



# WE CAN “VET” OUR EARTH

IL MONDO VETERINARIO  
AL CENTRO DI UNA SANITA' DI PREVENZIONE



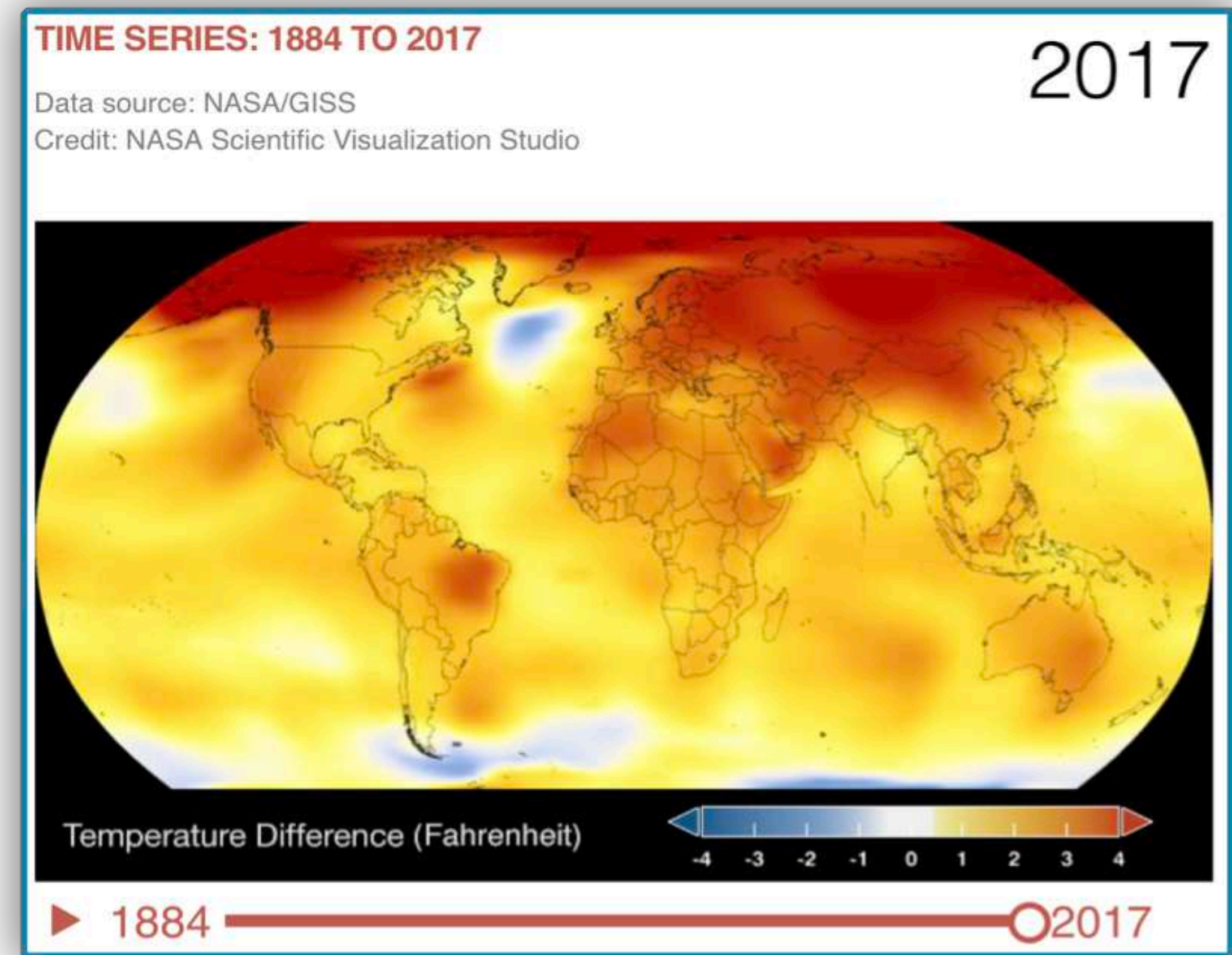
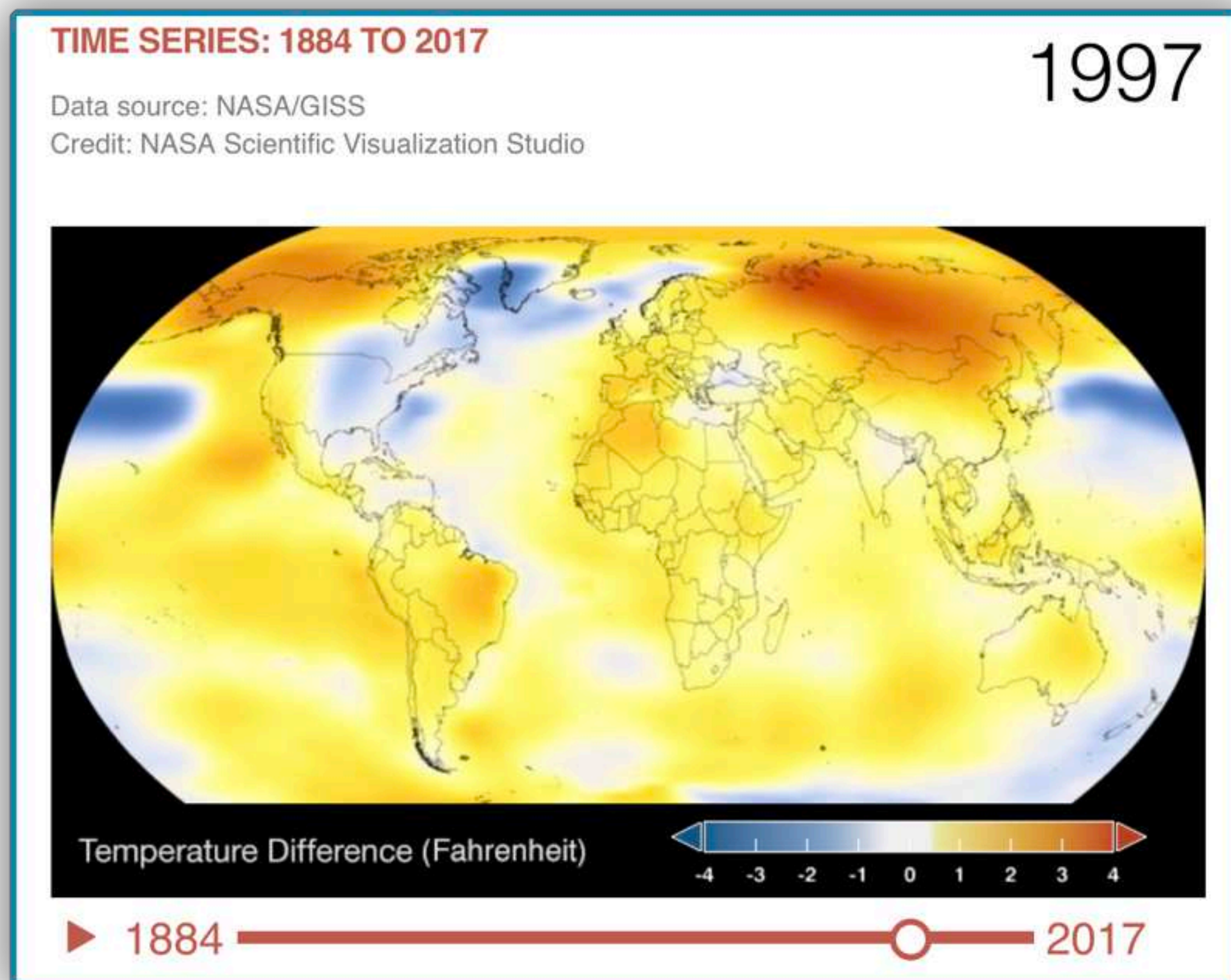
**Consiglio Nazionale FNOVI**  
Roma, 9-10 novembre 2018  
**Dott.ssa Emanuela Sannino**

