

*Restricted to the savanna and páramo marshes of Cundinamarca and Boyacá departments in the East Andes of Colombia, the Bogotá Rail has healthy populations in just a few remaining marsh areas, all of which are threatened by drainage, habitat loss and the effects of agrochemicals.*

**DISTRIBUTION** The Bogotá Rail is restricted to the marshes and lakes of the Bogotá–Ubaté savannas and some surrounding higher altitude areas, in the East Andes in Boyacá and Cundinamarca departments, Colombia (see Remarks). Although the current distribution is primarily restricted to relatively few lake or marsh areas, specific localities (coordinates from Paynter and Traylor 1981) for this species area as follows:

(*Boyacá*) Laguna de Tota (5°33'N 72°55'W; at 3,015 m), where probably the largest population exists (Blake 1959, Varty *et al.* 1986, Fjeldså and Krabbe 1990, J. Fjeldså *in litt.* 1992); (*Cundinamarca*) Laguna de Fúquene (5°28'N 73°45'W; at 2,580 m on the Cundinamarca–Boyacá border), where birds were seen in October 1991 (J. Fjeldså *in litt.* 1992); Laguna de Cucunubá (5°17'N 73°48'W; at 2,500 m, Valle de Ubaté), where a bird was seen in October 1991 (J. Fjeldså *in litt.* 1992); Subachoque (4°56'N 74°11'W; at 2,685 m near the north-western limit of the Bogotá savanna), from which there is an undated specimen (in ICN); Torca (c.4°53'N 74°05'W; at 2,600 m, 26 km north of Bogotá), where two males (in ICN) were taken in September 1950; Cota (4°49'N 74°06'W; at 2,605 m, 25 km north of Bogotá: Olivares 1969); Laguna de Pedropalo (c.4°45'N 74°24'W), where the species was recorded at 2,100 m in January 1991 (F. G. Stiles *in litt.* 1992); “Suba Marshes” and Laguna de Juan Amarillo (= Tibabuyes), c.3 km west of Suba (4°45'N 74°05'W; at 2,560 m), where four specimens (in LACM) were collected in March 1960, with one heard in January 1992 (L. M. Renjifo *in litt.* 1992); El Prado (4°43'N 74°02'W; at c.2,600 m, 5 km north of Bogotá), where three males (in ANSP, ICN) were collected in March 1960; near Funza (4°43'N 74°13'W), where birds were recorded on a small marsh in November 1991 (F. G. Stiles *in litt.* 1992); Laguna de la Florida (c.4°43'N 74°09'W; at c.2,600 m, west of Bogotá near Aeropuerto Internacional Eldorado), whence come the majority of recent records (Hilty and Brown 1986, F. R. Lambert *in litt.* 1989, M. Pearman *in litt.* 1990, J. Fjeldså *in litt.* 1992, P. Kaestner *in litt.* 1992); near La Florida on a small roadside pool, where one was seen in January 1987 (M. Pearman *in litt.* 1990: see also Population); La Holanda (4°42'N 74°15'W; c.25 km west of Bogotá), where a male (in AMNH) was collected at 2,650 m in May 1913; Usaquén (4°42'N 74°02'W; at 2,590 m, a north-eastern suburb of Bogotá), where a female (in ICN) was taken during November 1952; La Herrera (4°42'N 74°18'W; at c.2,600 m, 20 km north-west of Bogotá), where many birds have been seen during recent years (Varty *et al.* 1986, J. Fjeldså *in litt.* 1992, LGN); 15 km east-north-east of Bogotá (4°36'N 74°05'W) in a small marsh beside the road to Guatavita lake, where the species has recently been recorded (P. Kaestner *in litt.* 1992); Techo (c.4°36'N 74°08'W; at 2,570 m, 8 km west of Bogotá), where a male (in ICN) was taken during September 1952; Embalse del Muña (c.4°32'N 74°18'W; at 2,550 m), where a female (in ICN) was taken in June 1943; south of “Laguna Chingaza” (Páramo de Chingaza is at 4°31'N 73°45'W; 35 km east of Bogotá), where a bird and an empty nest were found at 3,300 m in October 1991 (J. Fjeldså *in litt.* 1992); also the adjacent Carpanta Biological Reserve, where the bird was recorded in October 1989 (F. G. Stiles *in litt.* 1992); and Laguna Chisacá (4°17'N 74°13'W; at 4,000 m, 45 km south-west of Bogotá), where a female (in ICN) was taken between 3,900 and 4,000 m in April 1960.

