

BIODIVERSITY AND ZONOSSES IN THE ASEAN REGION

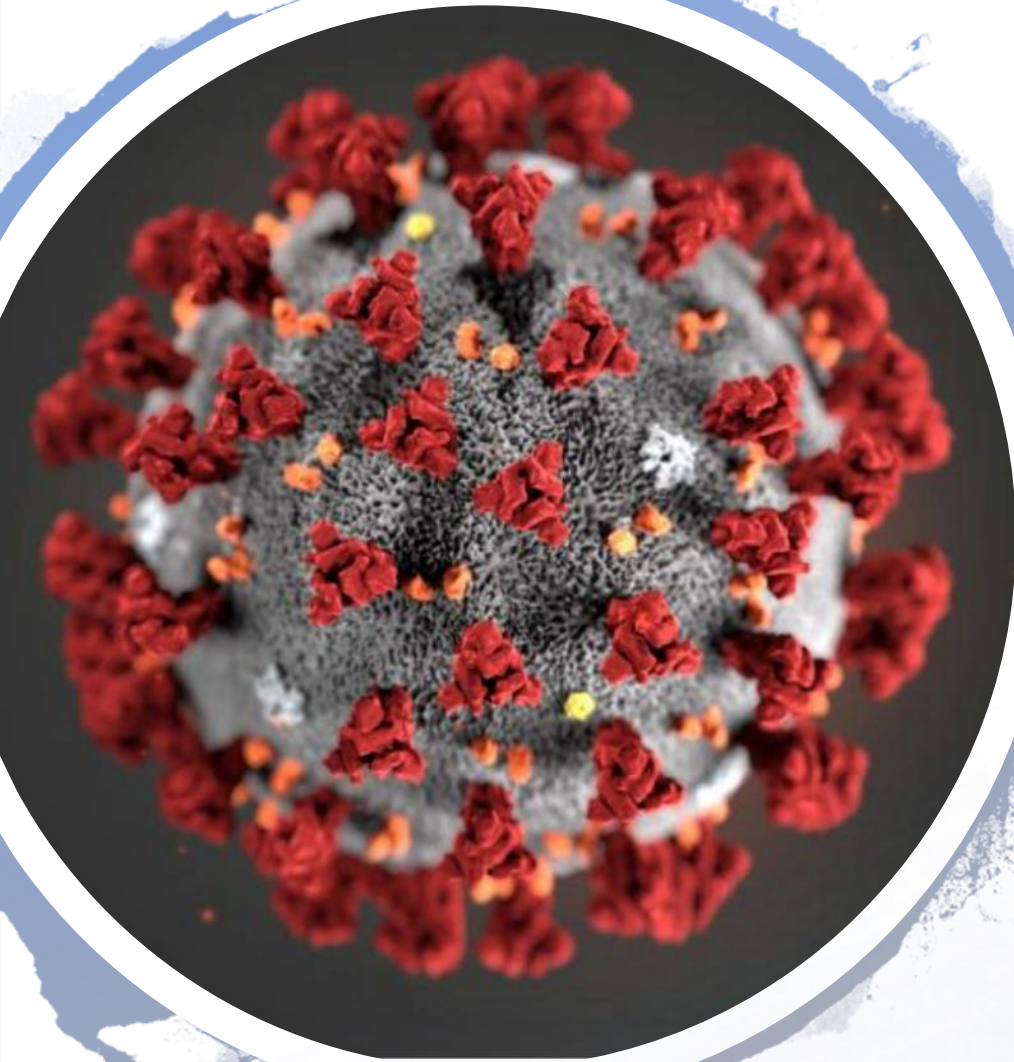
THERESA MUNDITA S LIM, DVM, DPCVPH

Executive Director

ASEAN Centre For Biodiversity



COVID 19

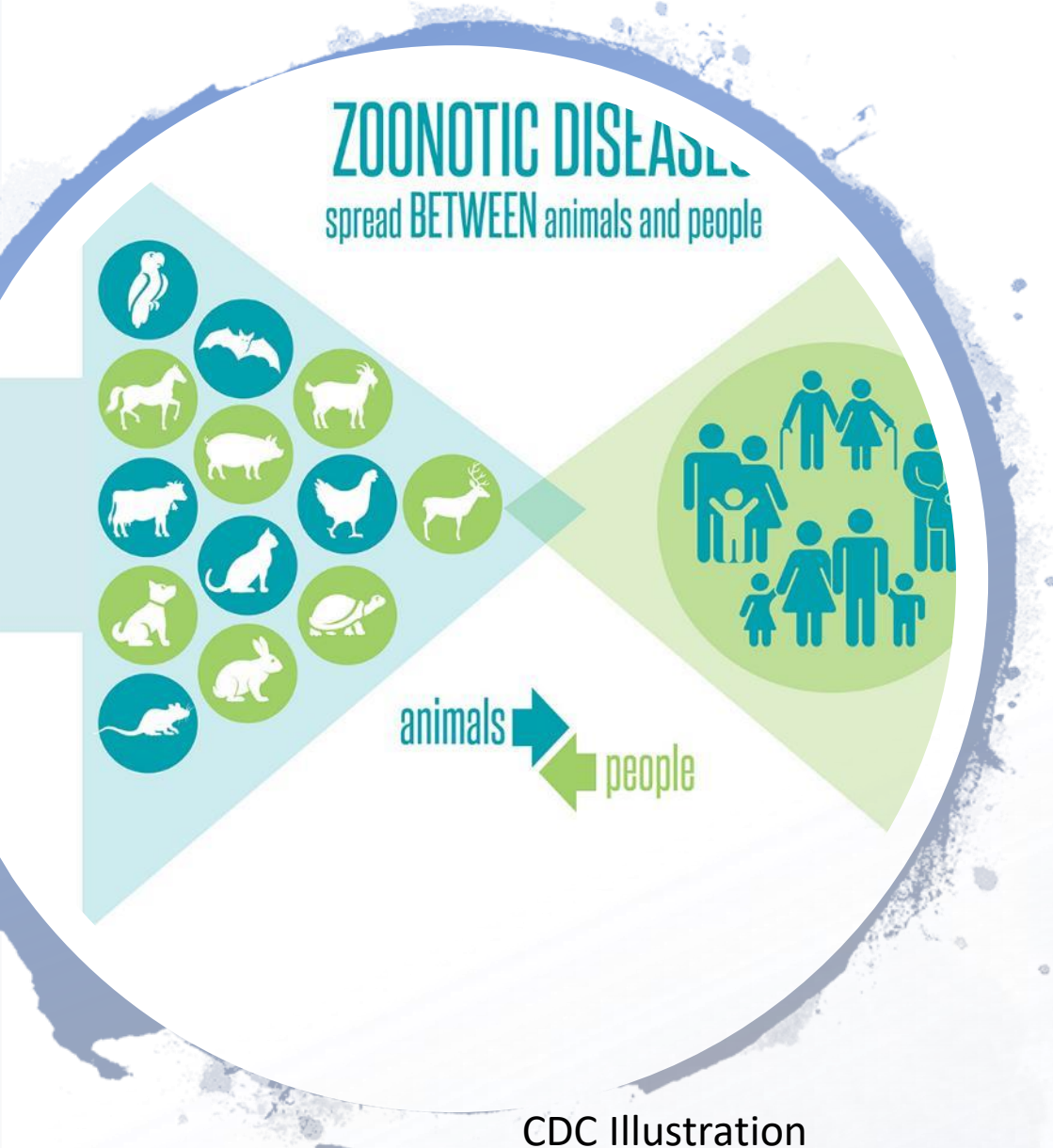


CDC Illustration

- Infectious disease caused by the most recently discovered coronavirus (SARS-CoV-2)
- Most coronaviruses originated from animals
- Possible animal source of COVID-19 has not yet been confirmed but research is ongoing.