# CLIMATE CHANGE



# DIRECT EXPOSURE TO CLIMATE CHANGE

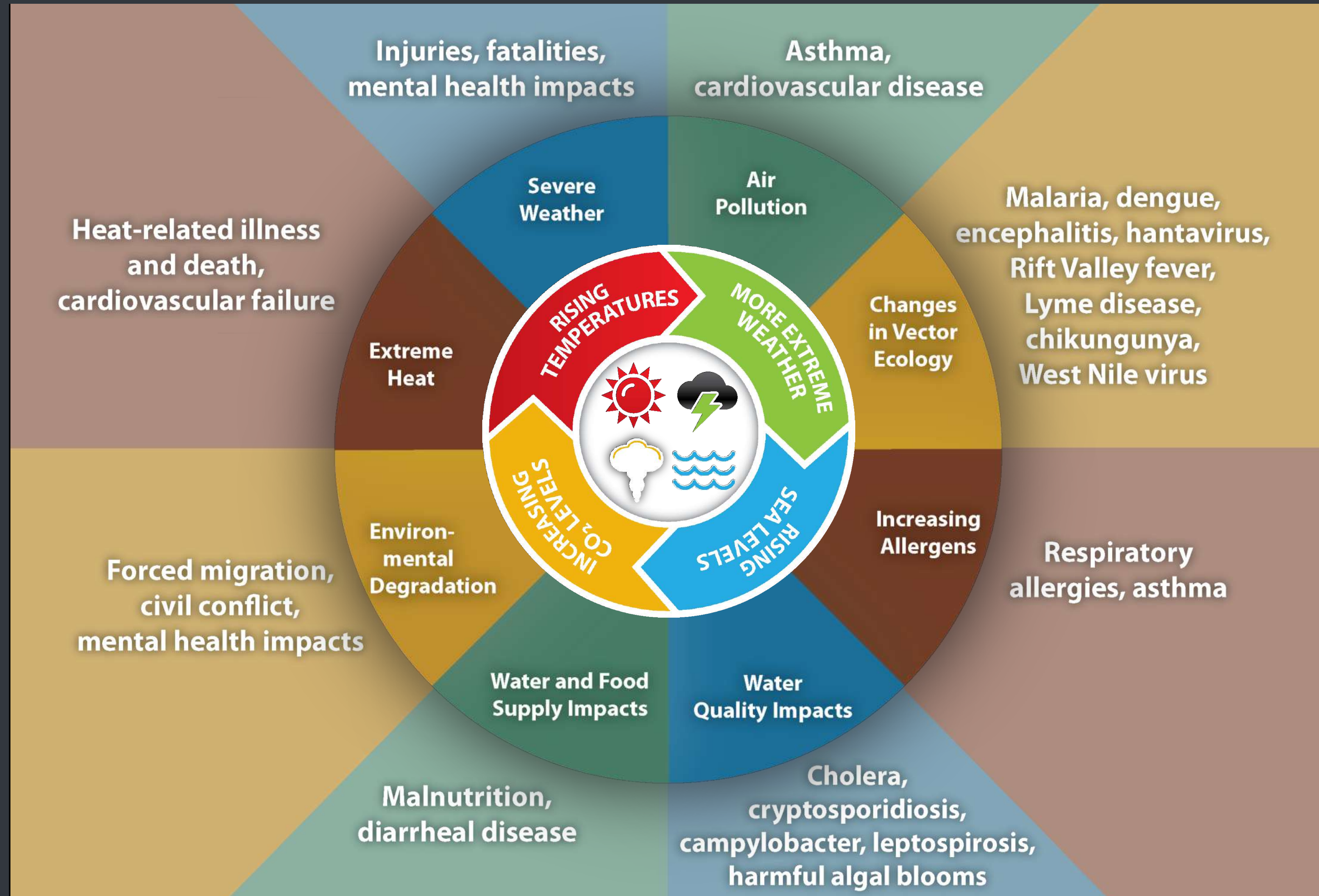
THE AVERAGE VARIATION OF GLOBAL SURFACE TEMPERATURES



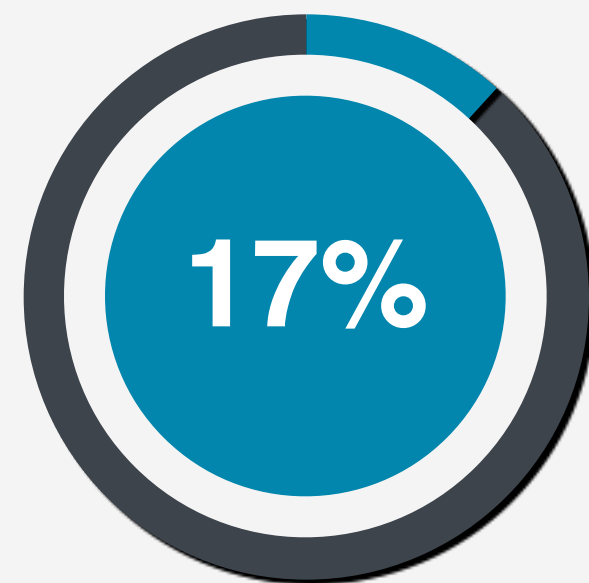
IPCC - INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

GLOBAL WARMING WILL LIKELY RISE TO 1.5 °C ABOVE PRE-INDUSTRIAL LEVELS BETWEEN 2030 AND 2052  
IF WARMING CONTINUES TO INCREASE AT THE CURRENT PACE

# INDIRECT EXPOSURE TO CLIMATE CHANGE



# VECTOR-BORNE DISEASES

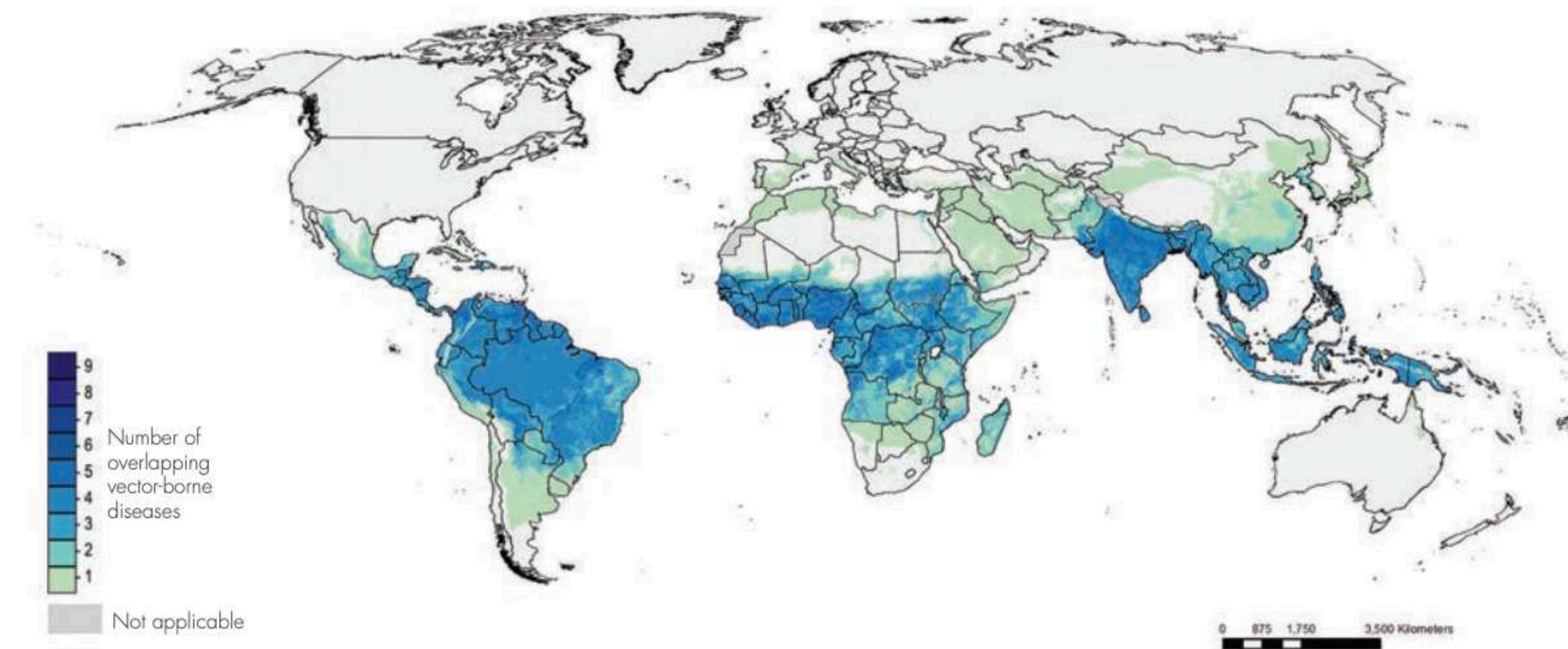


OF THE GLOBAL BURDEN  
OF TRANSMISSIBLE DISEASES (WHO)



