

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 2021, around **300 million** confirmed human cases have been reported worldwide, with more than **5 million** human deaths¹. 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 humans². 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 the OIE 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 the OIE is shown in Figure 1. The first case of SARS-CoV-2 in animals was officially reported to the OIE by Hong-Kong (SARC) on 29 February 2021 in a dog.

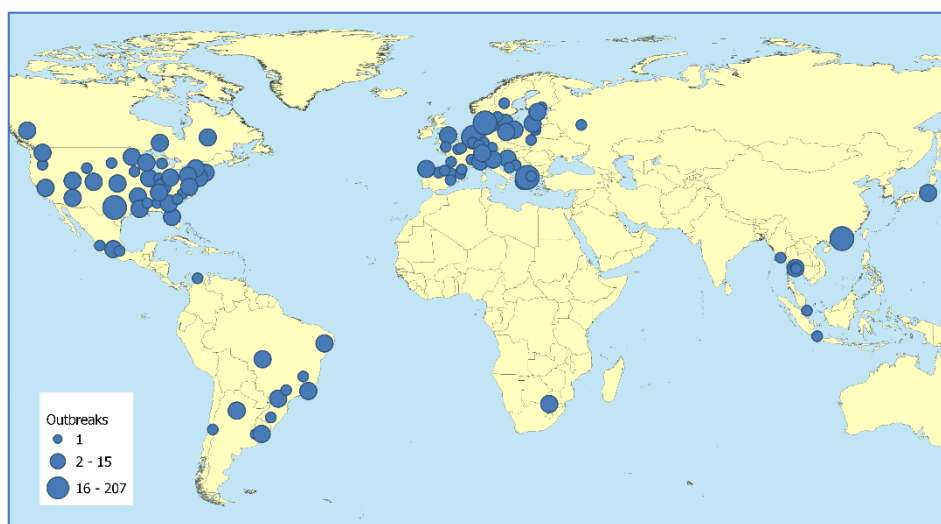


Figure 1. Worldwide distribution of SARS-CoV-2 outbreaks in fifteen animal species reported to the OIE (as of 31 December 2021). Note that dot size on the map is proportional to the number of outbreaks reported.

Table 1 shows the global distribution of animal infections with SARS-CoV-2. Thirty countries in the Americas, Africa, Asia, and Europe have reported the occurrence of the disease, in seventeen 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 and Canada lynx).

Table 1. Number of outbreaks (n=625) reported worldwide, by species and region (as of 31 December 2021).

Species	Cat	Dog	Mink	Otter	Pet ferret	Lion	Tiger	Puma	Snow leopard	Gorilla	White-tailed deer	Fishing cat	Binturong	Coatimundi	Spotted hyena	Felix lynx	Lynx canadensis
Region																	
Africa						Yes		Yes									
Americas	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Asia	Yes	Yes				Yes	Yes										
Europe	Yes	Yes	Yes		Yes	Yes	Yes									Yes	

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

² https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.23.2001005#html_fulltext

Update during last month (01/12/2021 - 31/12/2021)

During the last month **24 outbreaks** have been reported or updated by **11 countries (Canada, Colombia, Croatia, Denmark, Finland, Poland, Singapore, Switzerland, Thailand, United Kingdom, and United States of America)** in **8 animal species** (cat, dog, European lynx, Canada lynx, American mink, withe-tail deer, lion, tiger). The recent distribution of outbreaks is reported in Figure 2.



Figure 2. Worldwide recent distribution of SARS-CoV-2 outbreaks reported to the OIE (01/12/2021 - 31/12/2021).

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, **625 outbreaks** in animals have been reported globally, affecting **17 species** in **32 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, the OIE strongly encourages Members to report through WAHIS the occurrence of any cases in animals that comply with the case definition provided in the OIE guidelines³.

