

Chapter 5:

# Animal Health. The embrace of \* the species



# 1. Panzootics. Learning about Animal Health

Most of us know what a pandemic is, considering our recent experiences with COVID-19. Likewise, many people are still suffering from the HIV pandemic of the 1980s, but do you know what the term “panzootic” means?

It refers to a pandemic in animals. It literally means “all” and “animals,” and has been used occasionally to describe extensive multi species infections by a single pathogen infection that occurs in a vast number of animal species.

The term “panzootic” entered veterinary and medical terminology approximately in the 19th century referring to a widespread outbreak of a disease affecting several kinds of animals.



Credit: What is avian influenza? World Organization for Animal Health (WOAH)

At present, two distinct panzootics are underway. A highly pathogenic influenza strain, H5N1, which is affecting and decimating populations of domestic and wild birds, as well as maritime mammals across the globe (seals, sea lions, cetaceans, otters, foxes, bobcats, mountain lions, skunks and minks).

Secondly, the SARSCoV-2 Covid's pathogen, has spilled-back to nonhuman animals, both domesticated and wild, establishing what scientists believe to be vast reservoirs of the virus. As of October 2022 we have witnessed:

A total of

**675 natural outbreaks**

of SARS-CoV-2 infection have occurred in animal species worldwide.



Sources of this information:  
One Health High-Level Expert Panel (OHHLEP):  
[Learn more](#) →

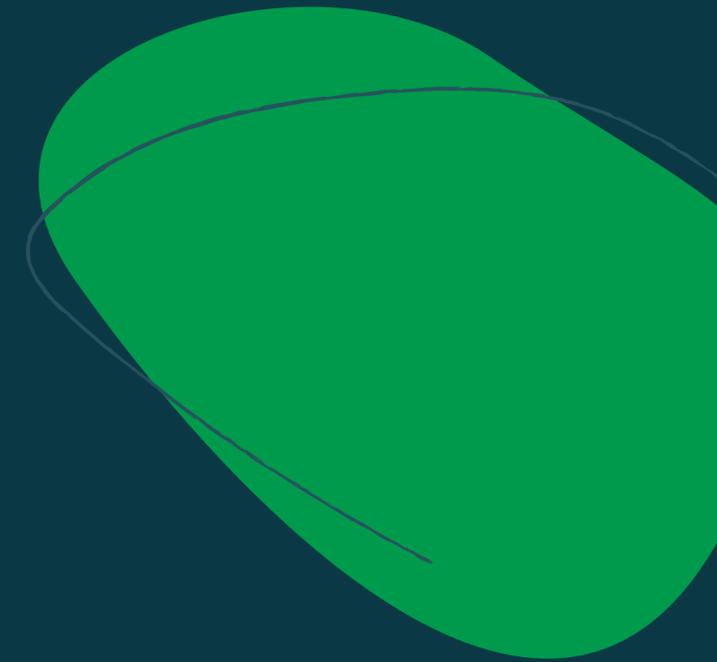
A total of

**58 animal species**

have been infected through natural and experimental infections, and these include human beings.

Pandemic or Panzootic— A Reflection on  
Terminology for SARS-CoV-2 Infection  
[Learn more](#) →

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## 2. Animal Health and climate change

