



CONICET | Study showed that overhunting turned the huemul into an endangered species

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CONSERVATION , RESEARCH

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For this reason, the southernmost deer in the world lost migratory traditions that are key to its survival, revealed a CONICET study.

Source: CONICET

CHUBUT (7/5/2022).- In modern times, the huemul (*Hippocamelus bisulcus*) was mistakenly conceptualized as a species adapted to the forest and exclusively to high mountains, with rocky environments and steep slopes. Now, a study by researchers from CONICET and colleagues, published in the journal Conservation, puts this concept in crisis, assuring that the huemul is not different from other cervids and that the cause of its extraordinary decrease is due to the historical and prehistoric anthropic pressure that This resulted in its expulsion from much of its original territory in the Patagonian peninsula and allowed it to survive exclusively in refuges in the high Andean forest.

"This refugee species then lost its migratory traditions (cultural cycle of moving from wintering to summering) and its access to various habitats such as meadows and meadows, modifying its feeding practices," says **Werner Flueck**, first author of the work and CONICET researcher at the "Nahuel Huapi" National Park, which depends on the National Parks Administration.

It is estimated that of the original metapopulation in Argentina there are currently only between three hundred and fifty and five hundred huemules left, fragmented into about sixty groups along 1,800 km of the Andes, with one of the most prominent population groups in the Shoonem Protected Park. Alto Rio Senaer. in the Province of Chubut. where research tasks are

carried out with the support of the Department of Flora and Fauna of the Province of Chubut.



"The loss of the migratory traditions of the huemul as a result of overhunting in the past and the establishment of human populations in areas inhabited by these animals put this species in danger of extinction," says Flueck.

And he adds that the forced confinement to regions of the Andes, in areas classified as summer, would be a factor that would explain the decrease in its population and the high proportion of specimens with skeletal conditions and low longevity.

Historical information, telemetry and medical studies

The authors of the work were able to confirm the migratory tradition in a wide habitat that the huemules had in the past, combining open areas (prairies) and wooded areas of the Patagonian peninsula, through archaeological information by the discovery of bones or antlers that the males lose during migration. winter, and from the collection of historical records contained in naturalist accounts and other testimonies of travelers from 1521 onwards.

"The historical data found show that in the past the huemul had members that migrated seasonally from forested Andean areas, classified as veranadas, to non-forested regions of the Patagonian peninsula during winters. Even in this wintering area, it is estimated that many groups of huemules behaved as annual residents, sharing habitat with guanacos and rheas, or other steppe animals. In this sense, their behavior is very similar to that of other cervids", points out Flueck, also a researcher at the Swiss Institute of Tropical and Public Health, based in Basel, Switzerland.

The loss is not only of habitat but also of a cultural pattern, since migration is educated from the mothers, or the group, to the offspring, it is not genetic, explains the CONICET researcher. And he adds: "Without education there is no possible migration, only occasional minimal movements due to climatic contingency. Even these migrations must have been shared with other mammals, such as guanacos, as depicted in hunting cave images of ancient prehistoric inhabitants."

The Argentine naturalist Francisco Pascasio Moreno (1852-1919) had already published in 1898 about sightings in non-forested areas of Patagonia, where huemules abounded and did not flee despite the danger they were running. Also the German Carl Martin, had reported in 1899 about a steppe area with pieces of low and open forest, where with his expedition group, in addition to seeing many groups of huemules while they crossed the area, they hunted some to eat their meat during weeks.

Flueck and colleagues placed radio collars (one with satellite GPS) on six huemules (three females and three males) from the Shoonem Protected Park, Lake La Plata sector, to study their movements between 2017 and 2022.

“The radio-tagged and geolocated huemules remained throughout the year in small territorial ranges with minimal seasonal elevational movements. Thus, we confirm that it is the only deer in the world that inhabits summers in mountain ranges throughout the year as a reaction to anthropogenic activities”, Flueck pointed out.

And he adds: “However, the anatomy of the huemul shows that it is adapted to grasslands (open deforested areas). Unfortunately, the human presence distanced him from his migratory traditions. This change decreased their reproductive rates and detrimentally altered their health.”

Flueck has also led much research on the health of huemules. One, published in BMC Research Notes in 2020, determined that in Argentina 57 percent of huemule carcasses had osteopathology, and that 86 percent of those alive had this condition. They presented structural problems both in

the skeletons and in the dentures.

“The head injuries involved tooth loss before death at a young age, which reduced feeding efficiency. The analyzes of his tissues showed deficiencies of minerals such as selenium, copper, magnesium and iodine that are essential for bone metabolism,” says Flueck.

In this regard, the CONICET researcher comments that in high mountain summer areas such as the Andes, the nutritional quality of the forage is lower compared to that of the winter areas to which the huemules do not have access due to human presence and the loss of the habit of migrating. “The few cases where a huemul descends into a valley, it generally does not survive due to dog attacks, hunting, or vehicle accidents. For this reason, most of the existing subpopulations of huemules inhabit remote mountainous areas, unattractive for human settlement and of little value for agriculture or forestry.”

The six huemules with radio collars were reviewed by pathologists and biologists, in two cases also by a veterinarian, and blood samples were taken to assess their health. “In fact, one of the radio-collared males had practically no teeth, he only had one of the eight incisors, in such a way that he had difficulty feeding, and died of starvation, in addition to carrying permanent pain due to severe infections” Flueck laments.

Conservation opportunities

Extinction is an irreversible process, Flueck warns. "If the huemul becomes extinct, it would be a failure of the human system, and of the nations of Argentina and Chile, since it is endemic. Losing it is inexcusable and it is preventable," he emphasizes. And he adds: "Large mammals, such as huemules, have a relevant role in the functioning of an ecosystem."

If the lack of migration behavior explains the high degree of bone disease and the lack of numerical recovery of the huemul, the researcher stresses that "part of the solution would be the reintroduction of the huemul to historically used wintering areas, in those areas where manage to neutralize anthropic and environmental threats.

With good monitoring, the effect of this measure on health and on the population's response could be verified. It would be proof that 'source' populations have been created, and with that a recovery phase for the species".

"The recently published work increases knowledge about the huemul, and provides useful and concrete tools to increase the possibility of recovering it. We believe that it will be a fundamental part of determining a conservation and recovery strategy for the southernmost deer in the world," concludes Flueck, also a member and creator of the Shoonem Foundation, whose objective is to collaborate with the state in the preservation and conservation of nature in the basin. of the Senguer River, in the Province of Chubut.

Breeding station for huemules

In Argentina, the Temaikén Foundation is dedicated, within the framework of its Delta Conservation Program, to promoting the recovery of the Swamp deer (*Blastocerus dichotomus*), also in danger of extinction.

As part of the “Swamp Deer Scientific-Technical Committee”, this foundation assists the affected specimens by carrying out restraints for the rescue and rehabilitation of those who are injured and their subsequent reinsertion in appropriate areas. Many cases of young specimens require going through a breeding process in human isolation in order to be reintroduced. Through a donation from Switzerland's Erlenmeyer Foundation, Flueck and his colleagues at the Shoonem Foundation were able to complete the construction of a huemule breeding station to achieve the same goal, but are seeking additional funds to accomplish the same goal. with all the logistics that the project requires.

Bibliographic reference: Flueck, Werner T., et al. "Loss of Migratory Traditions Makes the Endangered Patagonian Huemul Deer a Year-Round Refugee in Its Summer Habitat." Conservation 2.2 (2022): 322-348

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ENDANGERED SPECIES

HUEMUL