

## The Titicaca Flightless Grebe *Rollandia microptera* population of Río Laka Jahuirá, Bolivia

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Un censo de la población del Zampullidor del Titicaca *Rollandia microptera*, una especie clasificada como vulnerable o en peligro de extinción, efectuado a Paso Julián, Río Laka Jahuirá, el 26 de julio de 2005, producía 138 zampullidores por los 8 km cubiertos por el censo. Si la especie se distribuyera uniformemente a lo largo del río donde encuentran un medio ambiente apropiado, la población total podría alcanzar los 1.100 ejemplares. Otros ocho censos realizados a Paso Julián entre 1999 y 2002 producían números bastante fluctuantes, lo cual sugiere movimientos migratorios de los zampullidores. Existen, sin embargo, pruebas de que la especie usa el río no solamente como refugio en temporada seca pero también como área para anidar cuando el nivel de agua está más elevado, proporcionando así acceso a lagunas y riachuelos a lo largo del río que suelen ser sitios para criar. Se proponen censos completos y repetidos en la región para mejor apreciar la importancia de la población de Río Laka Jahuirá para la especie del Zampullidor.

The Titicaca Flightless Grebe *Rollandia microptera* is endemic to Lake Titicaca and related waterbodies, e.g. the río Desaguadero, the lakes Uru-Uru and Poopó and the Río Laka Jahuirá. The main threat to its survival stems from changes to Lake Titicaca and its surroundings. During the late 20th century, Fjeldsá<sup>5</sup> found numbers to be affected directly or indirectly by hunting for food by the local Uru Indians, pollution, boat traffic, harvesting of aquatic vegetation for fodder, and the introduction of alien fishes. The population has declined dramatically, especially since the 1980s, due to greatly increased use of monofilament fishing nets, in which grebes drown in large numbers, the result being a catastrophic decline in once-densely populated areas. The damming of Lake Umayo, near Puno, induced a further decline there, from 1,147 birds counted by E. Mølgaard in 1987 to just four in 2001 during a lake-wide survey<sup>5</sup>. An evaluation of the species' prospects identified commercial fishing on Lake Titicaca as the principal current threat to that population<sup>6</sup>. The IUCN Grebe Specialist Group considered Titicaca Flightless Grebe to be Vulnerable<sup>7</sup> and it is now Endangered<sup>2</sup>. Rose & Scott<sup>9</sup> and O'Donnell & Fjeldsá<sup>7</sup> estimated the overall population of *R. microptera* to be 2,000–10,000 birds, and these authors recommended more regular monitoring and to survey in more detail its range. As a part of such work, a sample census of the population of Titicaca Flightless Grebe was undertaken at Río Laka Jahuirá in July 2004.

### Study area

The census was undertaken at Paso Julian (altitude 3,650 m) on Río Laka Jahuirá. The river is the sole outflow of Lake Poopó and generally operates during periods of high water levels<sup>8</sup>. Río

Laka Jahuirá has a total length of 130 km, connecting Lake Poopó to the Salar Coipasa and it has an average inclination of 0.02%<sup>8</sup>. On 26 July 2004, the day of the census, the river was low and its maximum width at Paso Julian did not exceed 20 m over the entire length of the stretch surveyed. No emergent vegetation was present, but abundant floating vegetation, mainly *Myriophyllum* and *Chara* sp. was available. The area is characterised by large seasonal and inter-annual fluctuations in water levels. Google Earth, a free satellite imagery available on the internet, suggests that the eastern half (c.65 km) of the river may offer potential habitat for Titicaca Flightless Grebes, whilst the stretch towards Salar Coipasa is merely a narrow channel of similar distance through the desert.

The population on Lago Poopó depends largely on fish. The indigenous Uru Muratos consume those grebes they find in their nets as well taking their eggs<sup>8</sup>. The lakes Poopó and Uru Uru are threatened by chemical contamination caused mainly by the heavy metal mining industry. In some parts, heavy metal concentrations beyond the authorised limits for human consumption were found<sup>8</sup>. The human population concentrates in the immediate vicinity of Lago Poopó, whereas fewer live along Río Laka Jahuirá. During two stays at Paso Julian, in 1998 and 2004, only a handful of shepherds were observed, catering for their llamas. No fishing activity was recorded and no nets found. It is unknown to what extent chemicals contaminate the river.