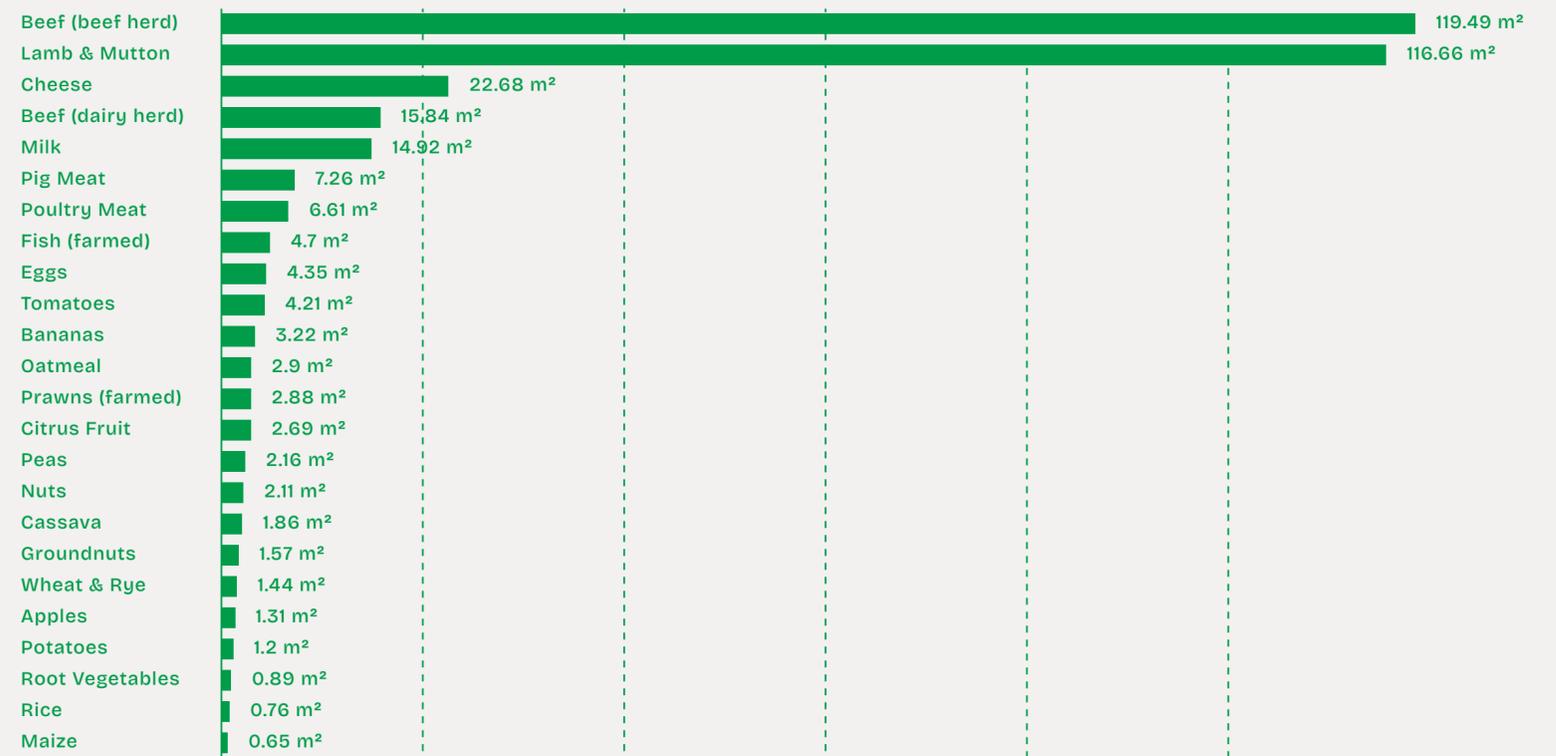
Reducing meat consumption and improving animal health offer a cost-effective and sustainable opportunity for livestock industries to lower greenhouse gas emissions and better manage climate risks. Healthy animals not only contribute to lowering climate gas emissions, especially carbon dioxide and methane, but also increase productivity and improve environmental sustainability.

### Select global facts:

- **26%** of the planet's ice-free land is used for livestock grazing; **33%** of croplands are used for livestock feed production (FAO).
- Livestock methane emissions from manure and enteric fermentation represent roughly **32%** (UNEP)
- **Beef production** requires roughly **100 times as much land per calorie** as grain or nuts (ourworldindata.org)
- **A reduction of 10% in disease levels is associated with an 800 million tons decrease in greenhouse gas emissions.**
- Vaccination against endemic cattle diseases resulted in decreased emissions of 12 to 277 kt CO<sub>2</sub>-eq (animalmedicinesaustralia.org)

