

SARS-CoV-2: Transmission between humans and wild animals held in zoos and aquaria

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Introduction

This information sheet intends to give background information on the transmission of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) between humans and wild animals held by EAZA zoos and aquariums. It furthermore summarises preventive measures that EAZA Members can take to reduce the risks of transmission.

EAZA would like to stress that we believe the main concern in the coronavirus disease (Covid-19) pandemic is disease transmission between humans. The risk of disease transmission from humans to animals is considered low. Veterinarians and other animal care staff working for EAZA Members have vast expertise preventing and where possible curing diseases in the animals in our care and are trained in zoonotic disease management. So far, none of the species held within EAZA institutions are reported to be a reservoir of SARS-CoV-2.

Scientific literature, case studies and anecdotal information

Scientific literature on SARS-CoV-2 transmission from animals to humans and vice versa is limited in number and in those studies that are available observation and feedback times are at present very short.

EAZA's longstanding MoU partner the European Association of Zoo and Wildlife Veterinarians (EAZWV) has published an excellent paper (see chapter 6.5 of the [Transmissible Disease Handbook](#)) describing the current state of play with regards to available information. It includes examples of reassuring statements about risk of transmission. EAZWV will continue to update this paper as more scientific literature becomes available. We recommend that this paper is used by EAZA Members to address any queries about SARS-CoV-2 disease transmission.

To our best knowledge there is no evidence of any SARS-CoV-2 transmission between humans and animals in EAZA Member institutions. There is mounting evidence of disease transmission from humans to domestic carnivores as referenced in the EAZWV paper mentioned above.

A Malayan tiger in the Bronx Zoo (New York, USA) with mild clinical signs of respiratory disease recently tested positive for SARS-CoV-2 (more information from the United States Department of Agriculture -USDA- [here](#)). The Bronx Zoo suspects that the disease has been transmitted from an asymptomatic keeper to the tiger. Based on the situation in the Bronx Zoo and considering unpublished information on disease transmission in domestic cats, SARS-CoV-2 could pose a risk to other non-domestic felids in human care. How much of a risk remains to be ascertained given the low number of confirmed cases currently (n=1).

Due to the close taxonomic proximity of non-human primates, particularly great apes, to humans the veterinary advisors of the EAZA Great Ape TAG recommends considering Covid-19 as a possible transmissible disease similar to other respiratory diseases in humans (e.g. influenza).

In addition to the above, the EAZA Veterinary Committee and the joint EAZA and EAZWV Infectious Diseases subgroup cannot rule out that other taxa will prove susceptible, and recommend that measures similar to those taken to reduce spread among people (i.e. social distancing and increased levels of hand hygiene) are taken in daily management of zoo animals (see more below).

There is presently no evidence of animals held in zoos and aquariums globally transmitting SARS-CoV-2 to humans.

EAZA Members and Preventative measures regarding COVID-19

As described in the sections above, there is still need for further research to understand the transmission of SARS-CoV-2 and the main concern in the Covid-19 pandemic is disease transmission between humans.

With most EAZA Members (96%) being closed to the public, and staff with clinical symptoms not allowed to work, there is also only limited risk of disease transmission from humans to animals held by EAZA Members. Based on the available scientific knowledge, the risk of spread of disease from zoo animals to visitors is considered negligible. Consequently, we believe there is no need for alarm regarding the animals held by the EAZA Membership. The highest risk for disease transmission from humans to animals in EAZA Members is via the staff.

Despite the risk being small, EAZA Members must be aware of the risk of disease transmission from humans to animals via the staff and therefore working in hygienic and sanitary conditions with the animals very important. This is already part of normal routine for staff at EAZA Members. EAZA Member institutions are subject to strict local and/or European animal health legislations. Furthermore it is part of EAZAs accreditation criteria based on EAZA's own veterinary standards

as described in the [‘EAZA Standards for the Accommodation and Care of Animals in Zoos and Aquaria’](#) (in particular section ‘1.13 Sanitation and control of disease’ and section ‘2. Animal Care – Veterinary Aspects’).

Additionally, we would like to recommend that all EAZA Members take the following preventative measures:

1. General

- Routinely check the paper in the EAZWV Transmissible Diseases Handbook to keep up to date on the most recent scientific information.
- Read the relevant sections in the EAZA Standards for the Accommodation and Care of Animals in Zoo and Aquaria and doublecheck if your hygienic and sanitary working protocols are up to date.
- Where necessary, work with your veterinarian to update your animal care teams about the risk of zoonoses and remind them that normal hygienic routines continue to apply also during the human Covid-19 pandemic.
- Continue to routinely observe the animals in your care as per standard procedures and consult with your zoo veterinarian in case of sick animals. It is not considered necessary to test felids, primates or other animals if there are no signs of respiratory disease.

2. Staff

- Keep social distance of 1.5-2 meter between members of staff and any other human being.
- Evaluate the need for any direct contact between staff and animals and avoid this wherever possible. **Aim to follow the same social distancing to your animals as recommend among humans wherever possible including during:**
 - Training
 - Shifting
 - Feeding
 - Etc.
- Ensure continuity among keeper teams by avoiding keeper-to-keeper transmission. In particular aim to avoid all keepers from one animal care team risking getting ill or needing to take precautionary measures at the same time. There are different ways to organise this, for example keepers of the primate section can be divided over two (or more) teams that work in shifts avoiding getting in contact with each other.

- In particular for animals with special care needs like for example apes and felids, animal care staff should have experience with the animals they work with.
- Any member of staff having Covid-19 symptoms should not be allowed to work and should put themselves in self-isolation in accordance with the recommendations from their local authorities.
- Working clothes for behind the scenes and cleaning enclosures should only be worn in the zoo (not in the public). Soiled and dirty clothes must be changed.
- Use individual rubber boots (that are not shared with other colleagues) in the animal service areas and if possible, foot bath at the entrance and exit of facilities.
- Washing hands regularly before and after each task when working in the section, including food preparation.
- No eating or drinking in the animal service area.
- Personal Protective Equipment (PPE) should where possible and available be worn when preparing food, cleaning the enclosures and in close contact to the animals (e.g. when providing food, water, enrichment items or medicines).
 - PPE supplies and use should be critically evaluated as these are needed by those on the front lines in the human medical community. In several countries across the EAZA region there is a shortage of face-masks and that those available should be made available to human health staff as a priority. In these situations, zoos might find equipment that could serve a similar purpose (e.g. masks prepared by volunteers).
- Wash dietary items like vegetables before feeding to the animals.
- Disinfect food bowls, enrichment materials (for example tires), door handles, anaesthesia machines, etc. regularly.

3. Visitors

- Zoos that remain open to the public, or reopen, should not allow visitors behind the scenes at present times. This includes zoo employees that are not part of the care team for the animals in question (except in emergencies, following same dress code as keeping staff).
- Feeding or throwing items in the enclosures by the public should be discontinued and prevented immediately.
- Regular cleaning of commonly touched items such as door handles.
- Indoor/outdoor facilities:
 - Animals should continue to be allowed to use their outside enclosures daily whenever it is possible;

- Put appropriate stand-off barriers in place for enclosures without a permanent glass barrier (e.g. moat or mesh). At present times it is recommended that the public does not have closer access to felids and primates than 2-3 meters.

Final note

This document will be updated as new information becomes available.