(WHO, May 9, 2020)

Zoonosis

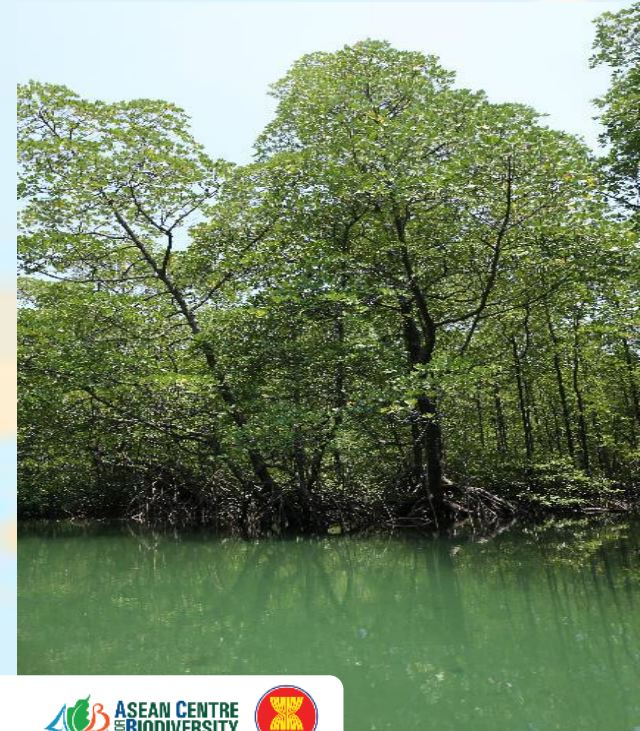


- **Two-thirds** of known human infectious diseases
- **75%** of new and emerging diseases
- More than **70%** are associated with wild animals
- Some studies suggest much more, with **90%** of zoonotic viruses originated from wildlife

Biodiversity

- The variability among living organisms, including terrestrial, marine, and aquatic ecosystems, and the ecological complexes of which they are part.
- This includes diversity within species (genetic), between species and of ecosystem

(Convention on Biological Diversity, 1992)



The ASEAN Region



3% of the Earth's surface area



18% of all known plants and animals



173,000 km shorelines



Link to SPECIES

- wildlife as a source of human disease, is often indirect;
- Domestic animals may act as “mixing vessels” or “disease bridges” for otherwise latent or dormant pathogens in wildlife reservoirs
- Increasing human interaction with wildlife increase opportunities for direct infection



Gregg Yan

	Primary transmission/ reservoir species	Impact