700.000 DEATHS EVERY YEAR

**Figure 2. Overlapping global distribution of nine major vector-borne diseases** for which integration of vector control programmes may be beneficial, 2016. Reflects all locations where the population is at risk of at least one of the following: malaria, lymphatic filariasis, dengue, leishmaniasis, Japanese encephalitis, yellow fever, Chagas disease, human African trypanosomiasis or onchocerciasis.<sup>1</sup>

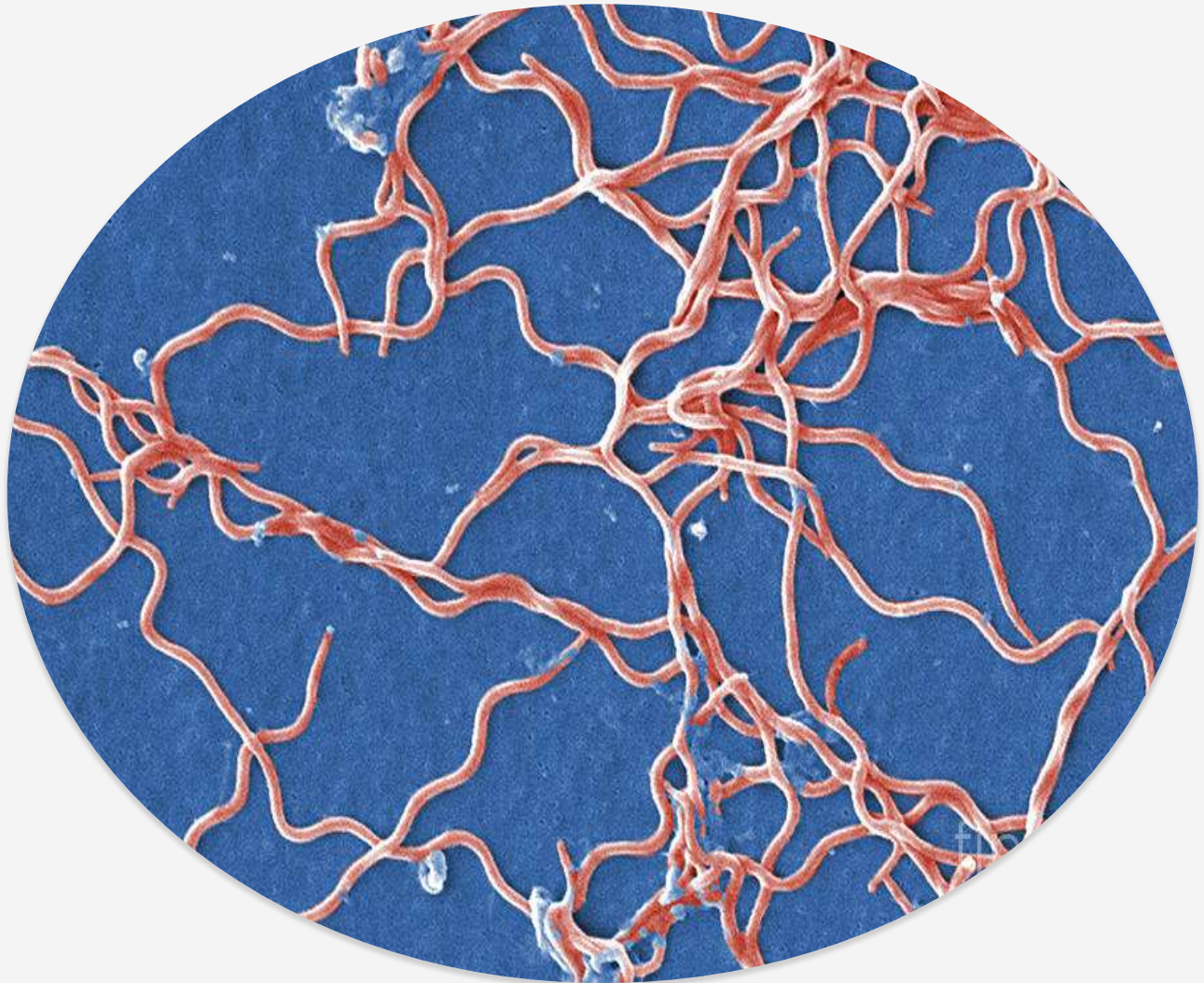
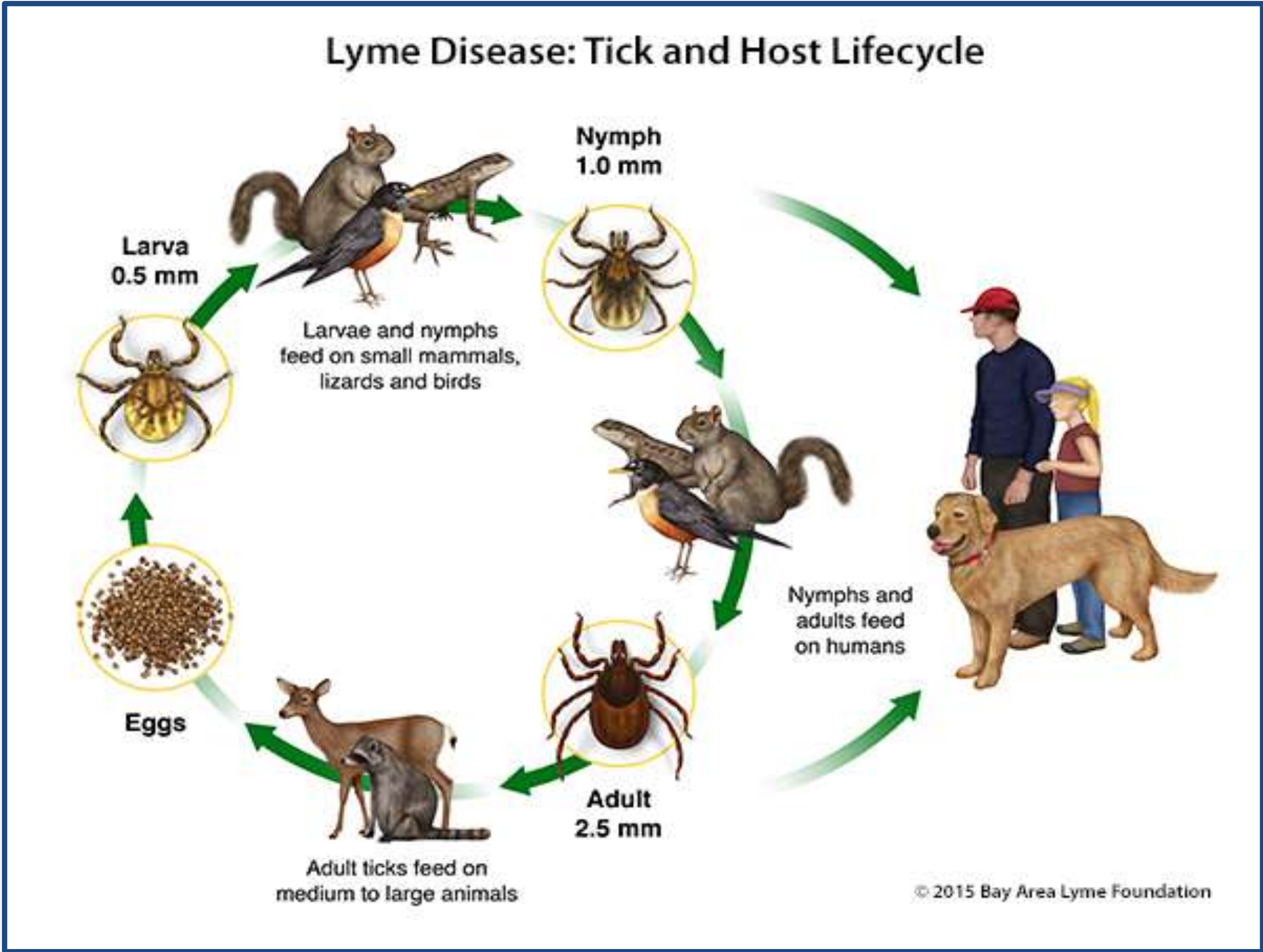


