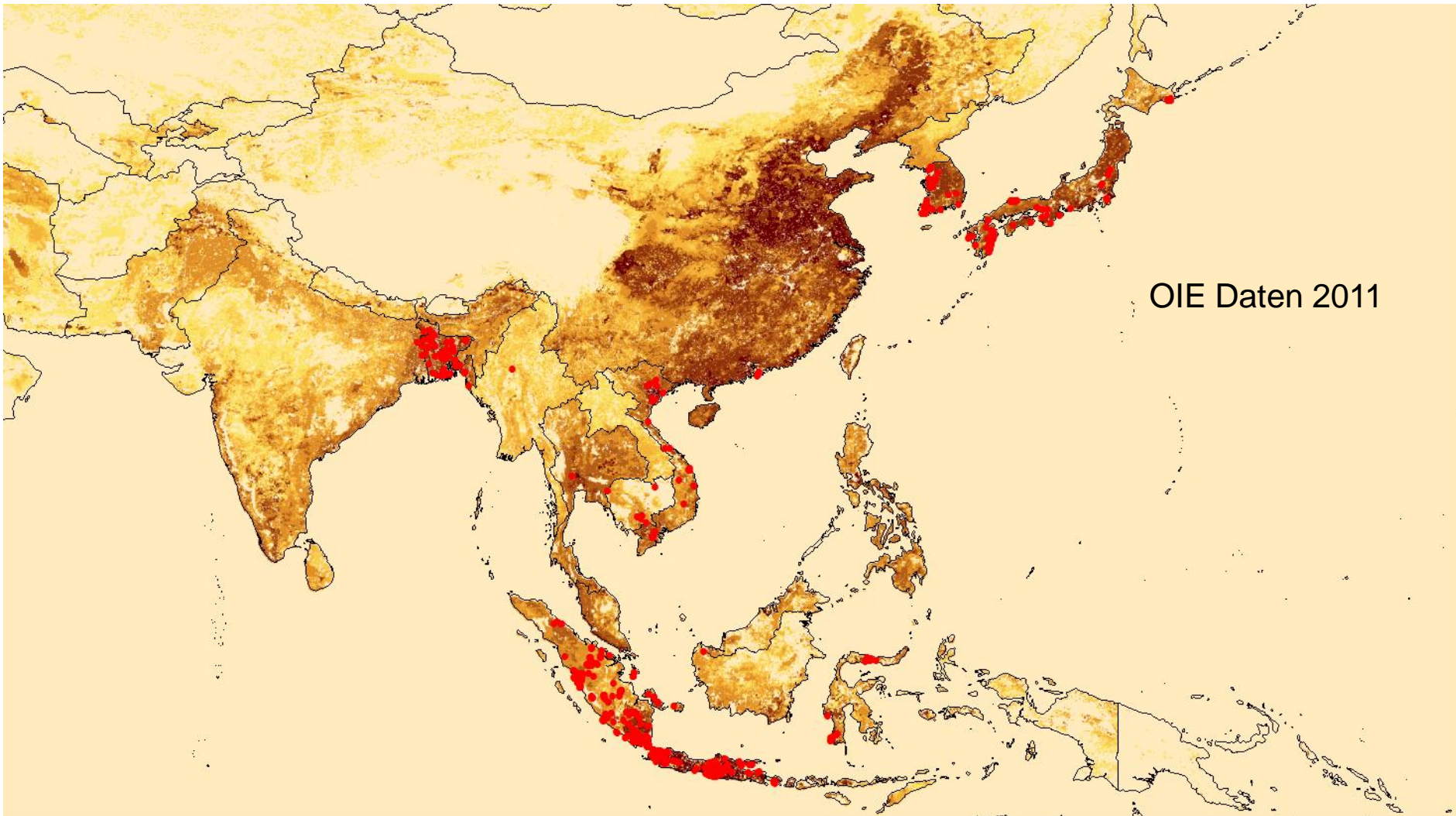
- EcoHealth
  - IDRC
    - holistic view of human health and environmental sustainability
    - ecosystem viewed as means to improved human health instead of as subject of study itself
  - Wikipedia
    - examines changes in biological, physical, social and economic environments and relates these changes to impacts upon human health
- One Health / Medicine
  - strategy for expanding interdisciplinary collaborations and communications in all aspects of health care for humans, animals and environment

