

Genetics from Nature to Increase Variation in the ECFA (Estación de Cría de Fauna Autóctona de Piriápolis) Breeding Center

Currently, 60% of Latin American deer species are classified in the *IUCN Red List*[™] under threatened categories. Conservation biologists and veterinarians must be prepared and trained to apply reproductive biotechnologies and genetic tools to help preserve our wildlife species. The pampas deer (*Ozotoceros bezoarticus*) is classified as Near Threatened on the IUCN Red List. Today, it occupies only 1% of its original southern range in Argentina and Uruguay. The species faces serious threats, including habitat loss due to agricultural expansion, competition with livestock, and poaching, which have led to small and isolated populations.

My research at the Instituto de *Investigaciones Biológicas Clemente Estable* (IIBCE) analysed the genetic variability and differentiation of the two remaining populations in Uruguay, leading to the description of two new subspecies. Together with Dr. José Mauricio Barbanti Duarte (UNESP), we are leading an interdisciplinary team that includes Dr. Brenda Bon Director from Estación de Cría de Fauna Autóctona (ECFA), aiming to inject genetic diversity into the captive breeding stock.

In the 1980s, a captive population in Piriápolis was established with 10 pampas deer from the Arerunguá population in Salto Uruguay. Though, population fluctuations and genetic studies indicate that this captive group is experiencing inbreeding depression, threatening its long-term viability.

To address this, we developed a genetic management plan aimed at increasing genetic diversity and ensuring the population's future stability. In polygynous species like the pampas deer, males play a key role in introducing genetic variation, while females contribute to population growth. However, capturing adult wild males for translocation was not a viable option due to legal restrictions and their low adaptability to captivity.

Dr. Duarte traveled from Brazil with reproductive biology specialists Lais Jaqueline de Souza and David Galindo, who conducted semen collection and preparation. Each male deer was weighed, and samples of feces, blood, ectoparasites, and semen were collected. The deer were also fitted with ear tags and GPS radio collars. The collected semen was cryopreserved in liquid nitrogen for future use.

We carefully designed a two-phase capture plan to collect semen from wild males and use artificial insemination to introduce new genetic material into the captive population. Five wild males were successfully captured on two livestock ranches in Arerunguá. In the field, Verónica Gutiérrez, Claudia Corbi, and Eugenia Olivera from IIBCE assisted with handling and sampling procedures.

Meanwhile, at the breeding center, nine females underwent a non-invasive oestrous cycle synchronization protocol, developed by Cecilia Ferrando (IIBCE), Hugo Arellano, Analía Rey (ECFA)r and Luciana Diniz (UNESP), to prepare them for artificial insemination. Although the first year did not result in pregnancies, we redesigned the synchronization protocol in the second year. Despite the initial setback, we successfully tracked the daily movements and home ranges of the wild males, providing valuable data for future rewilding initiatives.

In September 2024, we successfully performed artificial insemination, and each female was inseminated. With a gestation period of approximately seven and a half months, the animals have remained healthy, and we eagerly anticipated the birth of fawns in May 2025. On May 23rd, the first fawn was born, coinciding with the celebration of International Biodiversity Day and the anniversary of our institutional mentor, Clemente Estable. We are now expecting two additional births at the end of the month.

Although final outcomes are still pending, our results offer promising insights into the reproductive biology of the species and pave the way for future biotechnological conservation efforts. This project stands as a successful example of international conservation collaboration, aimed at enhancing the genetic diversity of the captive pampas deer population.

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