Colours indicate the number of vector-borne diseases that pose a risk at each 5 × 5 km grid cell

1. C. Moyes, University of Oxford, personal communication (2017). Developed based on the data and methods outlined in Golding N, Wilson AL, Moyes CL, Cano J, Pigott DM, Velayudhan R et al. Integrating vector control across diseases. BMC Med. 2015; 13:249. doi:10.1186/s12916-015-0491-4.

Daily, seasonal or year-to-year climate variability can sometimes results in vector/pathogen adaptation, and can extend the distribution of vectors to more temperate climes

# LYME DISEASE



**B. BURGDORFELI (SCIENCE SOURCE)**

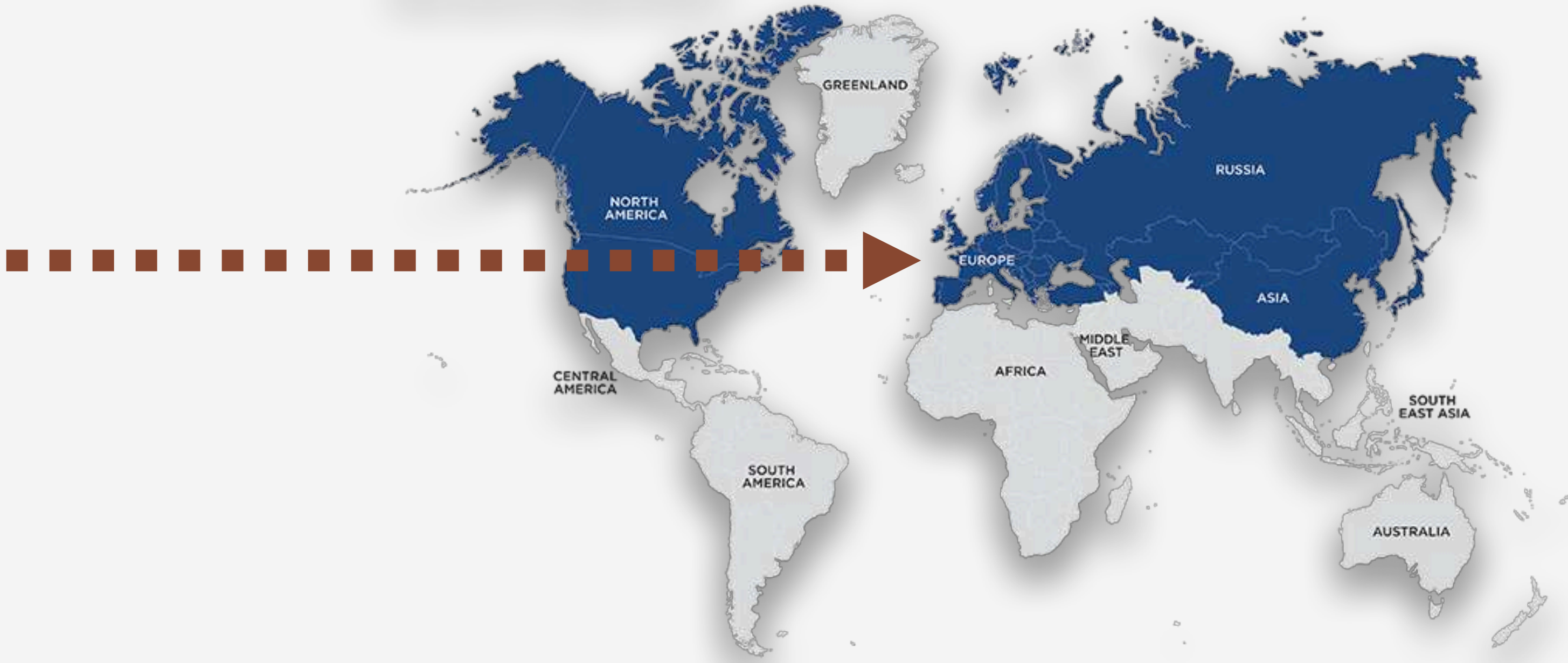
# LYME DISEASE



INCREASE THE OVERALL TICK POPULATION

**IN EUROPE, THE PREVALENCE OF  
B. BURGDORFELI IN TICKS IS  
ABOUT 12% (ECDC)**

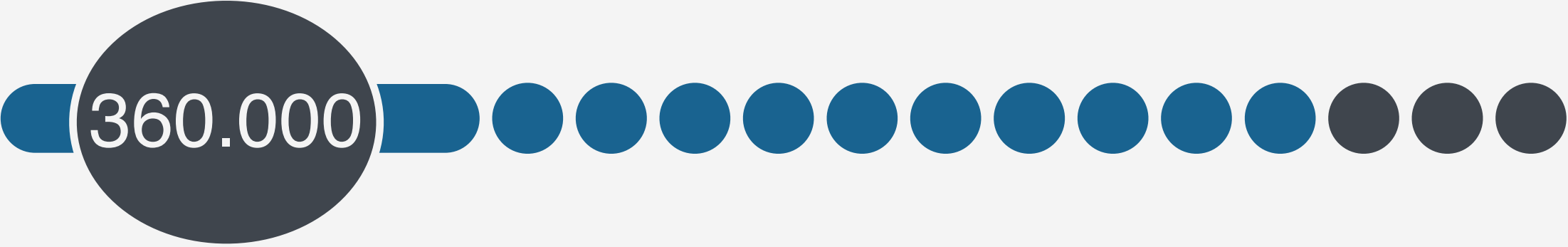
Risk areas for Lyme Disease



■ Risk areas / countries

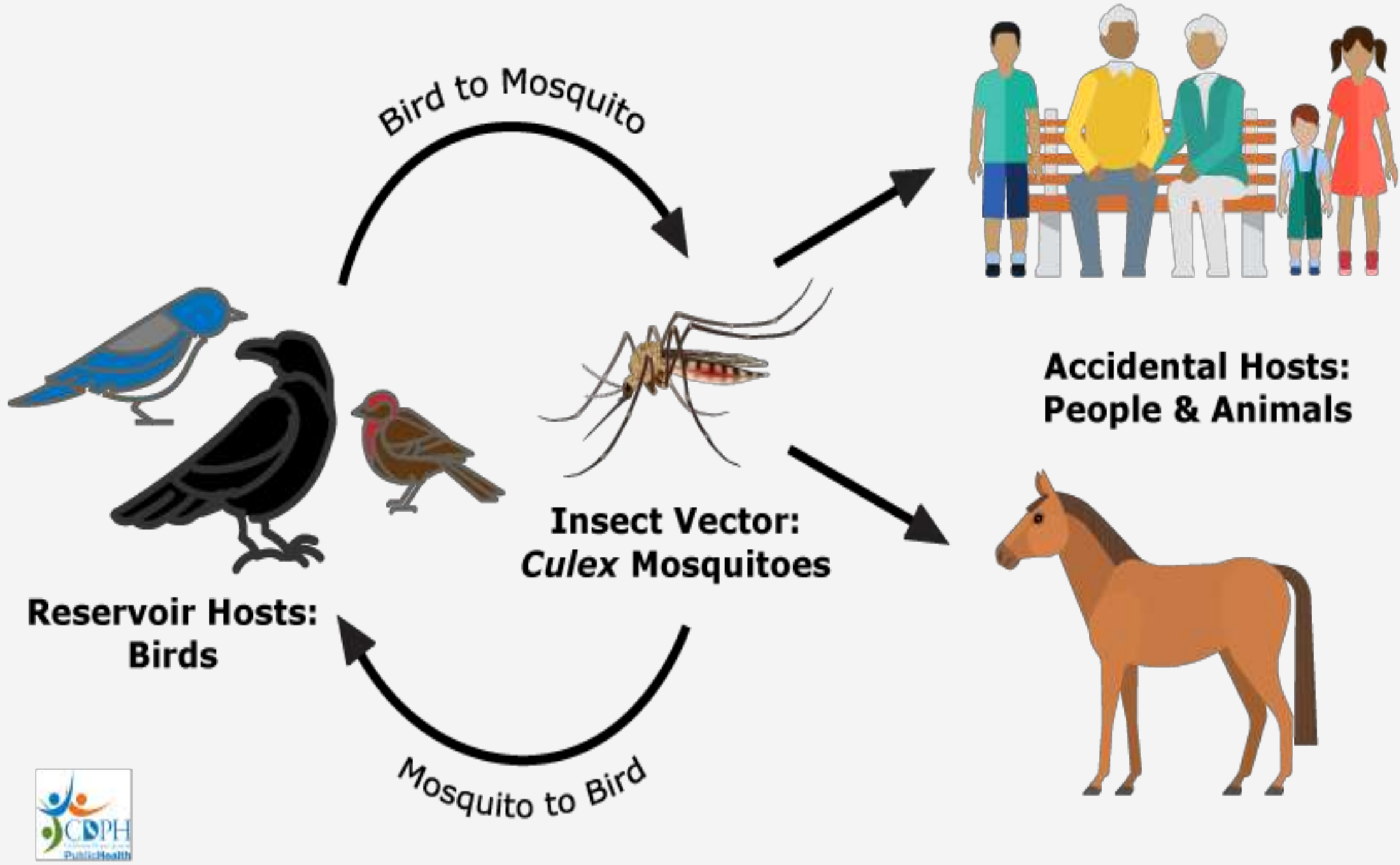
Adapted from CDC (2017)<sup>2</sup>

FEWER DISEASE-CARRYING TICKS DYING DURING WINTER

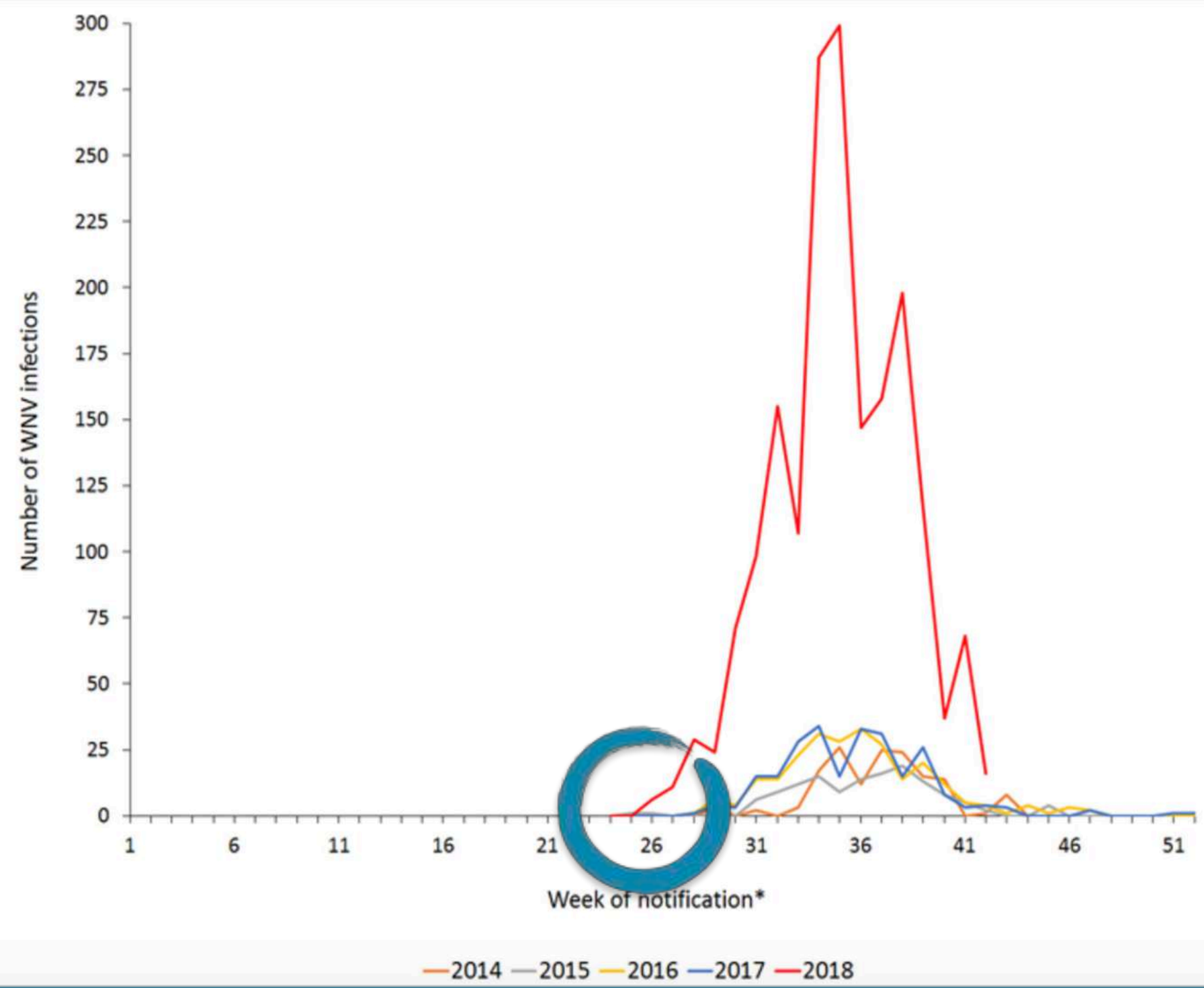


IN THE LAST TWO DECADES IN EUROPE (ECDC)

