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A Western lowland gorilla in a zoo enclosure in Prague, Czech Republic. Benislav/Shutterstock

## How zoos must change to keep great apes safe from coronavirus

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Our closest living relatives are the six species of great ape: chimpanzees, bonobos, Western lowland gorillas, Eastern lowland gorillas, Bornean orangutans and Sumatran orangutans. All of them are endangered, or critically endangered, and at risk of becoming extinct in our lifetime.

The threats to their survival in the wild should now be known. Their forest homes are at risk of destruction, they are poached for the illegal trade in wildlife and bush meat, and climate change threatens to disrupt their access to food and water. Perhaps less discussed, but no less lethal, is the risk posed by

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infections transmitted by humans. These are “zoonotic” diseases – those which can be passed from humans to animals and vice versa.

COVID-19 is one such case, and while much of our worries about zoonotic diseases centre on their risk of transmission from wild animals to humans, zoonotic diseases have decimated great ape populations. Diseases in great apes of probable human origin have been described since the 1960s.

Great apes share about 98% of human DNA, and they also share susceptibility to several human pathogens. During the Ebola virus epidemic between 1994 and 2003 in Central Africa, wildlife surveys were carried out in two areas of Gabon, before and after the outbreak. Between the two surveys, gorilla and chimpanzee populations in the areas shrank by 90-98%.



Most ape species are highly social, which helps diseases spread rapidly through populations. LeonP/Shutterstock

With the exception of orangutans, which are semi-solitary, it's no surprise that infectious diseases such as Ebola can wipe out a large population of highly social Gabonese gorillas and chimpanzees – it is spread through direct contact with blood and body fluids. Like us, great apes mourn the loss of those within their close-knit groups. Chimpanzees have been observed using firm grass to remove debris from the teeth of deceased group members.

Zoos are where most people encounter great apes, and they play a leading role in their conservation, from captive breeding programmes to research and public awareness campaigns. But there are risks involved. In 2009, a respiratory disease broke out in a group of 30 chimpanzees housed at Chester

Zoo. The disease had been transmitted from human visitors to the chimpanzees and, sadly, three apes died.

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It's not just the close quarters of zoos where zoonotic disease transmission is possible. A human coronavirus was observed in a group of wild chimpanzees living in Tai National Park in Côte d'Ivoire between late December 2016 and early January 2017. It's not known who transmitted the disease, but researchers working at the park believe poachers could have been responsible.

Although COVID-19 has not yet been reported in great apes, given the history of zoonotic diseases – especially their rapid spread and difficult containment – we should assume that transmission is likely and strict measures are needed to prevent it.

All UK zoos and safari parks are now closed, but once the pandemic slows down and they reopen, there will need to be lasting changes that limit contact and educate the public about zoonotic diseases and their threat to great apes.



Zoos around the world have closed their doors to visitors during the COVID-19 pandemic. EPA-EFE/Jorge Torres

## **Saving apes from a distance**

Some zoos are testing their animal care staff for coronavirus and advising any who feel ill to stay at home. Staff have been told to check their temperature regularly, wear face masks, and carry out deep

cleaning of zoo enclosures. Some keepers have chosen to live on site and away from their families.

Many zoos currently allow close encounters between visitors and captive apes, including feeding events, where people are encouraged to throw food into their enclosures. In many zoos worldwide, visitors are invited to play the role of zoo keeper, which involves mucking out, preparing food, feeding animals and helping with training.

These practices that allow visitors close contact with great apes, including behind-the-scenes tours, will have to change. The latest guidance from the International Union for the Conservation of Nature (IUCN) says the distance normally kept between people and great apes in zoos should increase from seven to ten metres. Anyone who has been ill should stay away from great ape enclosures for at least 14 days after they have recovered. It may be necessary to stop all close-up experiences with apes in the future, and use digital guidebooks and phone apps to educate the public about great apes and their conservation.



Workers disinfect the area around the ape enclosure in Skopje's Zoo, North Macedonia. March 17 2020. EPA-EFE/GEORGI LICOVSKI

The good news is that people are likely to learn just as much about great apes this way, without the need for close encounters. One study compared the effects of different presentations to zoo visitors about the impact of palm oil on orangutans and their habitats, and found that 83% of visitors could recall key facts after a live presentation by staff.

COVID-19 could change a great deal about the relationship between humans and their closest living relatives. But we can still enjoy their presence and learn more about them while keeping a safe distance.

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