

COVID-19, caused by infection with SARS-CoV-2, is a human disease which most likely emerged from an animal source and through widespread human-to-human transmission became a pandemic. As of 31 December 2022, around **664 million** confirmed human cases have been reported worldwide, with more than **6.7 million** human deaths<sup>1</sup>. The nature of this new zoonotic virus, together with its widespread distribution and the susceptibility of some animal species to infection, manifests in animal infections arising from close contact between people and animals. Conversely, there is also evidence that, for some animal species, close contact with infected animals can represent a potential source of infection in humans<sup>2</sup>. This report is a monthly update of the global situation of the report of SARS-CoV-2 in animals, with a special focus on the new reports submitted to WOAHA in the last month.

### Global situation since the beginning of the pandemic

The worldwide geographical distribution of SARS-CoV-2 outbreaks in animals reported to WOAHA is shown in Figure 1. The first case of SARS-CoV-2 in animals was officially reported to WOAHA by Hong-Kong (SARC) on 29 February 2021 in a dog.

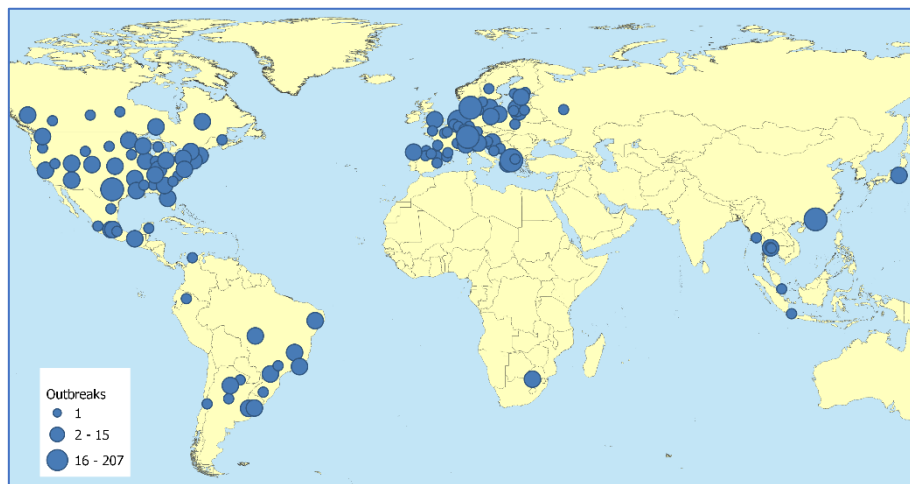


Figure 1. Worldwide distribution of SARS-CoV-2 outbreaks reported to WOAHA (as of 31 December 2022).  
Note that dot size on the map is proportional to the number of outbreaks reported.

Table 1 shows the global distribution of animal infections with SARS-CoV-2. Thirty-six countries in the Americas, Africa, Asia, and Europe have reported the occurrence of the disease, in twenty-six different animal species (cats, dogs, mink, otter, pet ferrets, lions, tigers, pumas, snow leopards, gorillas, white-tailed deer, fishing cat, Binturong, South American coati, spotted hyena, Eurasian lynx, Canada lynx, hippopotamus, hamster, mule deer, giant anteater, West Indian manatee, black-tailed marmoset, common squirrel monkey, mandrill, red fox).

<sup>1</sup> <https://coronavirus.jhu.edu/map.html>

<sup>2</sup> [https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.23.2001005#html\\_fulltext](https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.23.2001005#html_fulltext)

Table 1. Number of outbreaks (n=699) reported worldwide, by species and region (as of 31 December 2022).

Species	Region			
	Africa	Americas	Asia	Europe
Binturong		X		
Black-tailed marmoset		X		
Canada lynx		X		
Cat		X	X	X
Common squirrel monkey		X		
Dog		X	X	X
Eurasian lynx				X
Fishing cat		X		
Giant anteater		X		
Gorilla		X		X
Hamster			X	
Hippopotamus				X
Lion	X	X	X	X
Mandrill		X		
Mink		X		X
Mule deer		X		
Otter		X		
Pet ferret		X		X
Puma	X	X		
Red fox				X
Snow leopard		X		
South American coati		X		
Spotted hyena		X		
Tiger		X	X	X
West Indian manatee		X		
White-tailed deer		X		

### Update during last month (01/12/2022 - 31/12/2022)

During the last month **7 outbreaks** have been reported or updated by **5 country (Canada, Estonia, Italy, Mexico, Switzerland, )** in **4 animal species** (cats, dogs, lions, American minks). The recent distribution of outbreaks is reported in Figure 2.