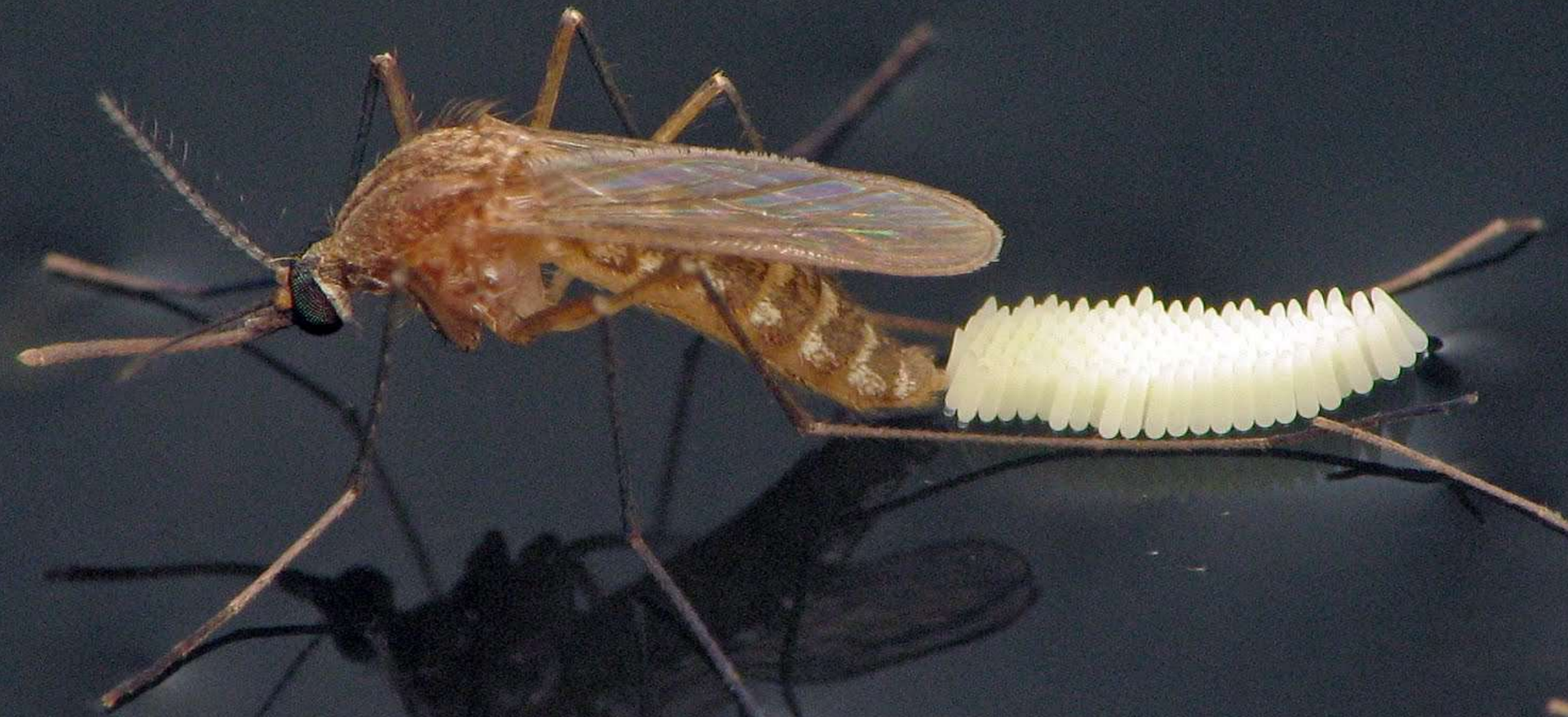
# WEST NILE FEVER



Number of WNV infections in EU/EEA and EU enlargement countries by epidemiological week of notification\*, 2014-2018



# WEST NILE FEVER



WEATHER CONDITIONS HAVE BEEN CONDUCTIVE  
TO MOSQUITO BREEDING AND PROPAGATION

2016  
225 CASES

2017  
207 CASES

2018

1.463 CASES

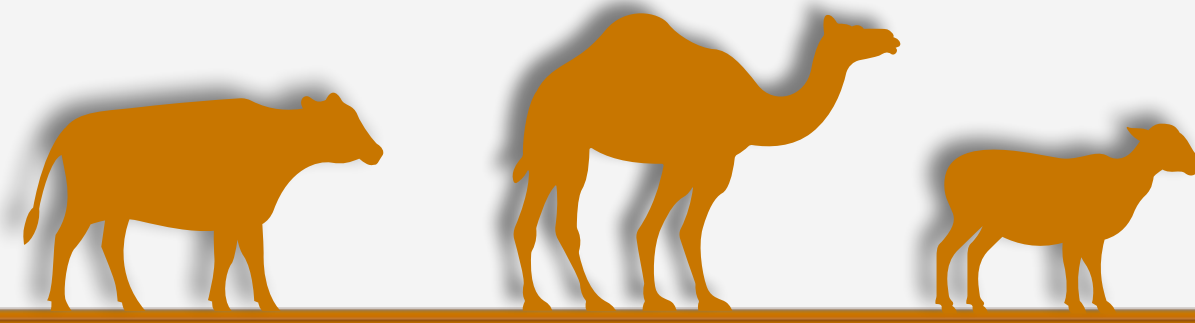
- 550 in Italy
- 307 in Greece
- 276 in Romania
- 214 in Hungary
- 53 in Croatia
- 24 in France
- 19 in Austria
- 15 in Bulgaria
- 3 in Slovenia
- 2 in Czech Republic

170 DEATHS

- 44 in Italy
- 42 in Greece
- 42 in Romania
- 35 in Serbia
- 3 in Kosovo
- 2 in Bulgaria
- 1 in Czech Republic
- 1 in Hungary

NOTIFIED BY ECDC (30 OCTOBER 2018)