Influenza virus		The 2004 outbreak in East Asia resulted in economic losses of US\$ 20 billion over the following five years. ⁴⁸ The 2015 outbreak in the US has cost the poultry industry US\$ 3.3 billion and led to the death of 48 million birds either from the flu itself or from culling. ^{46,47}
		US\$ 15 billion of economic losses from 1986-2009 in the UK. ⁷
		The 2014-2015 Ebola outbreak in Guinea, Liberia and Sierra Leone led to 11,310 deaths and 28,616 confirmed cases. ⁴⁸
MERS-CoV virus		Since September 2012, 27 countries have reported confirmed cases, with about 624 deaths. ⁴⁹
		US\$ 671 million of economic losses, one million pigs culled, and 100 people died from the 1998 outbreak in Malaysia. ⁷
SARS		The impact of the 2002 outbreak was estimated at US\$ 41.5 billion, with 8,000 confirmed infections and 800 deaths. ⁷

Nipah (1999)

- Henipavirus
- Transmission through direct contact with body fluids, contaminated meat or fruits
- Acute respiratory infection, encephalitis, death
- Respiratory and nervous system signs in pigs



SARS

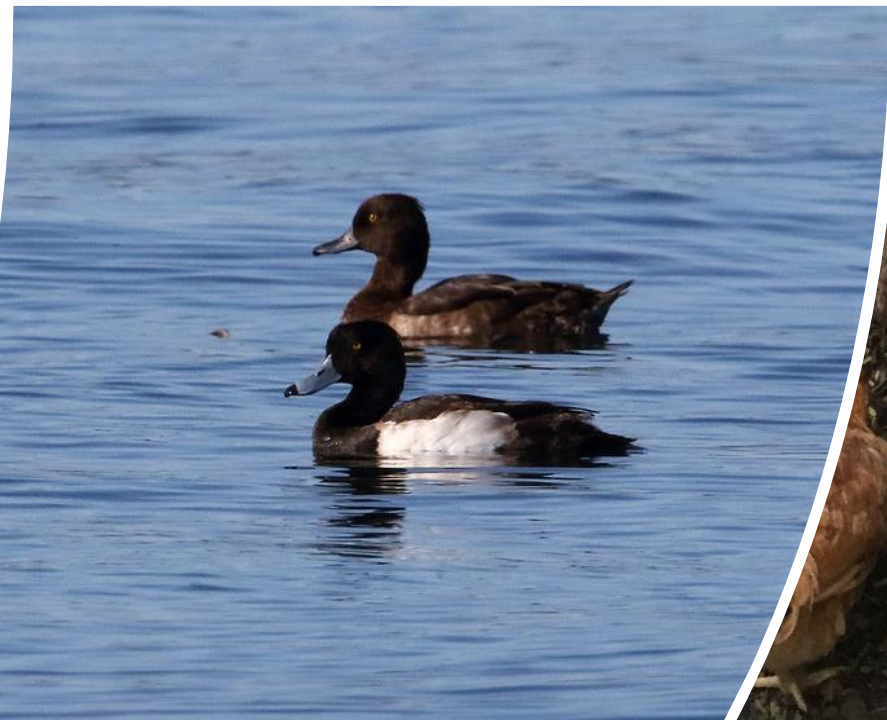
(2002)

