

## Title

The wetlands of the High Andes are an evolutionary hotspot for the grebe family (Podicipedidae). This unique diversity is, however, rapidly being lost: in the past 30 years, 2 species have gone extinct and another 3 species are on the verge of extinction. Here we report on efforts to save three of these species, the [Hooded Grebe](#) *Podiceps gallardoi*, [Junin Grebe](#) *Podiceps taczanowskii* and [Titicaca Grebe](#) *Rollandia microptera* as part of BirdLife's High Andean wetlands initiative.

## *Grebes as sensitive indicators of change*

The dependence of grebes on wetlands makes them sensitive indicators of change. That, combined with the restricted range of many species, means that they are particularly susceptible to going extinct. In fact, the latest bird species to be officially declared extinct (in 2010) was the [Alaotra Grebe](#) *Tachybaptus rufolavatus*, a species restricted to a small area in eastern Madagascar, where it lost the battle for survival due to the introduction of carnivorous fish and drowning in gill-nets used by local fishermen. It is the third species of grebe to go extinct within the past three decades, after the [Colombian Grebe](#) *Podiceps andinus* and the [Atitlan Grebe](#) *Podilymbus gigas* (both Neotropical species).

## *Threatened grebes in the Neotropics*

The Neotropics represent a center of adaptive radiation for the grebes, one of the most ancient groups of birds still in existence. Of the ten Neotropical species, two are already globally extinct, and three are highly threatened. These threatened species are the [Critically Endangered Junin Grebe](#) and [Hooded Grebe](#), and the [Endangered Titicaca Grebe](#). Both the [Junin Grebe](#) and [Titicaca Grebe](#) are flightless waterbirds, the former confined to [Lake Junin](#) in the highlands of Junin (west-central Peru) and the latter endemic to a few freshwater lakes on the altiplano of Peru and Bolivia. [The Hooded Grebe](#) is essentially endemic to Santa Cruz province, Argentina, breeding in lakes in the basaltic plateaus of the west of the province and wintering in estuaries along the Atlantic coast.

Among the other 15 grebe taxa (of 5 species) in the Neotropics, the *morrisoni* subspecies of [White-tufted Grebe](#) *Rollandia rolland*, endemic to [Lake Junín](#), is also threatened with extinction, while the *juninensis* subspecies of [Silvery Grebe](#) *Podiceps occipitalis* (postulated by some authors to be a separate species) is threatened in the northern part of its range, where it is restricted to high Andean lakes.

## *Shared conservation challenges*

The main threats to the three Neotropical grebes on the verge of extinction are: contamination and habitat alteration due to the mining industry, introduction of exotic fish such as trout, predation by introduced predators, drowning in gill-nets and changing climatic conditions. Of these, the introduction of exotic species and drowning in gill-nets are threats faced by all three species. One of the goals of [BirdLife's High Andean wetlands](#) and [Preventing Extinctions](#) programmes is to explore whether there are shared solutions to these shared problems.

## [Hooded Grebe \(CR\)](#)

The main threats to the [Hooded Grebe](#) are nest predation by an increasing population of [Kelp Gulls](#) *Larus dominicanus* (a native species); predation and competition for food resources from introduced Rainbow Trout *Onkorhynchus mykiss*, which also change the ecology of the lakes, resulting in a loss of nesting vegetation for the grebes; loss of breeding sites through sedimentation as a result of land erosion caused by overgrazing; and breeding failure due to increasingly strong winds that detach floating nests from their moorings. A new and highly worrying addition to the list of threats is the expansion of the [American Mink](#) *Neovison vison* into the northern part of the species' breeding distribution. During the 2010-2011 breeding season one American Mink killed 33

Hooded Grebes, thereby eliminating one of only five colonies found that season. Conservation actions for this Critically Endangered species are being implemented by [Aves Argentinas](#) in collaboration with Ambiente Sur and are supported by the Aage V. Jensen Charity Foundation, Mohamed bin Zayed Foundation, US Fish and Wildlife Service (USFWS) - Critically Endangered Animals Conservation Fund, and through an international online appeal launched by BirdLife in January 2012. Recent actions have included an assessment of the species' abundance at known and suspected breeding colonies and the implementation of anti-predator activities by "Colony Guardians". This is a pioneering new approach which involves the constant presence of a team of "guardians" who monitor the birds throughout the breeding season and help protect them from avian predators such as the Kelp Gull, and from terrestrial predators such as mink through the placement of traps. The colony guardians have also caught and individually marked with wing tags several adult and juvenile Hooded Grebes, to enable the movements of individual birds to be studied. Significant progress has also been made with efforts to create a protected area including the lagoons of the [Buenos Aires plateau](#) (which hold the main breeding colonies).

### [Junin Grebe \(CR\)](#)

This species is primarily threatened by the deterioration of water quality as a result of mining activities, but also by fluctuating water levels (due to water-level regulation for a hydroelectric plant supplying the mines). The species breeds in flooded reedbeds and as such it is especially vulnerable to these drying out, either through water-regulation or as a result of droughts caused by the El Niño Southern Oscillation.

Conservation actions implemented by the Species Guardian [ECOAN \(Asociación Ecosistemas Andinos\)](#) have included the publication with the Peruvian National Parks Authority of "The Action Plan for Threatened Junín Species", and a series of workshops (with support from the British Birdwatching Fair and IUCN-SOS) to promote the action plan with local authorities, communities and the media. These were successful in raising awareness of the problem of pollution in the lake, and resulted in the authorities committing to its protection. Through support from the Aage V. Jensen Charity Foundation, important progress has also been made in dialogue with the mining companies to seek ways to avoid contaminating the lake. A long-dormant management committee has been re-activated and has started to play an important role in facilitating agreements regarding the sustainable use of the lake's resources. With support from the Aage V. Jensen Charity Foundation and USFWS-Neotropical Migratory Bird Conservation Act, ECOAN has championed the development of improved cooking stoves that use significantly less "champa" native grass (thereby reducing pressure on habitats used by resident and migratory species). Local communities have been trained in the construction of such stoves, which also release 82% less emissions than normal stoves. Significant challenges remain in terms of building further cooperation with the local authorities and the minor sector to reduce pressure on the lake, but the management committee is increasingly succeeding in working with them to find economically and environmentally sustainable solutions.

### [Titicaca Grebe \(EN\)](#)

This species is mainly threatened by drowning in gill-nets, contamination of lakes resulting from mining activities, and changes in aquatic ecosystems through the introduction of exotic fish such as the Rainbow Trout. Recently there have also been cases of commercial hunting of grebes and harvesting of their eggs.

Although no direct action is currently being taken for the [Endangered Titicaca Grebe](#), through support from the USFWS-Neotropical Migratory Bird Conservation Act, the Bolivian NGO [Biota](#) and the [Asociacion Armonia \(BirdLife in Bolivia\)](#) have been working to develop a management plan for [Lago Poopo](#), in collaboration with the environmental authorities. As part of this process, an analysis of habitat loss has been undertaken, which has shown that the lake has reduced in size by 50% (17,426 ha) in the past 25 years, adding a new threat to the survival of the species (reduction in habitat availability).

Through sharing experiences and lessons learned between the groups working for the conservation of these highly threatened species it is hoped that all three can be saved in the most efficient and effective way possible, while at the same time helping to conserve other biodiversity and cultural and social values of these unique sites.