# RIFT-VALLEY FEVER

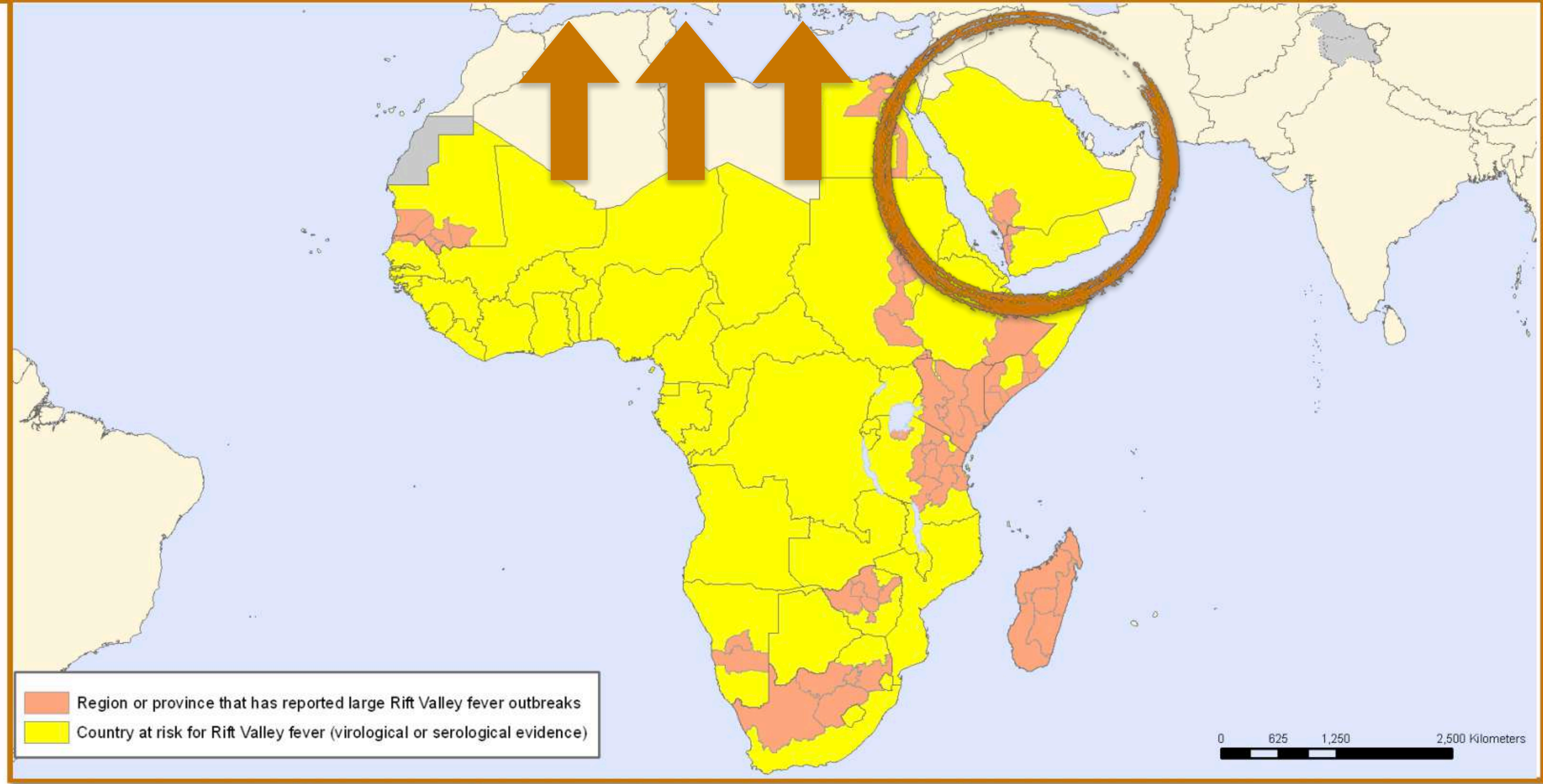


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World Health Organization

## Geographic distribution of Rift Valley fever

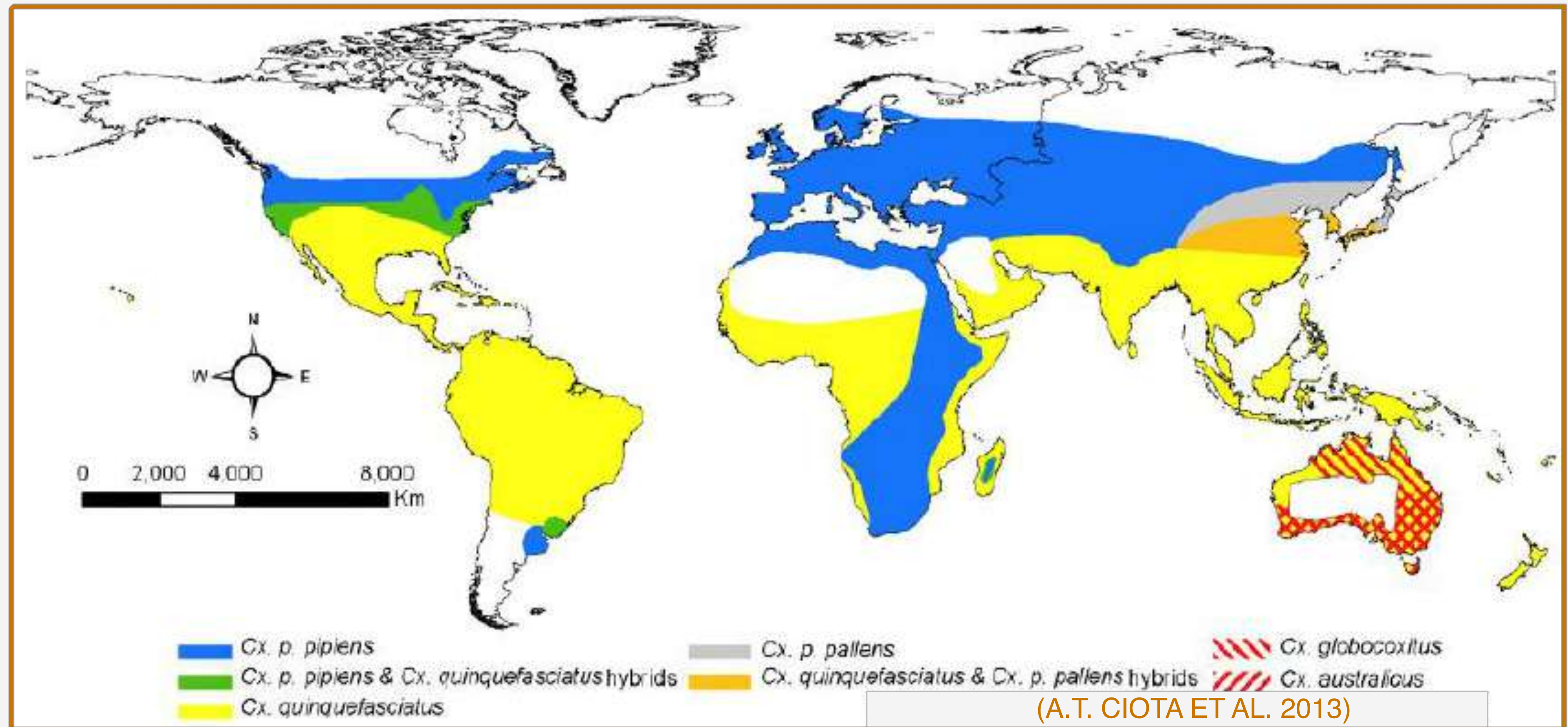


# RIFT-VALLEY FEVER



CULEX PIPIENS

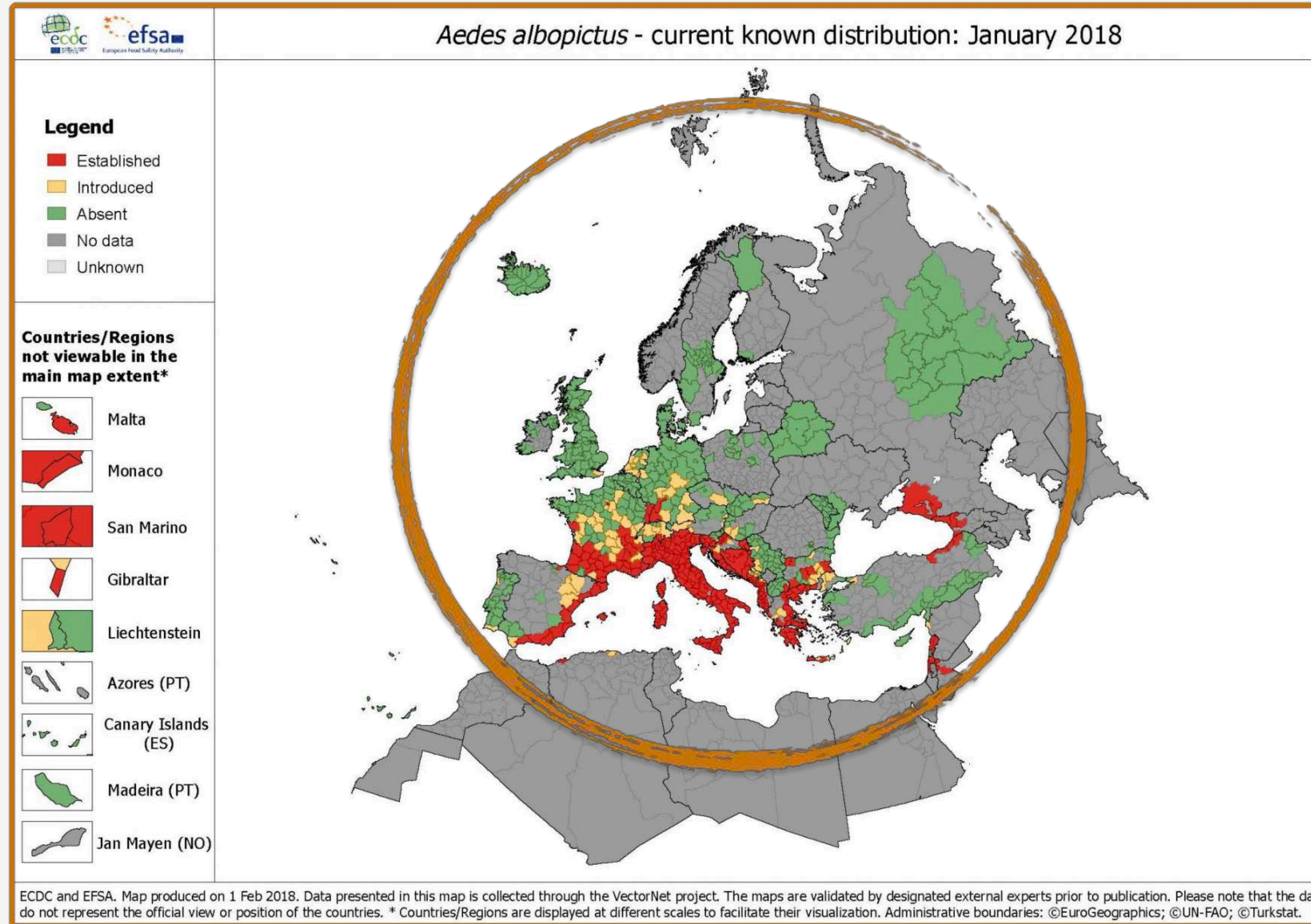
SOURCE: IZSVENEZIE.IT



50 MOSQUITO SPECIES MAY TRANSMIT THE VIRUS

# RIFT-VALLEY FEVER

CLIMATE CHANGE  
COULD ENLARGE  
THE DISTRIBUTION  
OF AREAS SUITABLE  
FOR THE RVFV  
TRANSMISSION



AEDES ALBOPICTUS

SOURCE: FUTURA-SCIENCES.COM

# HOW CLIMATE AFFECTS WATER AND FOOD SAFETY



THEY CAN SHIFT THE SEASONAL AND GEOGRAPHIC OCCURRENCE OF BACTERIA - VIRUSES - PESTS - PARASITES - FUNGI - CHEMICAL CONTAMINANTS