Relevant changes in disease situation during the period:

- SARS-CoV-2 was reported through **1** Immediate notification by **Canada** in **white-tail deer**
- SARS-CoV-2 was reported through **1** Immediate notification by **Colombia** in **a lion**
- SARS-CoV-2 was reported through **1** Follow-up report by **Croatia** in **a lynx** and in **a lion**
- SARS-CoV-2 was reported through **1** Immediate notification and **1** Follow-up report by **Denmark** in **lions**
- SARS-CoV-2 was reported through **1** Immediate notification by **Finland** in **a cat**
- SARS-CoV-2 was reported through **2** Immediate notifications by **Poland** in **American minks**
- SARS-CoV-2 was reported through **1** Follow-up report by **Singapore** in **lions**
- SARS-CoV-2 was reported through **3** Follow-up reports by **Switzerland** in **cats** and **dogs**
- SARS-CoV-2 was reported through **1** Immediate notification by **Thailand** in **cats** and **dogs**
- SARS-CoV-2 was reported through **2** Immediate notifications by **United Kingdom** in **a dog** and **tigers**
- SARS-CoV-2 was reported through **1** Follow-up report by **United States of America** in **a lynx** and **tigers**

Relevant epidemiological comments from countries:

- **Canada (white-tail deer affected):** "The detection of SARS-CoV-2 in hunter-harvested deer in Quebec is the first detection of the virus in free-ranging wildlife in Canada. Sequencing results indicate lineage is B.1.617.2 (Delta). These are the initial

³ https://www.oie.int/fileadmin/Home/MM/A_Sampling_Testing_and_Reporting_of_SARS-CoV-2_in_animals_3_July_2020.pdf

results of an ongoing cross-jurisdictional study undertaken by several federal, provincial, territorial and academic partners to monitor wild cervids across Canada for the presence of SARS-CoV-2”.

- **Colombia (lion affected):** *“It is suspected that the disease occurred through contact with the caregiver who tested positive for COVID 19, some days before the feline began to show symptoms.”*
- **Croatia (lynx and lion affected):** *“SARS-CoV-2 confirmed in three lions and one lynx in Zagreb Zoo Park. In animals respiratory clinical signs were observed.”*
- **Denmark (lions affected):** *“On November 30th 2021, a tiger in Knuthenborg Safaripark in Denmark has tested positive for SARS-CoV-2. Samples were collected on November 27th 2021, because a handler was tested positive for COVID-19. The park has a total of five tigers. All the tigers have been isolated. Sampling from the remaining four tigers has been performed and results of these samples are expected in the coming days.”*
- **Switzerland (cats and dogs affected):** *“These cases were detected in the framework of a research project on pet animals of owners who were infected with SARS-CoV-2. The project is under the responsibility of the Clinical Laboratory of the Vetsuisse Faculty (VSF) of the University of Zurich (UZH). The Swiss government does not recommend currently to test cats or dogs for SARS-CoV-2 but supports research to increase knowledge in the field. For the time being, COVID-19 continues to be treated as a human disease with the main route of transmission between human beings.”*

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

- OIE Ad hoc Group on COVID-19 at the Animal-Human Interface - https://old.oie.int/fileadmin/Home/MM/14th_call_AHG_COVID-19.pdf
- Statement from the Advisory Group on SARS-CoV-2 Evolution in Animals concerning the origins of Omicron variant - [Statement from the Advisory Group on SARS-CoV-2 Evolution in Animals concerning the origins of Omicron variant - OIE - World Organisation for Animal Health](#)
- Evidence for a mouse origin of the SARS-CoV-2 Omicron variant - <https://www.sciencedirect.com/science/article/pii/S1673852721003738?via%3DiHub#!>
- Spatial epidemiology and genetic diversity of SARS-CoV-2 and related coronaviruses in domestic and wild animals - <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0260635>
- From Deer-to-Deer: SARS-CoV-2 is efficiently transmitted and presents broad tissue tropism and replication sites in white-tailed deer - <https://www.biorxiv.org/content/10.1101/2021.12.14.472547v1>