COLOMBIAN GREBE *Podiceps andinus* **E/Ex**[4]

Probably now extinct, this waterbird was originally restricted to a few lakes throughout the Bogotá–Ubaté plateaus, Colombia, and was apparently last seen in 1977. The reasons for its decline cannot be determined with confidence, but habitat alteration, hunting and the introduction of exotic fish probably played significant roles.

DISTRIBUTION The Colombian Grebe (see Remarks) is known to have bred exclusively at a number of lakes between 2,500 and 3,100 m on the Bogotá–Ubaté plateaus, Cundinamarca and Boyacá departments, Colombia (Meyer de Schauensee 1966, Hilty and Brown 1986). Most records (specimens in AMNH, ANSP, FMNH, USNM) are from Laguna de Tota on the eastern side of the East Andes (5°33'N 72°55'W; 3,015 m): however, on the Ubaté plateau records come from Laguna de Fúquene (5°28'N 73°45'W; 2,580 m) and Laguna de Cucunubá (5°17'N 73°48'W); and on the Bogotá plateau, birds have been noted at La Caro (c.4°52'N 74°02'W; c.2,550 m), Laguna de la Florida (c.4°43'N 74°09'W; c.2,600 m), Laguna de la Herrera (4°42'N 74°18'W; 2,600 m), and Embalse del Muña (c.4°32'N 74°18'W, 2,555 m) (Olivares 1969, Fjeldså and Krabbe 1990, Fjeldså in press; coordinates from Paynter and Traylor 1981).

POPULATION This bird was recorded on the Ubaté plateau (specifically Laguna de Fúquene) during the 1940s, with a few birds still present in the 1950s, and unconfirmed reports of flocks at Laguna de Cucunubá during the early 1970s (Fjeldså in press): on the Bogotá plateau, its disappearance was seemingly complete by the end of the 1940s (Fjeldså 1984). At Laguna de Tota, the Colombian Grebe was recorded as abundant in 1945, usually in groups of 10-30 individuals (Borrero 1947, Fjeldså in press). Even during the 1960s the bird was considered relatively common at this locality (Nicéforo and Olivares 1964), with 300 individuals reported there in 1968 (King 1978-1979; also Fjeldså in press). However, since that date the species is only known from a report of a single bird in 1972 (Fjeldså in press), and two (possibly three) on 13 and 15 February 1977 (King 1978-1979, Fjeldså in press). Despite a number of searches (at all known localities, and practically all other potential sites) looking specifically for this species (e.g. by G. I. Andrade, G. Arango and LGN in the period 1975–1980, J. Fjeldså in 1981, and N. Varty and co-workers in 1982), the Colombian Grebe has not been recorded unequivocally since the 1970s and is almost certainly extinct (Fjeldså 1984 and in press, Varty *et al*. 1986: see Measures Proposed).

ECOLOGY All the lakes formerly inhabited by the Colombian Grebe have in common their high altitude, cold oligotrophic waters, and shorelines with a dense growth of reeds: however, they range widely in size and depth (LGN). Fjeldså and Krabbe (1990) described the habitat as "marshes and lakes with tall marginal reeds and extensive shallows full of submergent water-weeds". At Laguna de Tota in the 1960s, the main submergent in the lake was *Potamogeton illinoiensis* (Borrero 1963), although this is now no longer the case (Fjeldså in press). The *Potamogeton* habitat was probably important for the Colombian Grebe's various prey items (Fjeldså in press). The only published information on the breeding habits of the species are from Borrero (1947), who reported several females ready to lay in August, while J. I. Hernández Camacho (verbally 1980) mentioned that this grebe apparently depended on cattails and other reeds to build and anchor its floating nests.

THREATS In 1981, Fjeldså (in press) noted the following about the various localities and areas where the Colombian Grebe had previously been recorded: (1) the wetlands at the northern end of the Bogotá plateau, near La Caro, were almost totally drained, and the few remaining *Scirpus* marshes, partly overgrown oxbows and waterdams were all unsuitable for the species; (2) wetlands associated with the río Bogotá at Laguna de la Florida were also drained, and badly polluted; (3) Laguna de la Herrera was almost drained, and comprised 350 ha of marsh habitat (*Scirpus*), *Azolla*-covered mud, and scarcely any open water; (4) Lagunas de Fúquene (45 km^2) and de Cucunubá (3.5 km^2) had complex marginal vegetation zones but the water quality was totally unsuitable – the soil erosion from surrounding deforested hills had reduced water transparency to 10-30 cm and almost totally eliminated the submergent vegetation (again *Potamogeton illinoiensis*), the situation presumably being exacerbated by the large populations of carp *Cyprinus* sp. At Laguna de Tota, the main submergent community comprised *Potamogeton illinoiensis* in the 1960s (see Ecology), but in 1981, Fjeldså (in press) found that this had primarily been replaced with a dense monoculture of *Elodea canadense* which locally filled the water up to the surface.

Various other factors have helped cause the apparent extinction of the Colombian Grebe at

Laguna de Tota: (1) intensive onion cultivation around the lake during the early 1960s, leading to a lowering of the water-level and to increased usage of fertilizers and pesticides; (2) introduction of rainbow trout *Salmo gairdneri* in 1944, possibly resulting in the predation of chicks, but more likely affecting the availability of suitable food items; and (3) hunting pressure in the breeding colonies (Varty *et al*. 1986; also Fjeldså 1984). It seems likely that the major decline at Laguna de Tota occurred in the 1950s and early 1960s through habitat loss caused by falling water-levels and changes in the aquatic plant community – *Elodea canadense* seemingly being unsuitable for this bird to dive for food in (Fjeldså 1984 and in press, Varty *et al*. 1986).

MEASURES TAKEN None is known.

MEASURES PROPOSED Although it now seems unlikely that a population of this species still exists, Fjeldså (in press) has suggested that groups of birds may have been straying around (see records of flocks on Laguna de Cucunubá in the 1970s in Population), and that they may still exist on a suitable lake elsewhere in the Andes (see Fjeldså in press for elaboration of this hypothesis).

REMARKS Historically there has been continuous debate as to the taxonomic status of the Colombian Grebe, i.e. whether it is a full species (e.g. Simmons 1962) or a subspecies of the widespread Eared (Black-necked) Grebe *Podiceps nigricollis* (e.g. Meyer de Schauensee 1952, 1959, 1966, Blake 1977, Mayr and Cottrell 1979). Currently, the bird is regarded as a full species, and it will presumably need comparative allozyme analyses to put the argument finally to rest (Fjeldså in press).