### Land use of foods per 1,000 kilocalories

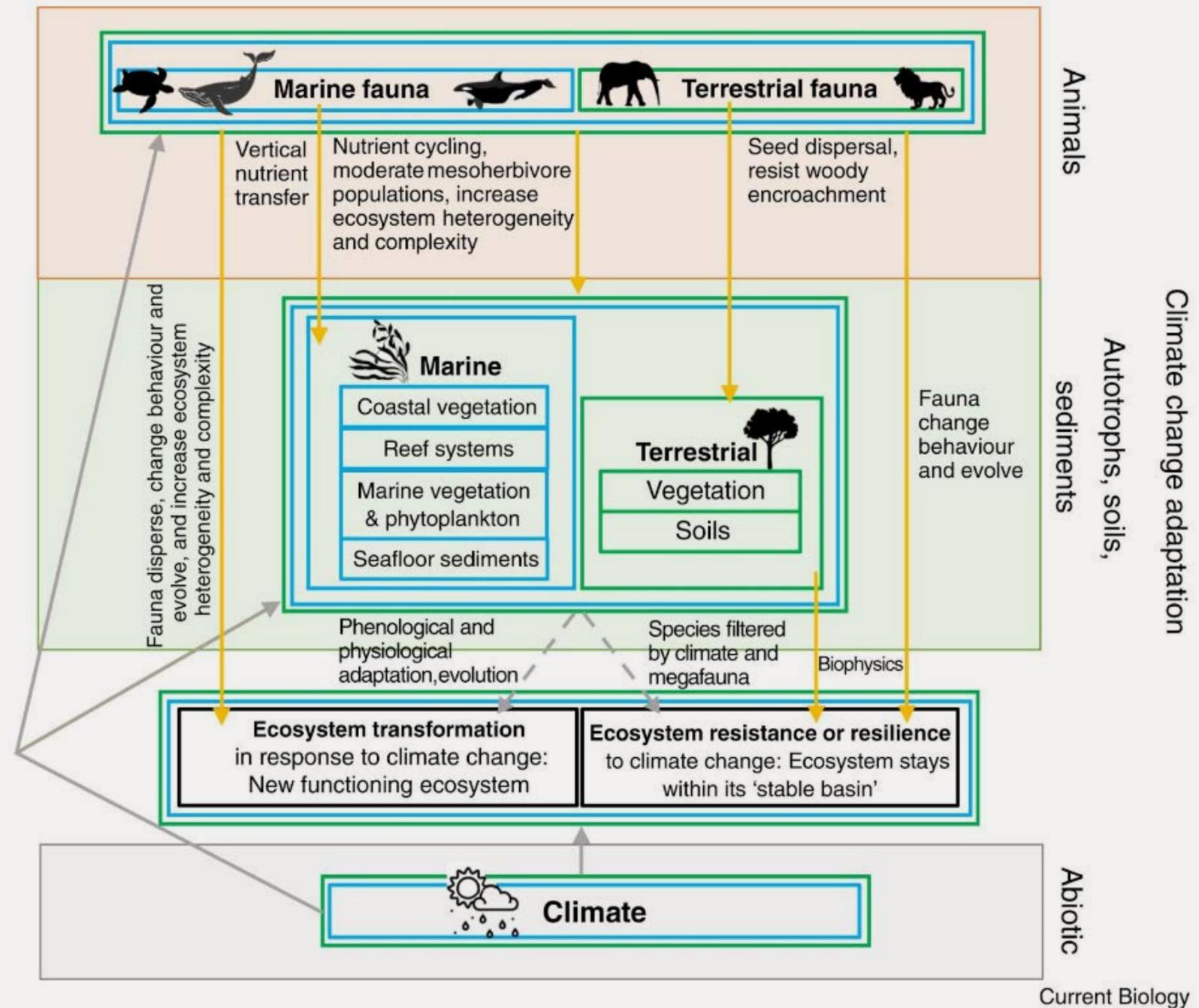
Land use is measured in meters squared (m<sup>2</sup>) required to produce 1,000 kilocalories of a given food product.



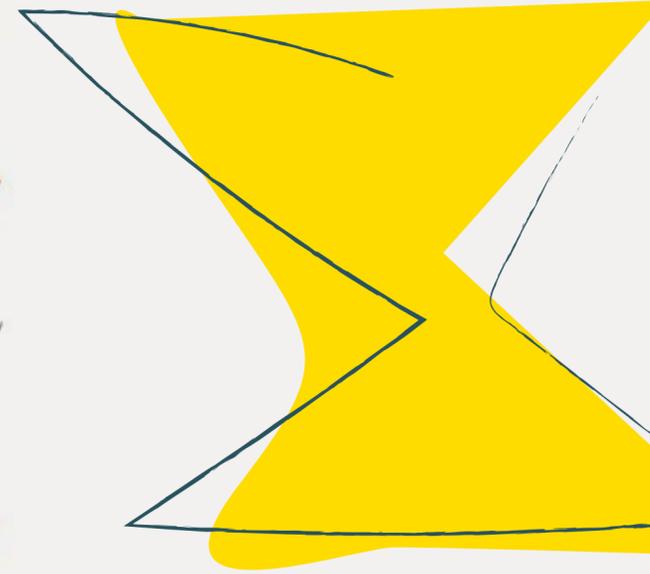
**Data source:** Joseph Poore and Thomas Nemecek (2018). Additional calculations by Our World in Data.  
**Note:** The median year of the studies involved in this research was 2010.

