Project Update: September 2025

Since December 2024, we have been implementing our study in Nahuel Huapi National Park, making substantial progress toward our objectives while engaging with park staff, local communities, researchers, and students.

Site Selection

Field surveys were conducted across forested wetlands with park rangers, volunteers, and local residents to identify a gradient of use by non-native ungulates and sites of interest for small mammal monitoring (Fig. 1). Due to a lightning-caused fire that restricted access in some areas, work was limited to 10 wetlands in the southern part of the park (Figs. 2–3).

Figure 1. Members of the Huala community, volunteers, and collaborators during the selection of sampling sites.

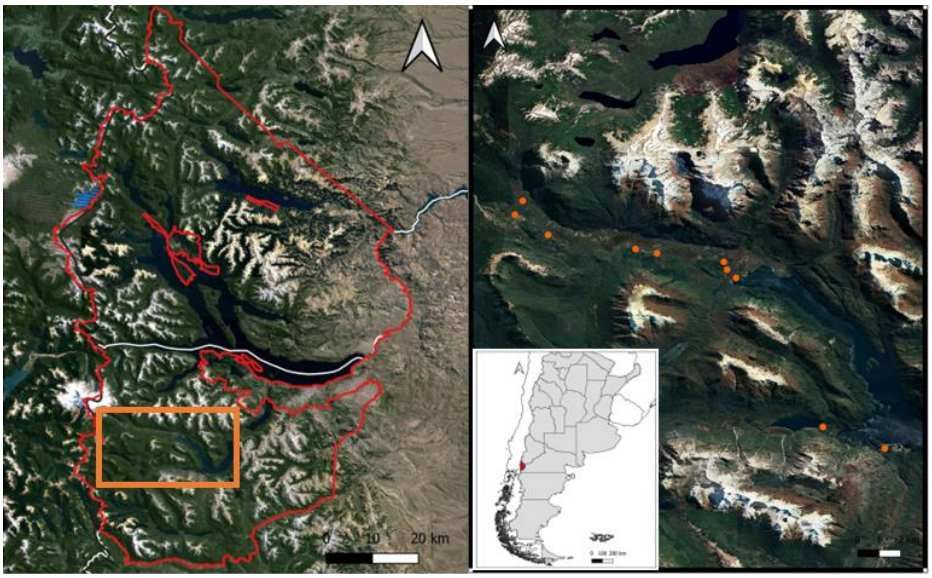

Figure 2. Project sites. The boundaries of Nahuel Huapi National Park are shown in red; the orange rectangle highlights the study area, and the orange points indicate each wetland.

Figure 3. A and B) Wetlands where the project is being conducted. C and D) Evidence of introduced ungulates in the wetlands.

Small Mammal Monitoring

In February 2025, we sampled small mammals at the 10 wetlands (Fig. 4), recording five species (Fig. 5), including Oligoryzomys longicaudatus, a key Hantavirus reservoir. Safety protocols were strictly followed during handling.

Figure 4. Processing of small mammals. Biosecurity measures are highlighted due to the potential presence of Hantavirus.

Figure 5. Handling of four of the species recorded during small mammal sampling. A) *Geoxus valdivianus*, B) *Abrothrix olivacea*, C) *Oligoryzomys longicaudatus*, D) *Loxodontomys micropus*.

Vegetation and Soil

Vegetation surveys were conducted between February and March 2025, recording 46 morphospecies currently being identified to the lowest taxonomic level possible (Fig. 6). Soil compaction measurements could not be performed due to waterlogged conditions.

Figure 6. Volunteers assisting with vegetation sampling.

Seed Predation Experiment

In March 2025, we carried out a seed predation experiment using inactivated sunflower seeds as a standardized food item. Ten seeds were placed per stick, with ten sticks per wetland (100 seeds per site), and checked after 2, 4, and 8 days, concluding when most seeds were removed (Fig. 7).

Figure 7. A) Sunflower seeds placed on wooden sticks, held by wire. B) Stick where all seeds have been removed

Monitoring Introduced Ungulates.

Camera traps are monitoring ungulate activity and other wildlife to establish baseline data before deploying odor baits to modify the "Landscape of Fear." This ongoing monitoring also allows us to observe seasonal patterns of wildlife use (Figs. 8–9).

Figure 8. Volunteers and technicians assisting with the placement and checking of camera traps for monitoring introduced ungulates.

Figure 9. Still frames from videos obtained via camera traps in the wetlands. A) Horse (*Equus caballus*), B) Wild boar (*Sus scrofa*), C) European hare (*Lepus europaeus*), D) Andean fox (*Lycalopex culpaeus*), E) Puma (*Puma concolor*), F) Red deer (*Cervus elaphus*).

Collaboration and Outreach

To date, fieldwork has involved 4 technicians, 10 volunteers, multiple universities and research institutes (National University of Tucumán, Northern Arizona University, National University of San Luis, IADIZA – Argentine Institute of Arid Zones Research, Mendoza –, INIBIOMA - Institute for Biodiversity and Environmental Research, Bariloche - and CNEA – National Atomic Energy Commission, Bariloche), local families, park rangers, and conservation staff. The project has been presented in seven graduate courses and a PhD seminar, and preliminary findings were shared with local authorities and community members.

Next Steps

Most fieldwork is complete. In the remaining project period, odor baits will be deployed to test the “Landscape of Fear” approach. Concurrently, data analysis is underway, with results being prepared for publication in *Biological Invasions* and presentation at the XXXVII Argentine Mastozoology Meeting 2026. These analyses will support an upcoming workshop and the development of outreach materials.