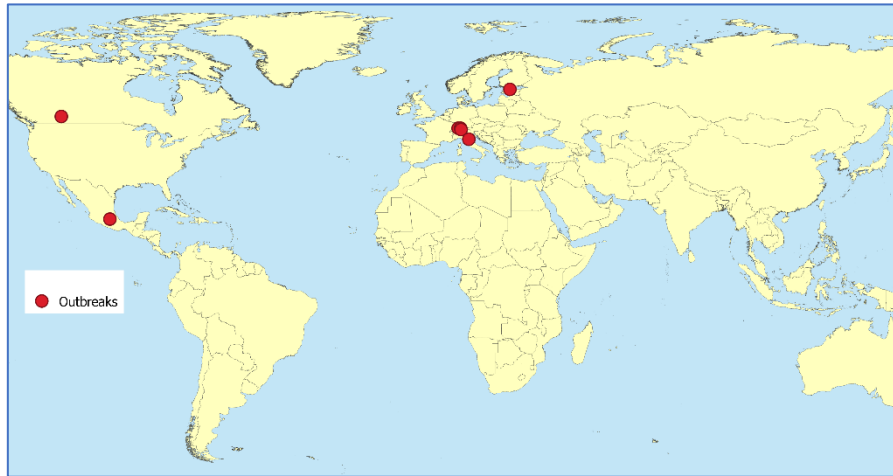


Figure 2. Worldwide recent distribution of SARS-CoV-2 outbreaks reported to WOA (01/12/2022 - 31/12/2022).

## EPIDEMIOLOGICAL COMMENTS

### Summary of the global situation and recommendations

While the main driver of community and international spread in the current pandemic is human to human transmission, animal cases of infection with SARS-CoV-2, though still only occasional occurrences, continue to rise. Currently, **699 outbreaks** in animals have been reported globally, affecting **26 species** in **36 countries**. Some countries have experienced a high prevalence of outbreaks in mink farms, and variant strains have now been identified in mustelids. As infection with SARS-CoV-2 is an emerging disease, WOA strongly encourages Members to report through WAHIS the occurrence of any cases in animals that comply with the case definition provided in WOA guidelines<sup>3</sup>.

### Relevant changes in disease situation during the period:

- SARS-CoV-2 was reported through **1** Immediate notification report by **Canada** in lions
- SARS-CoV-2 was reported through **1** Follow-up report by **Estonia** in cats
- SARS-CoV-2 was reported through **1** Follow-up report by **Italy** in American minks
- SARS-CoV-2 was reported through **1** Follow-up report by **Mexico** in dogs
- SARS-CoV-2 was reported through **1** Follow-up report by **Switzerland** in cats and dogs

### Relevant epidemiological comments from countries:

- **Canada (lions):** Two zoo female lions tested positive to SARS-CoV-2 after an episode of mild respiratory disease. Two male lions also developed clinical signs 48 hours later but were not tested. One of two Amur tigers and one of two Pallas cats also developed similar clinical signs, neither was confirmed positive to SARS-CoV-2. All cats were previously vaccinated for SARS-CoV-2 and all have recovered. The event is now considered resolved.
- **Mexico (dogs):** As a result of the recommendation issued by SENASICA since April 2020 urging the country's veterinarians and pet owners to follow the series of recommendations, it has been possible to prevent and detect possible cases of COVID-19 in animals exposed to infected people.

### Other relevant information during the period (WOAH documents, relevant news, upcoming webinar or conferences)

- WOA Ad hoc Group on COVID-19 at the Animal-Human Interface - [https://former.woah.org/fileadmin/Home/MM/14th\\_call\\_AHG\\_COVID-19.pdf](https://former.woah.org/fileadmin/Home/MM/14th_call_AHG_COVID-19.pdf)

<sup>3</sup> [https://www.woah.org/fileadmin/Home/MM/A\\_Sampling\\_Testing\\_and\\_Reporting\\_of\\_SARS-CoV-2\\_in\\_animals\\_3\\_July\\_2020.pdf](https://www.woah.org/fileadmin/Home/MM/A_Sampling_Testing_and_Reporting_of_SARS-CoV-2_in_animals_3_July_2020.pdf)

- [Statement from the Advisory Group on SARS-CoV-2 Evolution in Animals concerning the origins of Omicron variant - WOAH - World Organisation for Animal Health](#)
- [One Health Investigation of SARS-CoV-2 in People and Animals on Multiple Mink Farms in Utah-](#)
- [Viruses | Free Full-Text | GPS Tracking of Free-Roaming Cats \(Felis catus\) on SARS-CoV-2-Infected Mink Farms in Utah \(mdpi.com\)](#)
- [Clinical and epidemiologic features of SARS-CoV-2 in dogs and cats compiled through national surveillance in the United States in: Journal of the American Veterinary Medical Association - Ahead of print \(avma.org\)](#)