

Life-threatening foot disease found in endangered huemul deer in Chile

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A huemul deer in Chilean Patagonia. Credit: Alejandro Vila/Wildlife Conservation Society

Scientists report the first cases of foot disease for endangered huemul deer in Chilean Patagonia in a study led by the Wildlife Conservation Society and the University of California, Davis' One Health Institute,



with partnering institutions in Chile and the United States.

In the study, published April 17 in the journal *PLOS ONE*, researchers found foot lesions in 24 huemul <u>deer</u> in Chile's Bernardo O'Higgins National Park between 2005 and 2010. The park remains one of the few strongholds for the species, which lives in the rugged mountainous terrain of southern Argentina and Chile.

The foot disease causes severe pain, swelling, partial or complete loss of the hoof and in many cases, death. Affected animals become unable to move and forage, leaving them susceptible to starvation and predation.

Researchers identified parapoxvirus as the likely cause of the disease. About 40 percent of the 24 affected deer died, suggesting the virus could pose a considerable conservation threat to the already <u>vulnerable species</u>.

"We knew that deer were getting sick and dying from this disease for many years, but we didn't know what was causing it," said corresponding author Marcela Uhart, a wildlife veterinarian with the UC Davis One Health Institute and director of the Latin America Program within UC Davis' Karen C. Drayer Wildlife Health Center. "We're really excited that we found a potential cause for this disease. Now we need to learn from it so we can be better prepared to help this species."

Iconic species

Culturally iconic, the huemul deer appears alongside the condor on Chile's coat of arms and symbolizes biodiversity in the region.

While only about 2,500 remain in the wild today, huemul deer were once widespread in Patagonian forests. Then, in the 19th century, habitat loss, poaching and livestock disease began contributing to their decline. Today, the huemul deer is the most endangered deer in South America.





A painful virus is affecting huemul deer, an iconic and endangered animals in Chilean Patagonia. Credit: Alejandro Vila/Wildlife Conservation Society

"Considering the critical situation of huemul deer, this finding is a significant first step toward identifying and implementing solutions," said lead author Alejandro Vila, the Scientific Director of the Wildlife Conservation Society in Chile. "We will continue to work closely with all relevant stakeholders for the recovery of this flagship species."

Cattle considerations

The lab analysis provided some indication that this disease may have



originated with livestock, as well, but more research is needed to confirm. Parapoxvirus DNA present in the sample was highly associated with bovine viruses.

Three-quarters of the deer affected by the foot disease were found in the Huemules Valley, where cattle were introduced in 1991 before being removed in 2004. The remaining quarter of affected deer were found in the more isolated Bernardo and Katraska Valleys, which were always free of cattle and had no cases of the foot disease until six sick deer were found between 2008 and 2010.

Better monitoring could help

The study said a better system for monitoring the population, collecting high-quality samples and ensuring their delivery for lab analysis could help researchers, land managers and wildlife veterinarians more quickly identify problems huemul deer face and find ways to help them.

"It's very rare to link an <u>endangered species</u> with the cause of a disease," Uhart said. "Disease is one reason this species is not doing well. A collaborative framework that involves the different stakeholders can help us put the right pieces in place to diagnose and help the species."

Such a framework requires collaboration among academic institutions, non-governmental organizations and <u>government agencies</u>, the authors emphasize.

"We are very pleased with the outcome of this collaborative investigation," said Alejandra Silva, Regional Director of the National Forestry Service (CONAF) for Magallanes and Antarctica. "Given how complex it is to work in remote and isolated locations and the costs involved in pursuing sophisticated diagnostics, we recognize the value of partnering with academia and the non-governmental sector to solve



problems threatening our wild species."

More information: *PLOS ONE* (2019). journals.plos.org/plosone/arti ... journal.pone.0213667

Provided by UC Davis

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