- Coronavirus
- Direct transmission, contact with secretions
- Fever, respiratory symptoms, diarrhea, respiratory distress
- death



Avian Influenza - H5N1 (2003)

- Respiratory symptoms, difficulty in breathing, death
- Direct contact with contaminated poultry
- Consumption of improperly cooked contaminated poultry/ poultry products



Reston ebolavirus (2008)

- Filovirus, Reston is one of six species of Ebolavirus
- Transmission through direct contact with body fluids and fomites
- Fever, flu in humans, but the African strains are fatal (internal bleeding)
- Fatal in monkeys
- Pigs tested positive, asymptomatic





COVID19

rsalem

Illegal Wildlife Trade

ASEAN's rich biodiversity and increasing demand from outside the region make illegal wildlife trade a lucrative business.

4th largest industry

Estimated at USD 20B per annum (Asia-Pacific)

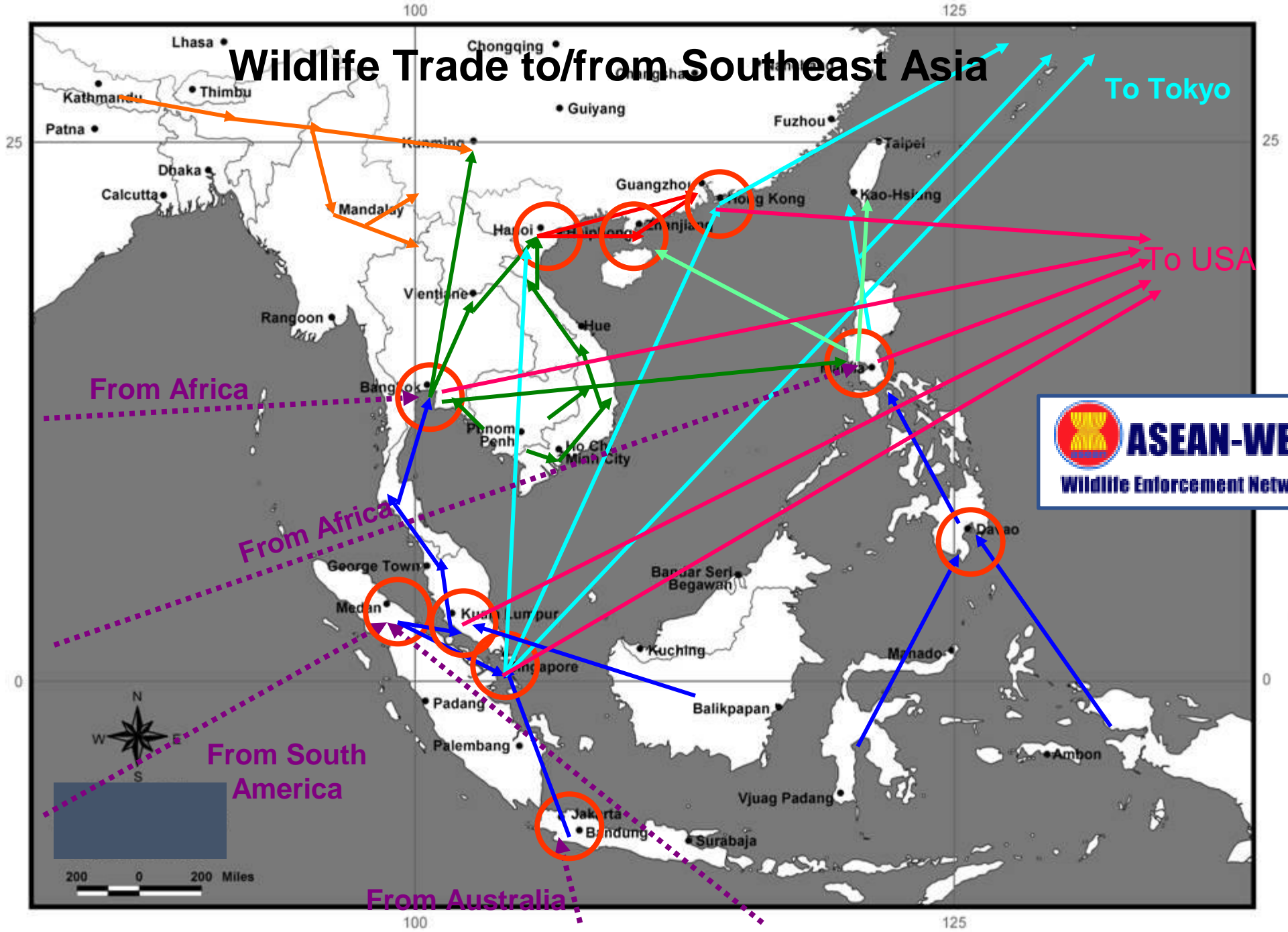


Wildlife Trade to/from Southeast Asia

S
O
U
R
C
E

U
S
E
R

TRAN
SIT
PT



Poaching / Hunting



Pets



Touching / Handling



Consumption of Exotic Wildmeat



Photos courtesy of BMB-GIZ

Press Ecosy

- Encro
- Land







Birds of ASEAN

- **2,779** Avian Species
 - 56 – Critically Endangered
 - 85 – Endangered
 - 184 - Vulnerable

- **48** Anatidae (Duck) Species:
 - 2 – Critically Endangered
 - 2 – Endangered
 - 5 – Vulnerable

