

This poorly known parrot is found very locally in temperate Andean forests in Colombia, Ecuador and Peru, in the first two of which it has suffered from much habitat loss; its nomadism, which may be related to a heavy dependence on Podocarpus cones, renders it highly problematic to conserve.

DISTRIBUTION The Golden-plumed Parakeet is known from at least 70 specimens, and has been recorded from at least 30 localities scattered through the Andes in Colombia, Ecuador and Peru.

Colombia The species is known from two regions on the west slope of the Central Andes (all coordinates, unless otherwise stated, are from Paynter and Traylor 1981), as follows:

the Nevado del Ruiz–Nevado del Tolima region on the borders of Tolima, Risaralda, Quindío and Caldas departments (in and around Los Nevados National Park), localities being Hacienda Jaramillo, over 3,000 m, at 4°47'N 75°26'W, September 1918 (Carriker 1955a; nine specimens in CM, all labelled “Santa Ignacia”); above Santa Rosa de Cabal, recently (Hilty and Brown 1986); Laguneta, 3,050 m, at 4°35'N 75°30'W, April 1942 (specimen in ANSP); Alto Quindío Acaime Natural Reserve, 4°37'N 75°28'W, and the nearby Cañon del Quindío Natural Reserve, on the west slope of the Central Andes in Quindío, ranging into adjacent forest on the east slope in Tolima, and present throughout the year (E. Murgueitio R. *in litt.* 1987; also Renjifo 1991, L. M. Renjifo *in litt.* 1992, whence coordinates; see Ecology); Rincón Santo, Salento, 2,800 m, December 1989 (J. A. Giraldo *in litt.* 1992); and Ucumarí Regional Park, Risaralda, recently (LGN);

the Volcán Puracé region in Cauca department, localities being: Las Papas valley, río Caquetá, 3°08'N 64°46'W, eight seen in February 1988 (Negret and Acevedo 1990); río Aguas Blancas, at 2°58'N 76°14'W, February 1954 (Carriker 1955a; coordinates from LGN); Cerro Munchique, at c.2°32'N 76°57'W (Lehmann 1957; Negret and Acevedo 1990 place this within the national park); Gabriel López, 2,835 m, at 2°29'N 76°18'W, February 1955 (specimen in USNM); Laguna San Rafael and in canyons or over the largely forested north-west end of Puracé National Park, December 1982 and more recently (Hilty and Brown 1986, M. Pearman *in litt.* 1988, B. M. Whitney *in litt.* 1991), with several flocks of 8–12 birds (a total of 31 on one day in May 1989; Negret and Acevedo 1990) near Laguna San Rafael, c.3,350 m, and near Quebrada Tierra Adentro, c.3,200 m, March 1987, when c.60 were seen (M. Pearman *in litt.* 1989), and February 1989 (F. R. Lambert *in litt.* 1989); Puracé, 2,900 m, at c.2°24'N 76°27'W, February 1954 (five specimens in USNM and YPM); Termales de San Juan, 2°20'N 76°05'W, 12 seen in June 1986 (Negret and Acevedo 1990; coordinates from LGN); Coconuco, 3,050 m, at 2°20'N 76°28'W, June 1939 (seven specimens in ANSP *contra* Carriker 1955a, who believed them all in Sweden), four seen in January 1983 (B. M. Whitney *in litt.* 1991) and six seen in May 1989 (Negret and Acevedo 1990); río Quilcacé, Sotará, c.2°12'N 76°31'W, 23 seen in February 1990 (Negret and Acevedo 1990; coordinates from LGN); río San Francisco canyon, c.1°13'N 77°17'W, where two flocks of 13 and 21 were seen in April 1989 (Negret and Acevedo 1990; coordinates from LGN).

The view that the species may occur in the intervening region (Hilty and Brown 1986) is borne out by a record from Bolo Azul (untraced), Cauca department, in November 1989 (Negret and Acevedo 1990), while to the south of the second main area it has been recorded on the east slope of Nariño at Llorente, 1,800 m, at 0°49'N 77°37'W (Fitzpatrick and Willard 1982), with a flock heard on the east shore of Lago del Guamés (= La Cocha) in Tungurahua Natural Reserve in April 1992 (L. M. Renjifo *in litt.* 1992).