Shifting livestock production can be implicated in mitigate climate change. Large wild animals play a major role in climate change mitigation and adaptation of terrestrial and marine ecosystems.

Scientists at the University of Oxford, in the U.K., have published in the prestigious scientific magazine *Current Biology* (CELL PRESS) a study that claims large animals have the greatest potential to facilitate climate change mitigation at a global scale through three mechanisms: by changing the pattern and frequency of bushfires and wildfires; by intensifying fire patterns; and by increasing vegetation and soil capacity to store carbon.



Wild animals help to mitigate climate effects in both terrestrial and marine ecosystems. So, next time you see a big wild animal, don't just think about the need to protect them because of their beauty, but also remember the important role they play in building resilience against climate change.



**Reference:**

The role of animal health in addressing the challenges associated with climate change. - Animal Medicines Australia

[Learn more](#) ! →

The role of large wild animals in climate change mitigation and adaptation: Current Biology (cell.com)

[Learn more](#) ! →

Global Methane Assessment: Benefits and Costs of Mitigating Methane Emissions

[Learn more](#) ! →



# 3. The threat of invasive alien species on people and nature

Alien species are animals, plants, and other organisms that have been introduced by human activities to new regions and have driven more than 1,200 documented extinctions around the world. The majority of these – 90% – have occurred on islands, which often contain uniquely susceptible species due to their geographical isolation.

(IPBES) Assessment Report on Invasive Alien Species and their Control



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Credit: (IPBES) Assessment Report on Invasive Alien Species and their Control

**According to the first Assessment Report on Invasive Alien Species and their Control, published by The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES):**

More than

**37,000**

**alien species**

have been introduced by many human activities to regions and biomes around the world. 200: new alien species are recorded every year.

More than

**3,500**

**of these**

are harmful invasive alien species – seriously threatening nature, nature’s contributions to people’s wellbeing and quality of life.

**85% of**

**documented**

impacts negatively affect people’s quality of life – for instance, through health impacts, including diseases such as malaria, Zika and West Nile Fever, spread by the invasive alien mosquito species *Aedes albopictus* and *Aedes aegyptii*.

