

The Flame-winged Parakeet occupies upper subtropical and temperate forest in the East Andes of Colombia, where it is confined to the east slope in both Boyacá and Cundinamarca, having at least formerly also occurred in the latter on the west slope. Forest destruction has been extensive within its restricted range and, although still locally numerous, it now survives in highly fragmented populations.

DISTRIBUTION The Flame-winged Parakeet is known from over 50 specimens taken at 17 or more localities in Boyacá and Cundinamarca departments, in the East Andes of Colombia (the record from Macizo de Tamá means that it may possibly occur in Venezuela: J. I. Hernández Camacho verbally 1991). In the following account coordinates are from Paynter and Traylor (1981).

West slope Records are all prior to 1914 (and all from *Cundinamarca*): Villa Gómez, at c.5°17'N 74°12'W, 1872 (specimen in BMNH); Anolaima, at c.4°46'N 74°28'W, 1913 (specimen in AMNH), this being the probable source of many specimens labelled "Bogota" (Chapman 1917a), of which there are over 27 in various museums; Subía, 1,900 m, at 4°34'N 74°27'W, 1913 (Chapman 1917a); La Aguadita, at 4°25'N 74°20'W (Rodríguez and Hernández Camacho 1988); Silvania, at 4°24'N 74°24'W (Rodríguez and Hernández Camacho 1988); El Roble, 2,450 m, at 4°23'N 74°19'W, 1913 (Chapman 1917a); Fusagasugá, 1,850 m, at 4°21'N 74°22'W, 1913 (Chapman 1917a). All west slope specimens thus appear to have been taken in the upper subtropical zone at 1,850-2,450 m, perhaps as low as 1,500-1,600 m (Villa Gómez, Anolaima, Silvania).

East slope Localities are: (*Boyacá*) Macizo de Tamá, at c.7°25'N 72°26'W, i.e. close to the border with Venezuela (see Remarks 1); Boca del Monte, according to Paynter and Traylor (1981) at c.2,250 m, north-west of and near Chinivaque, which is at 6°09'N 72°20'W, 1917 (specimens in CM); upper río Cusiana at 2,000-3,000 m, this river rising on Páramo de Toquilla, which is at c.5°37'N 72°50'W, October 1967 and July 1984 (specimens in ICN and IND; see Remarks 2) and sightings in 1977 (Hilty and Brown 1986); Laguna de Tota, (3,015 m), at 5°33'N 72°55'W, 1963 (Hilty and Brown 1986); Ramiriquí, at c.5°24'N 73°20'W (Hilty and Brown 1986); (*Casanare*) La Salina (untraced), where two birds were taken at Los Arrayanes, Vereda Rodrigoque (specimens in ICN); (*Cundinamarca*) Páramo de Guasca (c.3,000 m), at 4°55'N 73°52'W (Forshaw 1981, Rodríguez and Hernández Camacho 1988; specimen in ICN); Guasca, (2,720 m), at 4°52'N 73°52'W; below Páramo de Choachi, 2,980 m, at 4°33'N 73°58'W; Choachi, (1,966 m), at 4°32'N 73°56'W (all from Rodríguez and Hernández Camacho 1988); Páramo Chingaza, including Chingaza National Park and adjacent areas (see Measures Taken), at 3,100-3,400 m, at c.4°31'N 73°45'W (Hilty and Brown 1986, Rodríguez and Hernández Camacho 1988, L. Rosselli *in litt.* 1991); Fómeque, 2,000 m, at 4°29'N 73°54'W (Rodríguez and Hernández Camacho 1988); the Monterredondo–El Calvario road, close to the former (4°17'N 73°48'W), at 1,800-2,000 m (F. G. Stiles *per* L. Rosselli *in litt.* 1991; see Remarks 3). East slope records thus range from 1,800 to 3,400 m.

There are three specimens in BMNH collected in 1914 at Peños which, however, cannot be located; it may well, however, be El Peñon, at 4°26'N 74°18'W. Rodríguez and Hernández Camacho (1988) suspected that the species occurs as far south as Páramo de Sumapaz, western Meta department (at 3°45'N 74°25'W).

POPULATION Although reported "common" in the subtropical zone on the west slope in Cundinamarca by Chapman (1917a), there seem to be no records after 1913, and the region is now mostly deforested (Ridgely 1981a); a few forest patches, harbouring many other bird species, still exist, but the parakeet could not be found in one of these during intense fieldwork from April 1972 to January 1973 at Finca Rancho Grande, 1,700 m, 4°36'N 74°20'W (Munves 1975). On the east slope the parakeet ranges over 300 km from north-west Boyacá to the Bogotá region in Cundinamarca, and it was reported fairly common in the upper río Cusiana valley in February 1977, with over 40 seen and heard (Hilty and Brown 1986). Nevertheless, there has been a steep decline throughout Cundinamarca (Orejuela 1985). In Chingaza National Park small numbers were seen daily from September to November 1979 (Hilty and Brown 1986), and students from Universidad de los Andes have encountered it in the park on virtually all their field trips (F. R. Lambert *in litt.* 1989). However, the population on the east slope presumably continues to diminish rapidly, as there seems no reason to believe that the deforestation reported by Ridgely (1981a) should have ceased.