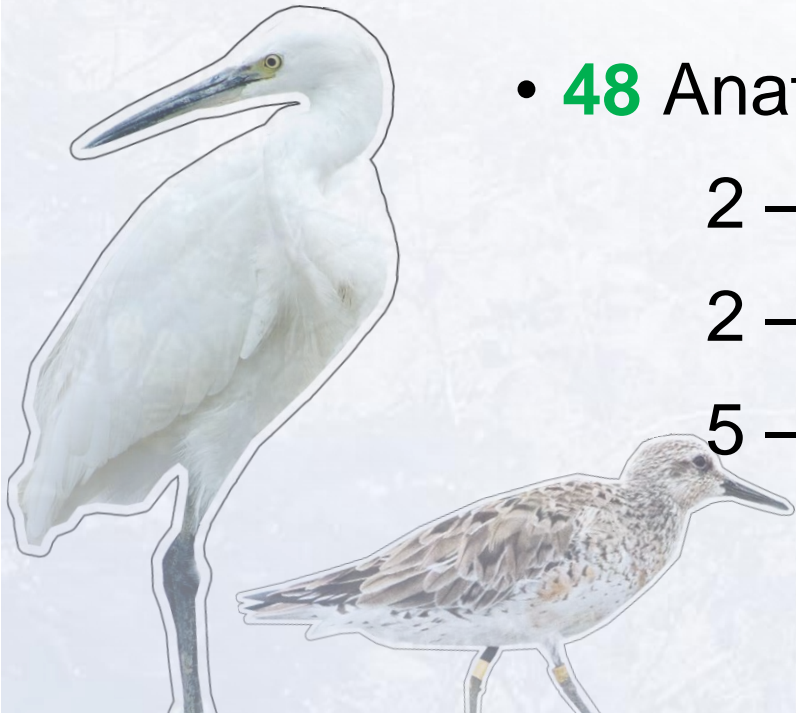


Photo Courtesy: Dante Oporto, DENR

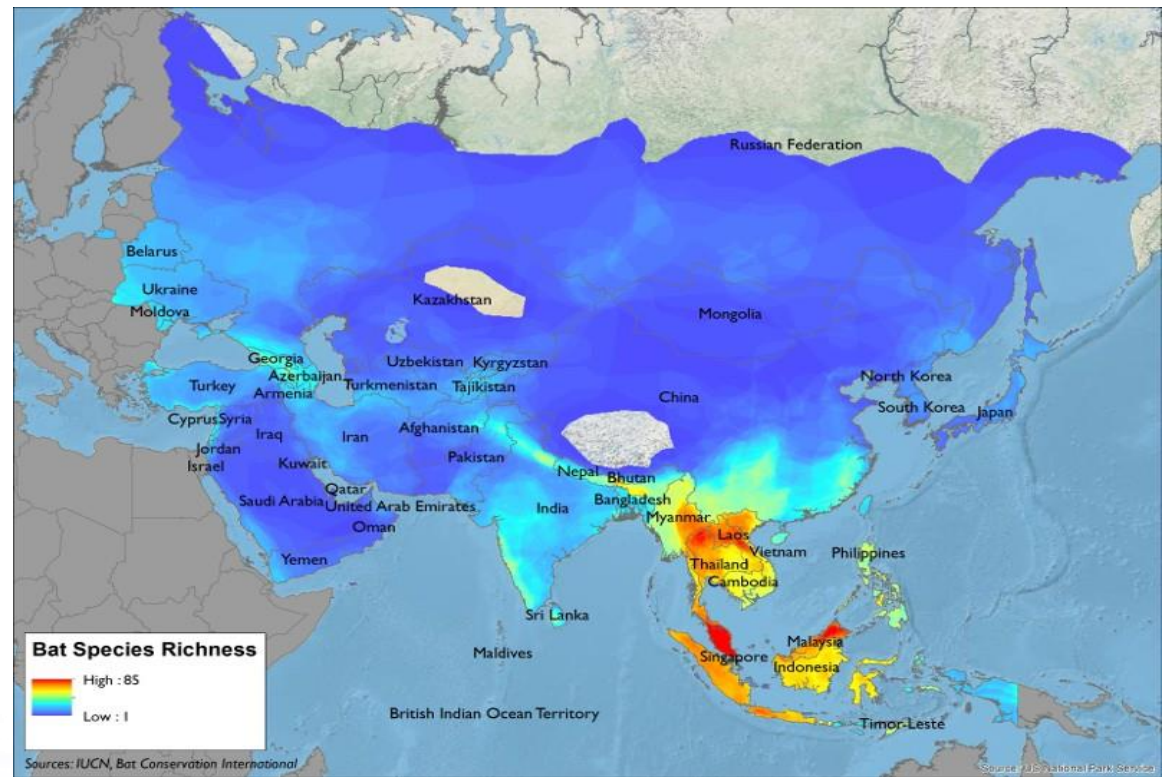


“If you look at the evolution of the virus in bats and what's out there now, [the scientific evidence] is very, very strongly leaning toward this could not have been artificially or deliberately manipulated ... Everything about the stepwise evolution over time strongly indicates that [this virus] evolved in nature and then jumped species,”