More than

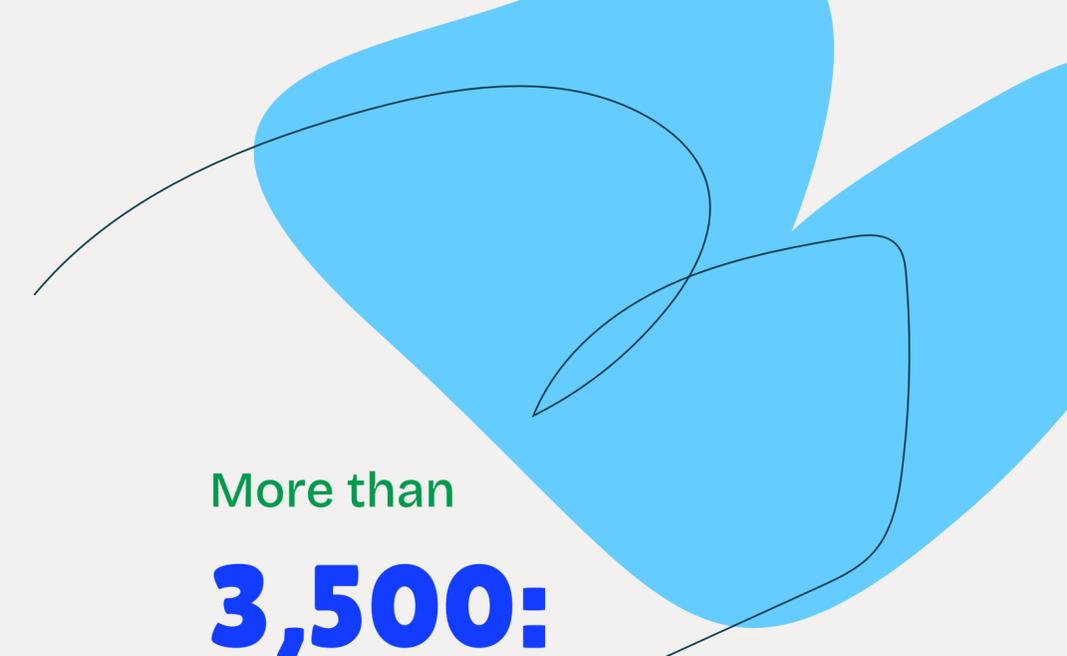
**3,500:**

**invasive species**

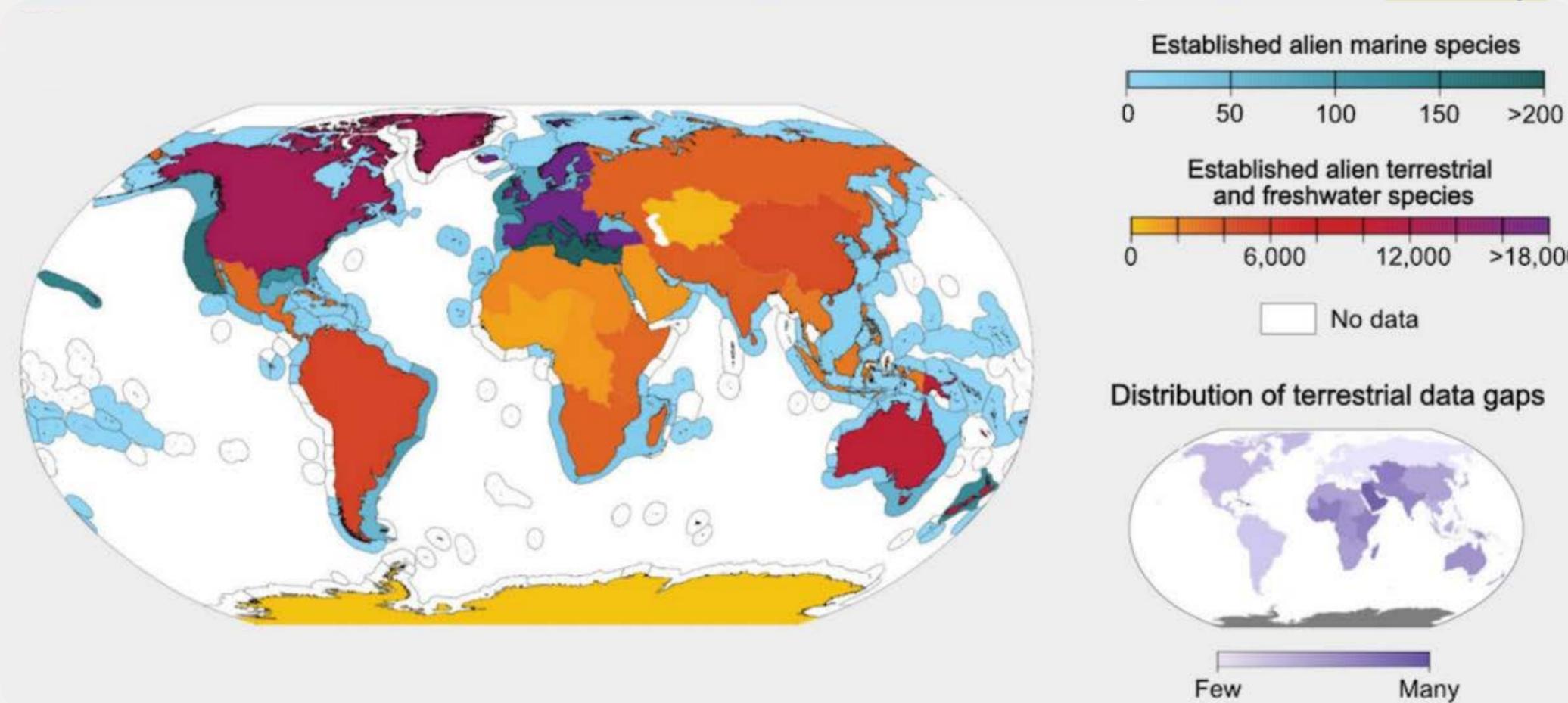
recorded globally, including 1,061 plants (6% of all alien plant species), 1,852 invertebrates (22%), 461 vertebrates (14%) and 141 microbes (11%).