### Methods

The census was executed by H. Aranibar and A. Konter with the assistance of M. Braum and M. Konter. In two groups, they walked the shore, each covering a distance of c.4 km either side of the

bridge crossing the river at Paso Julian. On 25–26 July 2004, AK took notes on the behaviour of the Titicaca Flightless Grebes.

### Results

A total of 138 grebes or 17 grebes per km were counted on 26 July 2004; none showed any feature of immaturity. Most, if not all, were paired; either they were encountered in pairs or they were alone with one other lone grebe in close vicinity. Large parts of the river were covered in abundant floating vegetation which, in times of higher water levels, possibly offers suitable nesting habitat for the species. Each pair occupied a clearly delimited territory and their distribution along the Río Laka Jahuira was rather uniform. Territory defence as described by Fjeldså<sup>4</sup> was frequently observed, being initiated when a neighbouring pair approached a territory border.

### Discussion

Assuming that Río Laka Jahuira presents similar habitat throughout its eastern half, and given the uniform distribution of grebes in the surveyed area, the population of Titicaca Flightless Grebes on the river could total 1,100, or more than 50% of the overall minimum population<sup>7,9</sup>. Although it is impossible to reasonably maintain the hypothesis of a uniform distribution of the grebes over the entire eastern part of Río Laka Jahuira without evidence, the fact that most pairs appeared to occupy rather restricted territories argues in favour of an important local population.

In October 1998, AK found a comparable clustering of grebe territories at Paso Julian, but no count was performed. Eight surveys at Paso Julian between June 1999 and March 2002 counted 4–96 grebes, but apparently covered only 1.5 km, and found most birds during the wet season, in January 2002<sup>8</sup>. The same study also found the species at Ojo de Agua and Chuacha on Río Laka Jahuira. At Ojo de Agua, grebes were observed nesting in September 2002, but no complete census was executed. From the data of the eight surveys, we can conclude that the population at Paso Julian fluctuates greatly, but to where the birds from Río Laka Jahuira go at other times is enigmatic. Is the local population augmented occasionally by birds from other parts of the river or even Lago Poopó? The latter presents unstable habitat, much dependent on outside water entry for its quality<sup>8</sup>. Could it be that, especially at low water levels when the lake is more saline and considerably reduced in area, grebes leave for Río Laka Jahuira, thereby increasing the population there? The resulting high pressure on territories could prevent most pairs from breeding until Poopó birds return to the latter. Another possibility is that the population is

entirely local to the outflow, but that its distribution in the river is affected by water levels. Pairs concentrate during periods of low water, but with rising levels disperse, occupying their newly accessible breeding sites.

Either scenario could explain the reason for the failure of the present survey to register a grebe platform or an immature, although other species, e.g. Andean Coot *Fulica ardesiaca* was found with nests and chicks. The variable numbers of grebes found during the eight surveys could also be consistent with either of the above scenarios, but the maximum count was during the wet season, when nesting conditions at Río Laka Jahuira are optimal and water levels at Lake Poopó would not force out the resident population. Therefore, the relationship between numbers at Río Laka Jahuira and any migration into the area from Lago Poopó might be limited. In addition, there is some evidence that the Río is more than a dry-season refuge for the species: it was previously recorded nesting there, the maximum count was in the wet season when nesting habitat is most abundant, and grebes defend territories perhaps subsequently used for nesting. Territories are generally maintained year-round<sup>3</sup>, thus during the wet season (the main breeding period) higher water levels make potential breeding sites in the many small lagoons and creeks in Río Laka Jahuira accessible, extending the total breeding habitat available and increasing the size of individual territories. An important population may rather regularly use the Río for breeding under such conditions.

In 2003 Armonía, the BirdLife partner in Bolivia, commenced a study of Titicaca Flightless Grebe, focusing on Lago Titicaca and also counting Lake Poopó, producing a higher than expected population estimate for the species<sup>1</sup>, but confirming its classification as Endangered (A. B. Hennessey & A. Martínez pers. comm.). If the important presence of the species at Paso Julian, confirming the slight range extension into the sparsely populated semi-desert beyond Lake Poopó already noted by O. Rocha, proves true of the entire east of the river, this population would constitute a particularly important one. More complete and regular surveys are required to assess the importance of the site for the species, but it is clear that, even if confirmed, a reduction in the recently started efforts to protect this grebe would not be justified. On the contrary, additional measures may be needed to conserve the Río Laka Jahuira subpopulation.

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