Dr. Anthony Fauci

U.S. National Institute of Allergy
and Infectious Diseases,
2020

ASEAN Bats

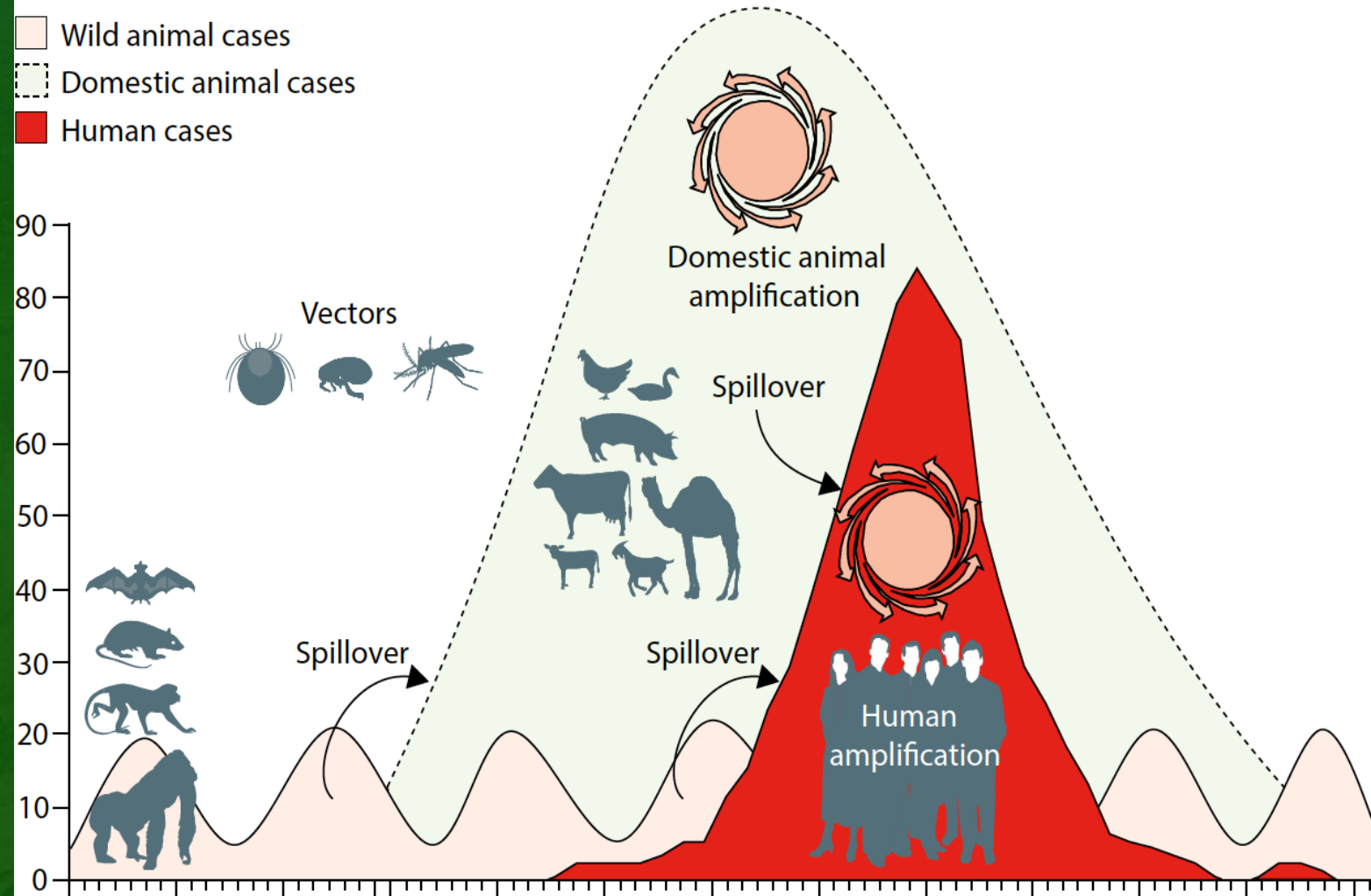


- **346** bat species
- **30%** mainly fruit eaters and nectar feeders
- **20%** insectivores
- The rest feed on small rodents and large insects
- Almost 20% threatened

Transmission of zoonotic diseases and amplification in people

There may be around 1.7 million unidentified viruses believed to still exist in mammals and water birds that can infect people.

-IPBES



Source: Karesh *et al.* (2012)



Provisioning

Loss of sources of medicine / treatment for illnesses

ASEAN INITIATIVES

1. **Integrated efforts**
among various fields.
Adopt a One Health
Approach



ASEAN INITIATIVES

2. ASEAN HERITAGE PARKS

Support the protection of remaining important ecosystems in the ASEAN, which are also valuable habitats and act as refuge for wildlife;

This along with our efforts to help cause transformational change in all levels of society through biodiversity mainstreaming



ASEAN INITIATIVES

3. MAINSTREAMING BIODIVERSITY

- change in mindset and behavior
- New development paradigm.
- Mainstream biodiversity and care for the environment in everyday decisions



ASEAN INITIATIVES

4. Stronger cooperation among nations

- Puts a premium on interconnectivity
- Synergies foster inclusiveness, and allow greater engagement among countries, especially those that are similarly situated, in ways that are more responsive to their goals, commitments, needs, resources, and capacities





**ASEAN CENTRE
FOR BIODIVERSITY**





For more information, log on to
www.aseanbiodiversity.org



**Championing
Biodiversity
Conservation in
the ASEAN
Region**