**POPULATION** The Bogotá Rail is uncommon to locally fairly common (Chapman 1917a, Hilty and Brown 1986), and despite the destruction of its habitat (see Threats), there are indications that the bird may occur in numerous localities where suitable habitat (albeit in small patches) remains (J. Fjeldså *in litt.* 1986, P. Kaestner *in litt.* 1992). Laguna de Tota supports the largest population of the species, with Varty *et al.* (1986) estimating the 1982 population to be between 30 and 50 pairs, although they recognized that this was probably an underestimate as most records were just of calling birds (33 counted). Two breeding territories observed at Laguna de Tota during 1982 were between 0.2 and 0.45 ha in area (Varty *et al.* 1986). In 1991, J. Fjeldså (*in litt.* 1992) judged the number to be closer 400 individuals. At La Herrera, 11 birds were counted along a 250 m transect in August 1982 (Varty *et al.* 1986), and in 1991 the population was estimated at 50 territories, thus representing the second largest known concentration (J. Fjeldså *in litt.*

1992). Elsewhere, at (Parque) La Florida, 4-8 birds have consistently been recorded (since 1989), with up to 12 individuals noted along one edge of the main marsh: a more precise population estimate at this locality (in 33 ha) is being made by I. E. Lozano, and currently (May 1992) stands at c.20 pairs (F. G. Stiles *in litt.* 1992: see Measures Taken). Outside of the park, another sizeable area of marsh also supports a small population, and a c.6 ha marsh near Funza supported at least five birds in November 1991 (F. G. Stiles *in litt.* 1992). Despite several birds being seen at Laguna de Fúquene, the unsuitability of the vegetation suggests that the population density there is not high (J. Fjeldså *in litt.* 1992).

**ECOLOGY** The Bogotá Rail has been recorded in the temperate zone marshes from 2,500 m up to 4,000 m on the páramo, occurring at least occasionally down to 2,100 m at Laguna de Pedropalo (see Distribution). Birds inhabit rushy fields, reedbeds (often with open, regenerating burnt areas), reed-filled ditches (including *Juncus* sp.), fens fringed with dwarf bamboo *Swallenochloa* sp., and often feed along the water's edge, in flooded pasture, wet fen, or within patches of dead waterlogged vegetation nearby (Varty *et al.* 1986, Fjeldså and Krabbe 1990). The characteristic wetland where these birds occur is fringed with tall, dense reeds (comprising *Scirpus californicus*, *Typha latifolia*, with less *Cortadera* sp.) and some *Alnus acuminata* swamp, with the shallows full of *Elodea*, *Myriophyllum brasiliense*, *Potamogeton* etc. (Varty *et al.* 1986, Fjeldså and Krabbe 1990). Few of these marshes remain, owing to the strong influence of pollution and siltation: in these circumstances, the submergent vegetation disappears and carpets of *Azolla* sp., *Ludwigia peploides*, and *Limnobium stoloniferum* spread over the surface (Fjeldså and Krabbe 1990), although even this can be utilized by the species (J. I. Hernández Camacho verbally 1991).

This rail primarily feeds on aquatic invertebrates and insect larvae, although birds have been observed taking worms, dead fish and molluscs, and may also take small frogs, tadpoles and plant material (Varty *et al.* 1986, L. M. Renjifo *in litt.* 1992). Although they are closely associated with *Typha* reedbeds, food availability in this vegetation is low, and they seem to prefer wet fen and marsh shoreline areas for foraging (Varty *et al.* 1986): at Laguna La Florida, birds forage mainly in areas with a thin carpet of floating plants, such as *Azolla* sp. and *Limnobium* sp., but avoiding the introduced *Eichhornia crassies* (I. E. Lozano *per* L. M. Renjifo *in litt.* 1992). Bogotá Rails are active from dawn to dusk and, although generally skulking, they visit more open areas (including reed edge) early in the morning (Hilty and Brown 1986, Varty *et al.* 1986).

Nesting territories (0.2-0.45 ha) of two pairs studied at Laguna de Tota comprised a combination of vegetation types, but the (three) nests found were all in *Typha* sp. beds (one of these areas was mixed with *Scirpus* sp.) (Varty *et al.* 1986). Pairs with between two and four juveniles were recorded at the end of July and the beginning of August, and there was some indication that one pair was starting a second brood, suggesting a breeding season at Laguna de Tota from July to late September (Varty *et al.* 1986): two specimens (in ROM) taken at this locality in February 1950 are labelled "juvenile" and "immature".