Invasive alien species are spreading around the world at “unprecedented and increasing rates,” and pose major global threats to nature, economies, food security and human health.

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# Global distribution of established alien species



The global distribution of all known established alien species occurrences in the land and sea. Inset: The distribution of data gaps for land alien species. Credit: IPBES (2023) Figure SPM.4A.

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) has published the first Assessment Report on Invasive Alien Species and their Control. **It draws on more than 13,000 references**, including very significant contributions from Indigenous Peoples and local communities, making it the most comprehensive assessment ever carried out of invasive alien species around the world.

Watch the presentation of the main results of the first Assessment Report on Invasive Alien Species in this video or read the reports:

**READ**

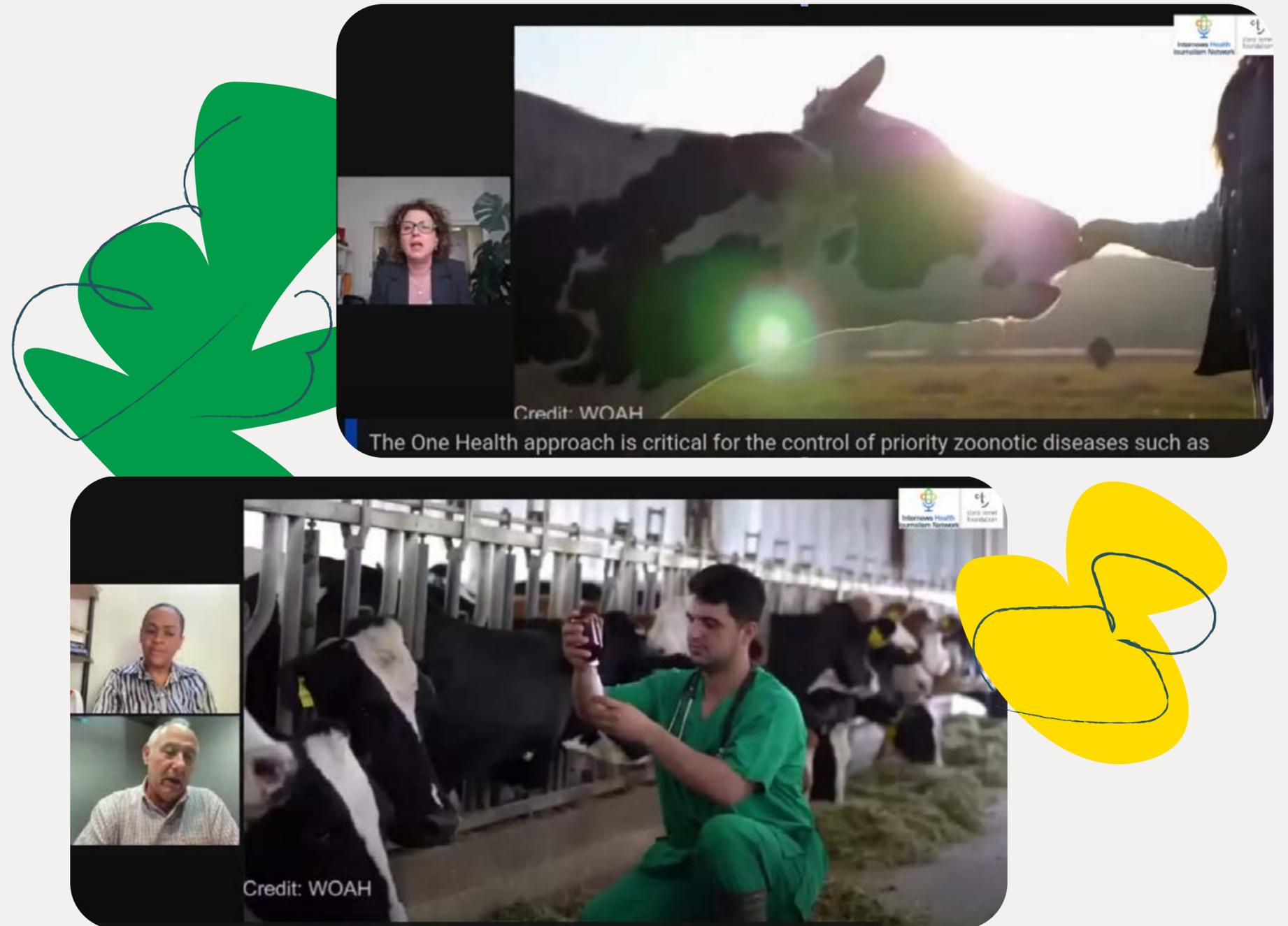
**WATCH**

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# 4. One Health: Wellness across species is critical!