ECOLOGY The Flame-winged Parakeet inhabits humid upper subtropical and temperate forest at 1,850-

3,000 m, where it sometimes flies over, and even feeds in, adjacent clearings amongst stubble, as well as elfin woodland and regenerating second growth at 3,000-3,400 m (Forshaw 1981, Hilty and Brown 1986, F. R. Lambert *in litt.* 1989). Forshaw (1981) reported it a bird of cold montane moorlands, although Ridgely (1981a) suspected that this is at best only a seasonal phenomenon. Rodríguez and Hernández Camacho (1988) described the habitat as often clouded Andean and subandean forest (including *Weinmannia tormentosa*, *Quercus humboldtii* and other communities), secondary forest, subpáramo and peatbog páramo with bushes. Recent studies in and near Chingaza National Park by L. Rosselli (*in litt.* 1991) have indicated that the species occurs in páramo and subpáramo with scattered small forest patches (with *Clusia* trees common), also in an area of forest in which the dominant trees are *Clusia* spp., *Weinmannia* spp., *Brunellia colombiana* and several Melastomataceae.

Food includes blueberries (“mora”) and other fruits, such as those of *Cecropia* (data on skins in ICN, IND). Observational records are of fruit of *Clusia* spp., *Ficus* sp. and *Brunellia colombiana*, and by report blackberries *Rubus*, the seeds of *Espeletia uribei*, and cultivated maize (L. Rosselli *in litt.* 1991).

Birds collected in March and April on the west slope in Cundinamarca were not in breeding condition (specimens in AMNH). Two from July (río Cusiana) had developing gonads, one of two in August (Casanare) had developed gonads, while four of five from October (río Cusiana) had developed gonads (specimens in ICN, IND), as did five from Laguna de Tota in the same month (Olivares 1971), suggesting breeding in this and adjacent months. This parakeet usually occurs in small fast-flying bands of 6-14 that behave like others of the genus (Hilty and Brown 1986).

THREATS Rapid deforestation poses a threat to the species, although it is in no immediate danger of extinction, being still fairly common locally and with much habitat still remaining in Boyacá (Ridgely 1981a, S. L. Hilty *in litt.* 1986). The Laguna de Tota area is now nearly totally deforested (R. S. Ridgely *in litt.* 1989). A road is to be built through Chingaza National Park, and this will probably affect an important forest area for the parakeets (L. Rosselli *in litt.* 1991). Except as pets locally (L. Rosselli *in litt.* 1991) the parakeet has apparently never been held in captivity, and certainly not outside of Colombia (Ridgely 1981a). Birds are occasionally hunted by local farmers in retaliation for their feeding on maize crops, but this is likely to become a serious problem only after further deforestation (L. Rosselli *in litt.* 1991).

MEASURES TAKEN The Flame-winged Parakeet occurs in Chingaza National Park, but fieldwork there in 1991 suggested that most of the local population remains outside the park boundaries (L. Rosselli *in litt.* 1991). However, a small (roughly 1,000-2,000 ha) forest just outside the western part of the park, called Reserva Florestal del Río Blanco, is probably very important for the species; 400 ha have already been purchased by the Empresa de Acueducto (L. Rosselli *in litt.* 1991). The 1,200 ha private Carpanta Biological Reserve, 4°35'N 73°40'W, also adjacent to Chingaza, harbours a population of the species, mainly in its upper reaches (L. Rosselli *in litt.* 1991; see *Fundación Natura Annual Report* 1989: 5-6; 1990: 4-6; coordinates from L. M. Renjifo *in litt.* 1992); so does Valle de Jesus Forest, c.4°50'N 73°40'W, this being a communal reserve in need of more formal protection (L. M. Renjifo *in litt.* 1992).

MEASURES PROPOSED It is important that certain areas still with forest be formally and effectively protected while there is still forest left to protect (notably in Boyacá); proper management of the parks already established should also be ensured (Ridgely 1981a, Orejuela 1985). The Río Blanco Reserve requires further support in order to ensure its survival and that of the important population of Flame-winged Parakeets it harbours (L. Rosselli *in litt.* 1991). Pisba National Park north-east of Laguna de Tota and Sierra Nevada de Cocuy National Park on the border of Boyacá and Arauca departments (see Hilty and Brown 1986) are two protected areas that deserve to be investigated for presence of this species. The significance of the Monterredondo area has been greatly enhanced by a recent discovery there that must make this one of the highest priority sites for conservation in the species's range (see Remarks 3). More fieldwork is needed to establish whether it still exists on the west slope in Cundinamarca. Work is also needed to determine the birds' movements and annual requirements, since without such information it is impossible to manage the species in the long term (L. Rosselli *in litt.* 1991).

REMARKS (1) This record is from J. I. Hernández Camacho (verbally 1991), who recalls the species's mention at this locality in a book by a missionary; but the name and author of the book have escaped his

memory. (2) The five 1967 specimens in ICN from the río Cusiana are labelled as from Hacienda Comijoque; the two in IND are also from this hacienda, but also labelled “Município Pajarito, Inspección Policia Corinto, 2,000 m”. (3) The area at Monterredondo forms the type- and only locality of a new antpitta *Grallaria* (see *Wilson Bull.* 104, 1992), and hence is of extreme importance: steps are clearly needed to secure the region against further degradation (F. G. Stiles *in litt.* 1992).