**THREATS** Only a few lakes with high plant productivity exist in the Andes of Colombia, but until recent disturbance by man the Ubaté and Bogotá plateaus had enormous marshes and swamps (Fjeldså and Krabbe 1990). These savanna wetlands are strongly influenced by pollution and siltation, with the submergent plants disappearing to be replaced by floating mats of vegetation: such habitat destruction has caused the once outstanding diversity of waterbirds to vanish (Fjeldså and Krabbe 1990). All of the major savanna wetland localities are threatened with final destruction, mainly from drainage (Varty *et al.* 1986, J. Fjeldså *in litt.* 1986). At Laguna de Tota, there remain less than 175 ha of "wetland" vegetation, some of which is unsuitable for rails and all of which is threatened by numerous factors: (1) tourism, although this is probably not a major threat during the main breeding season, except through the disturbance caused by the increasing use of motorboats; (2) hunting of all waterbird species; (3) burning of vegetation; (4) harvesting of reeds (possibly not a significant threat); (5) onion cultivation, which is now the major source of revenue, about 90% of the flat lakeside agricultural land being used for this crop; (6) insecticide usage, possibly reducing food availability and poisoning birds; (7) eutrophication from untreated sewage effluent and agrochemicals; and (8) fluctuations and general decreases in water level, caused by drainage and increasing water demand, which have a detrimental effect on the shallow water plant community and allow

agricultural encroachment into the reedbeds (Varty *et al.* 1986). Laguna de la Herrera has greatly decreased in size during recent years, although there remain c.250-350 ha of marsh (reed-marsh with extensive open mudflats covered in *Azolla* sp. and *Hydrocotyle* sp. but hardly any water): however, even this is threatened by the development of limestone quarries (which has had a dramatic effect on the western side of the marsh), and by cattle trampling the reedbeds (causing further drying of the marsh) (Varty *et al.* 1986, J. Fjeldså *in litt.* 1992): this lake, one of the largest in the Bogotá savanna, has been without water from August 1991 until at least June 1992 owing to irrigation projects run by the Corporación Autónoma Regional de las Cuencas de los Ríos Bogotá, Ubaté and Suárez (CAR) (L. M. Renjifo *in litt.* 1992). Laguna de Fúquene, although not ideal for the rail (owing to the wide fringe of tall reeds: J. Fjeldså *in litt.* 1992), suffers from agricultural activities within the watershed, soil erosion causing a high content of suspended material, and severe hunting pressure (Varty *et al.* 1986), and is also affected by the work of CAR (L. M. Renjifo *in litt.* 1992: see above). Parque La Florida is a popular recreational area bisected by a road, to the south of which is a highly disturbed boating area with little suitable vegetation, and to the north a fenced-off area of c.2 ha with reeds (Varty *et al.* 1986): the vegetation around this lake is in places apparently cleared or cut, and in 1989 a new dyke was under construction, the potential effect of which was unknown (F. R. Lambert *in litt.* 1989): water flowing into this marsh is polluted with sewage and agrochemicals from surrounding farms and greenhouses (I. E. Lozano *per* L. M. Renjifo *in litt.* 1992).

**MEASURES TAKEN** Páramo populations of the Bogotá Rail are to be found within Chingaza National Park (50,370 ha), the adjacent Carpanta Biological Reserve, and possibly in Sumapaz National Park (154,000 ha) (Hernández Camacho *et al.* undated): however, the savanna wetlands enjoy no legal protection, although CAR is charged with the task of providing water for drinking and industrial use, and as such is concerned with conservation initiatives and management plans for the many wetlands within its jurisdiction in Cundinamarca, plus Laguna de Tota, Boyacá (Varty *et al.* 1986). A detailed study of the species at Parque La Florida is currently being undertaken (supported by an ICBP-PACS small grant) in order to discover the population size and further aspects of the species's ecology (I. E. Lozano *in litt.* 1991, M. G. Kelsey *in litt.* 1992: see Population and Ecology for some of the preliminary findings): the protected status of this site is unknown.

**MEASURES PROPOSED** The ecological requirements of the Bogotá Rail are already sufficiently well known to allow the design of an effective conservation plan, and the priority must be to secure the long-term future of the larger remaining wetlands, although any such initiatives need to consider the region's other threatened species, for which see the equivalent section under Apolinar's Wren *Cistothorus apolinari*, but also Rusty-faced Parrot *Hapalopsittaca amazonina* and Black Inca *Coeligena prunellei*, with which (amongst other threatened species) this rail is sympatric in some paramó areas.

Any searches for the species should perhaps concentrate in the páramo areas which have apparently enjoyed a less disturbed history than the savanna wetlands: the species may well be found to occur widely and in significant populations within these areas. However, an assessment of the population within the savanna wetlands, especially that portion of it that exists within small remnant marshes away from the main lake areas, is also a priority for this bird, the status of which is unclear outside of the few main localities. The effective protection of Laguna de la Florida (including the control of incoming water quality), where there appears to be a significant population (see Population), should be an early measure to help conserve this species.

**REMARKS** Fjeldså and Krabbe (1990) reported an unconfirmed record of this species from Ecuador, and noted that the Peruvian Rail *Rallus peruvianus* (known from just one old specimen of uncertain origin though believed to be in Peru) may in fact represent a subspecies of Bogotá Rail.