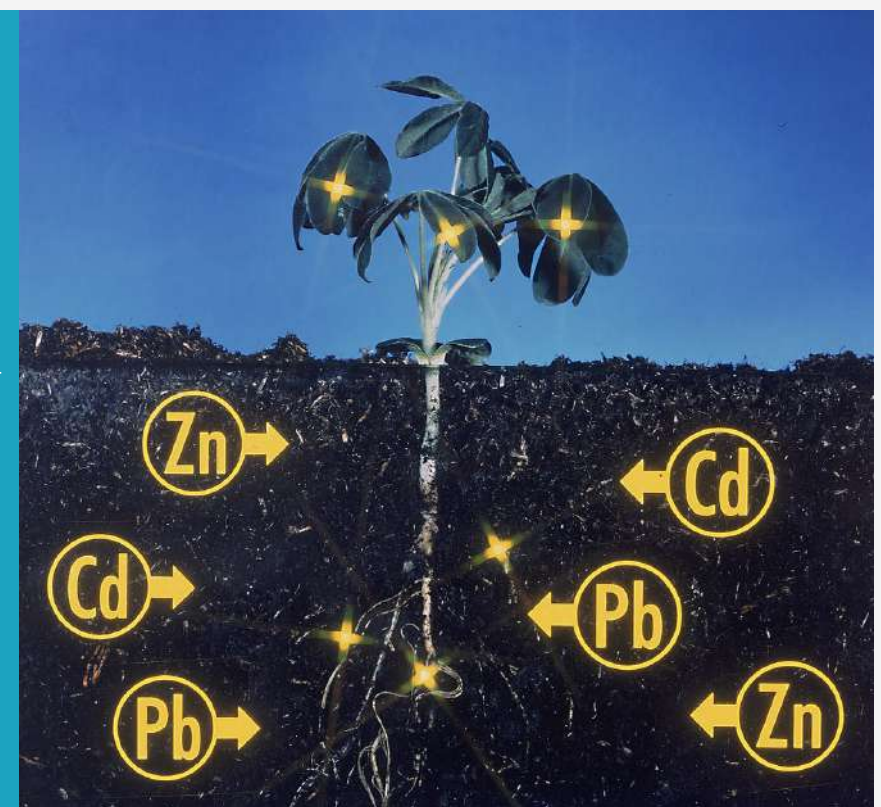
# HOW CLIMATE AFFECTS WATER AND FOOD SAFETY



Bacterial populations can increase during food storage, which can also increase food spoilage rates



Precipitation has been identified as a factor in the contamination of irrigation water and products, which has been linked to food-borne illness outbreaks.



Higher temperatures can increase the number of pathogens already present in products and seafood

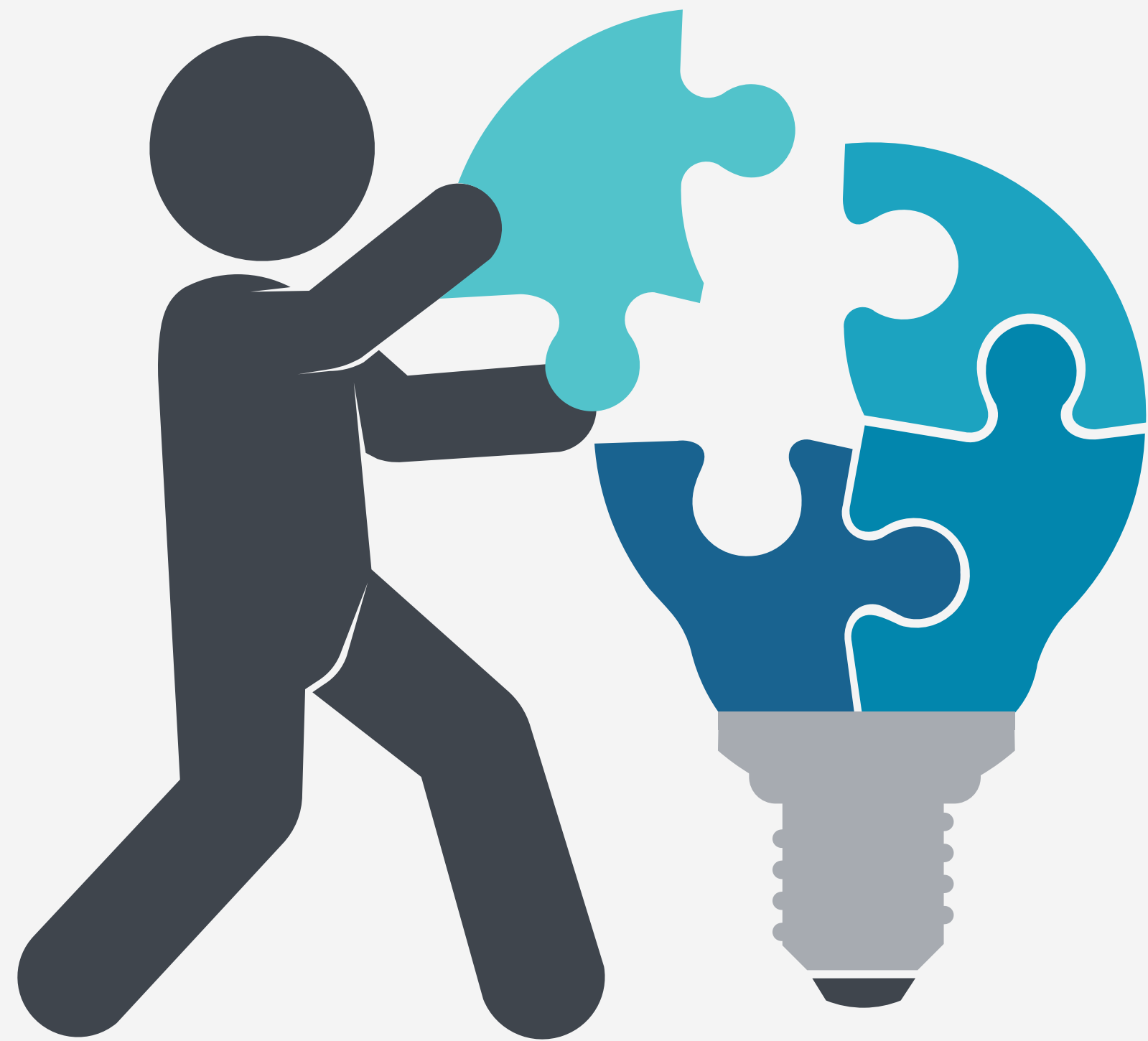






Sea surface temperature is directly related to seafood exposure to pathogens



Changing environmental conditions and soil properties may result in increasing the incidence of heavy metals in the food supply.

# CONCLUSIONS



-  DIALOGUE BETWEEN ANIMAL WORLD AND HUMAN WORLD
-  AN ASSESSMENT OF OUR POSSIBLE DISEASE FUTURE
-  INTEGRATE HOW FUTURE CLIMATE WILL AFFECT PATHOGENS
-  POTENTIAL SOCIETAL RESPONSE:  
POSSIBLE MEASURES OF CONTROL AND ADAPTATION



**Thank you  
for your attention**

*Dott.ssa Emanuela Sannino*