# Transmission of HPAI H5N1 in SE-Asia

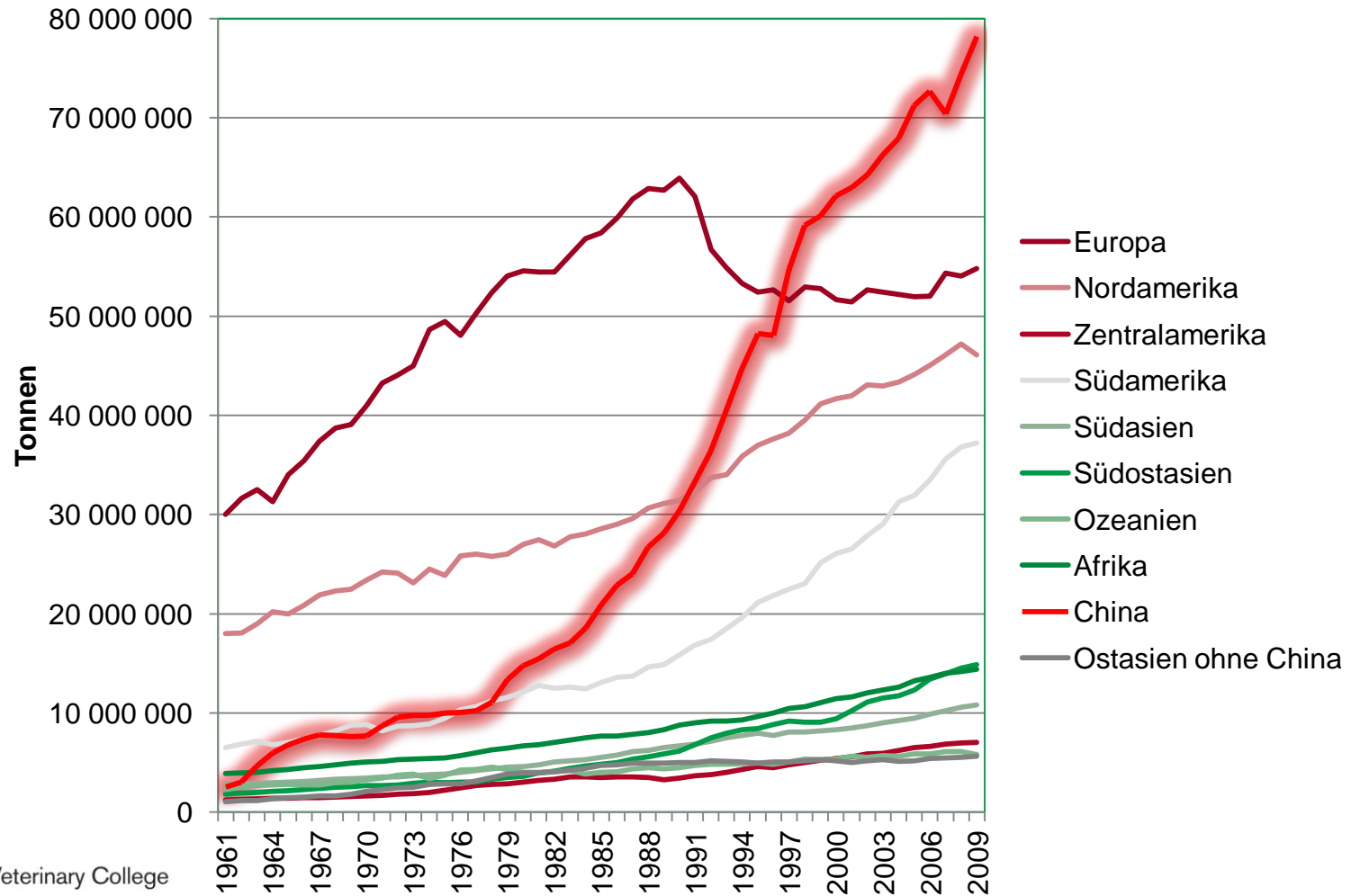


*adapted from V. Martin, FAO-AGA*

# Poultry Density and HPAI H5N1 Outbreaks in Asia (2003-11)



# Worldwide Meat Production (1961-2009)



Source: FAOSTAT

# With quakes and tsunamis, no one's got time for bird flu

The fight against the disease is unlikely to attract much attention from the resource-strapped Indonesian authorities until the flu becomes a mass killer

ER 17, 2005

GENERATION  
OUT



**RVC**

Royal Veterinary College

# Conclusions

- two scenarios in Greater Mekong Subsystem
  - presence of local reservoir of HPAIV H5N1 in Mekong delta
  - continuing introduction of new strains from China into northern Viet Nam, Lao PDR and Thailand
- effectiveness of surveillance and response
  - very good in Thailand (without vaccination)
  - moderate in Viet Nam (with vaccination)
  - poor in Lao PDR and Cambodia

# Conclusions *cont.*

- need to understand mechanisms of introduction and local maintenance
  - importance of socio-economic and anthropological drivers
- develop refined responses
  - targeted vaccination in Viet Nam
  - address role of live bird markets and role of production systems
- recognise importance of regional transboundary trade
  - prevention of further introductions from China



# Conclusions *cont.*

- lack of system understanding
  - need to use interdisciplinary approach
    - link between
      - academic disciplines, such as anthropology, ecology, economics, epidemiology, microbiology, public health etc.
      - different knowledge perspectives such as individual, local, specialised, strategic and holistic (after Brown 2005)