If you are not entirely sure how animal health intersects with human health, this is the time to tune in! Experts from The World Organization for Animal Health (WOAH) and The National Research Council Scientific and Technical from Argentina (CONICET) participated in our last Live Event to discuss about the most relevant topics on Animal Health like Antimicrobial Resistance, and update information related to the current panzootic of Avian Influenza. The discussion was moderated by Alison Kentish, Science and Health Journalist. Watch our event One health: wellness across species is critical!

**WATCH VIDEO**



# 5. One Health. When people infect animals

## (to reverse zoonosis)

When many of us hear the term zoonosis, we think of pathogens that spillover from animals to humans. **The majority of human infectious diseases (60-75%) come from pathogens that originally circulated in non-human, animal species.** But zoonosis can also mean the reverse, the transmission of a pathogen from humans to wildlife by direct contact between species (reverse zoonosis) or mediated by vectors (spillback) (Weaver, 2013; Hendy et al., 2020; Olival et al., 2020). For instance, humans can transmit *Mycobacterium tuberculosis* to cattle, while strains of the influenza virus are often transmitted from humans to swine.

**READ MORE**

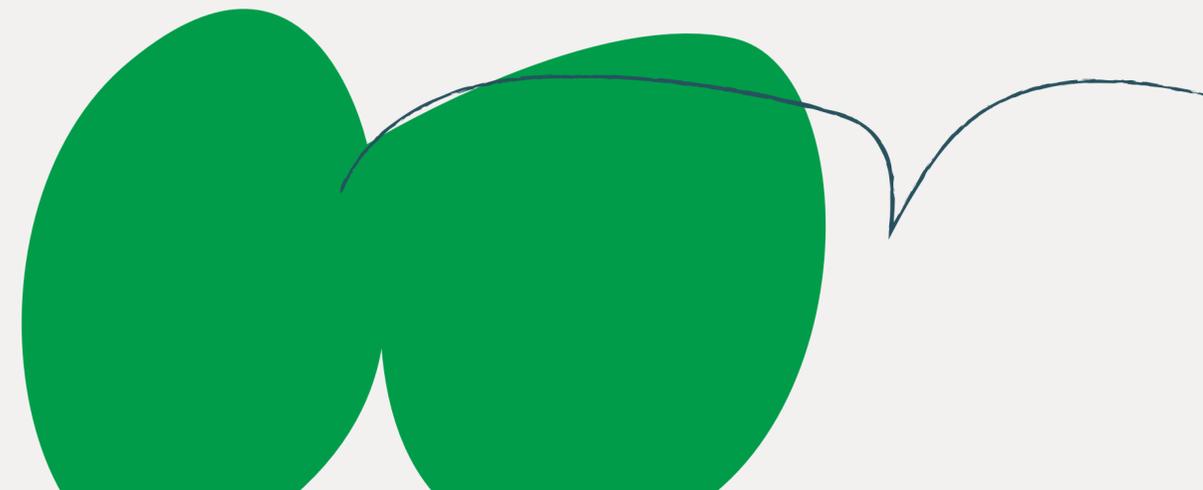
Other information sources:

Zoonotic spillover: Understanding basic aspects for better prevention:

[Learn more](#) →

The pandemic of Covid-19 is a clear example of how the SARS\_CoV-2 can move either from animals to humans or from humans to animals, and through this process, the virus can acquire new characteristics, as it happened in November 2020. This aspect should be taken into account when designing and building resilient systems against new epidemics and pandemics.

In an article published in the New York Times in July 2023, reporter Emily Anthes explains the phenomenon of SARSCov2 and deers as a potential source of new variants, and why “reverse zoonosis” matters.



# 6. Call to action: Wildlife health is everyone's health

Wildlife is essential in maintaining ecosystems around the world and helps determine the health of humans and other animals. However, human activity can disturb the natural balance of ecosystems, and harm critical species. Learn how we are all interconnected and what you can do to safeguard wildlife.

**WATCH VIDEO**

