

Camera traps reveal Nasampulli's biodiversity secrets

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Rainforest Concern

The volcanic lagoon at the Nasampulli Reserve.

Back in 2010 we developed a four-year Management Plan for Nasampulli Reserve. That was almost four years ago and it is now time for a review. The Management Plan was a tool to guide the development and implementation of activities within the Reserve. We divided the Reserve into different management zones, each with a specific objective and permitted and restricted activities. We established six programmes covering administration maintenance, restoration, research and monitoring, protection, outreach and environmental education, and ecotourism.

Among the actions implemented for the “Administration and Maintenance Programme”, with funding from Rainforest Concern, is the hiring of a park ranger during summer and autumn (in winter the area is covered by snow and mostly inaccessible) and the construction and maintenance of a

cabin for the use of staff, researchers, students and visitors. This is a huge improvement because it enables a more permanent presence of administration staff at the Reserve and the possibility of receiving researchers, students and interns. Previously the only way of staying at the Reserve was by camping. We have also enhanced our trail infrastructure, with a new lookout over a 10 metre waterfall, more than 15 kilometres of trails, new signs and 6 further lookouts.

The achievements have facilitated the implementation of the “Protection Programme” and we are able more effectively to defend the Reserve against threats. One of the main threats is illegal use of the Reserve for cattle ranching, which has negative impacts on soil structure, vegetation and water quality. Through setting up and maintaining fences and developing agreements with

neighbours, we have finally been successful in excluding the cattle. This has permitted the recovery of grasses and shrubs, increased tree regeneration and reduced trail erosion. Another pressing issue at the Reserve is the presence of non-native wild boars, which disturb *Araucaria araucana* (monkey puzzle tree) regeneration, cause soil erosion and feed on native birds and frogs. We are still working on a control programme based on a study to assess wild boar populations and their habits.

During the past four years we have made important progress in the “Research and Monitoring Programme”. We have established permanent plots to study the stand dynamics of *Araucaria* and *Nothofagus* forests and we have involved undergraduate students in this project. A significant improvement in our monitoring capacity has been the acquisition of 4 camera traps that

are installed at the Reserve entrance for surveillance and at specific sites in the Reserve for monitoring wild boar and native wildlife. We are excited to have discovered there is more wildlife than we expected. The cameras have captured puma or mountain lion (*Puma concolor*), pudu (*Pudu puda*), the smallest deer in South America, chilla (*Lycalopex griseus*) and culpeo (*Lycalopex culpaeus*) foxes, and quique or lesser grison (*Galictis cuja*), a small mustelid endemic to southern South America. We have also found one of the four marsupial species endemic to Chile, the monito del monte (*Dromiciops gliroides*), considered to be a living fossil, and the Darwin's frog (*Rhinoderma darwinii*), endemic to the Austral forests of Chile and Argentina and known for its rare breeding behaviour in which the male ingests the eggs and incubates them in vocal sacs. Through footprint monitoring we have also detected the presence of the endangered guiña cat (*Leopardus guigna*). In addition, we have installed a basic weather station for measuring precipitation, temperature and snow depth.

As part of the "Restoration Programme" we are working on minimising erosion impacts on trails and revegetating old logging roads. We have developed trials with different native plant life forms, including trees, shrubs, grasses and herbaceous species. We have trialed tree species such as coihue (*Nothofagus dombeyi*), lenga (*Nothofagus pumilio*) and direct sowing with araucaria seeds collected in the Reserve. Among the shrubs we have used are the native currant, zarzaparrilla (*Ribes magellanicum*), and the chaura berry (*Gaultheria* sp.). We have also used herbaceous species such as rushes (*Juncus procerus*), acaena (*Acaena ovalifolia*), and sedges (*Carex* sp.).

Through the "Interpretation, Environmental Education and Outreach Programme", the Reserve



Deep winter at Nasampulli - a Puma approaches the entrance to the Reserve.

has given undergraduate students the opportunity of fulfilling their thesis and internship requirements while contributing to the conservation of the Reserve. In the past four years, one undergraduate thesis has been submitted and three are in progress. Between 2012 and 2014, six students from the Degree in Conservation of Natural Resources at Universidad Austral de Chile have developed their internships. Furthermore, there is great potential for future development, especially in terms of working with neighbouring communities and schools. We look forward to implementing an environmental education programme and working more closely with these communities in the coming years.

During the past months we have become actively involved in "Asi Conserva Chile", (asiconservachile.cl/en/), a very active network of indigenous and private protected area land owners in Chile, attending workshops and meetings to discuss agroecology, environmental education and ecotourism, with the objective of strengthening our capacity and links with other protected areas. In August 2013, we attended the 10th Latin American Congress of Private Reserves and Indigenous Peoples giving an oral presentation and

displaying the work and Management Plan of the Reserve.

There are many plans and ideas for future developments in Nasampulli Reserve, which we aim to pursue with the support of Rainforest Concern and other collaborators. There is great potential to create a corridor to join Nasampulli with other public protected areas, which could be implemented by purchasing more land towards the south and connecting Villarrica National Reserve with Huerquehue National Park. This would be valuable as Nasampulli Reserve protects such unique Andean ecosystems and forests. In addition, we plan to develop a temperate forest mountain research station in collaboration with local and international research institutions and universities. We are keen to further implement the Management Plan, especially those programmes relating to community development, focusing on ecotourism, agroecology, sustainable forest management and renewable energy. On a landscape scale we would like to contribute to the development of a wider landscape conservation project, in which there is collaboration between public and private land owners, and in which conservation, production and other activities can coexist and thrive in harmony.