Ecuador The species is known from four or five localities (coordinates, unless otherwise stated, are from Paynter and Traylor 1977): (*Imbabura*) Pimampiro (c.2,000 m) on the west slope, at 0°26'N 77°58'W, September 1931 (two specimens in FMNH); (*Azuay*) recent sightings at 3,100–3,400 m at Río Mazan, adjacent to Cajas National Recreation Area, west side of the interandean plateau, at 2°52'S 79°08'W (Gretton 1986, J. R. King verbally 1988, M. Hancock *in litt.* 1989; location and coordinates read from LANDSAT 1987 and IGM 1981); (*El Oro*) Taraguacocha, 2,970–3,350 m, in the Chilla mountains, at 3°40'S 79°40'W, August 1920 (two specimens in AMNH and MCZ); (*Morona-Santiago*) sightings and tape-recordings in June 1984 and 1987 at San Vicente, 3,100–3,200 m, Zapote Najda mountains, eastern slope of the Andes near the Azuay border, at c.3°1'S 78°38'W (NK; coordinates read from IGM 1981); (*Loja*) 7 km north-east of San Lucas, 3,100 m, at 3°42'S 79°13'W, September 1990 (one in MECN collected from a flock of 35); Acanama near San Lucas, 3,000 m, at 3°42'S 79°13'W, recently (Bloch et

al. 1991, whence coordinates); the Vilcabamba area, September 1982 (Lemire 1991); between Yangana and Valladolid, c.3,100 m, at 4°27'S 79°10'W, recently (P. Greenfield *in litt.* 1989, Bloch *et al.* 1991); Podocarpus National Park, at c.4°06'S 79°10'W, February, May and August 1989 (M. Hancock *in litt.* 1989, Bloch *et al.* 1991; coordinates read from IGM 1981).

Peru There are no records from Cerro Chinguela, Piura, northern Peru (Parker *et al.* 1985), but further east and south (coordinates from Stephens and Traylor 1982) there are records from: (*Cajamarca*) locality unspecified (Ridgely 1981a); (*Amazonas*) Cordillera Colán, 1,390-3,125 m, at c.5°34'S 78°17'W, August and September 1978 (specimens in LSUMZ); (*San Martín*) Puerto del Monte, c.3,250 m, c.30 km north-east of Los Alisos, at c.7°32'S 77°29'W, August 1981 (three specimens in LSUMZ); (*La Libertad*) Cumpang, 2,400 m, at 8°12'S 77°10'W, August 1900 (Ménégaux 1910); Mashua, 3,350 m, east of Tayabamba, on Ongón trail, at c.8°12'S 77°14'W, September 1979 (specimen in LSUMZ); (*Huánuco*) Acomayo region (Bosque Shaigua, Bosque Tapra, Mision Punta, Rosapampa, Huailaspampa, Hacienda Huaravilla, Zapatagocha, Carpish Tunnel), 2,400-2,750 m, Carpish Mountains, north-east of Huánuco, at 9°40-46'S 76°02-12'W (many specimens in ANSP, BMNH, FMNH and LSUMZ), with several recent sightings (Parker and O'Neill 1976, Forshaw 1989, NK); (*Pasco*) Rumicruz, 2,950 m, at 10°44'S 75°55'W, February 1922 (specimen in AMNH); (*Junín*) Huacapistana, at 11°14'S 75°29'W, April 1930 (two specimens in ANSP); Maraynioc, "3,050-3,950 m", at 11°22'S 75°25'W (type: von Berlepsch and Stolzmann 1894); (*Cusco*) between Shintuya and Paucartambo, 2,200 m, flock of 25 observed, July 1989 (R. S. Ridgely *in litt.* 1989).

POPULATION The status of this species is difficult even to guess at, owing to its nomadic behaviour and inaccessible haunts (see Ecology), factors which certainly help explain why it has been judged very rare (Ridgely 1981a). Most records are of small flocks of 6-10 individuals (Ridgely 1981a, Forshaw 1989, Hilty and Brown 1986, NK), but larger flocks certainly still occur (see below), and in Alto Quindío the mean flock size was 19 (Renjifo 1991). Nevertheless, numbers in Colombia are indisputably small and vulnerable (Negret and Acevedo 1990). In Ecuador there is no recent information concerning its occurrence in the north-west, but a flock of 18-22 birds was seen almost daily at Río Mazan in 1986 and 1987 (Gretton 1986, J. R. King verbally 1988), and on some days an additional flock would join to form a flock of 41-42 (Gretton 1986) or even 50 birds (J. R. King verbally 1988), and judging from the extent of apparently suitable habitat there (read from LANDSAT 1987: NK) the population at Río Mazan and the adjacent Cajas National Recreation Area may number several hundred (NK; see also King 1989). In the far south up to 100 birds were present near Vilcabamba in September 1982, but this appeared unusual (Lemire 1991). The species is very local and uncommon in Peru (Parker *et al.* 1982, J. W. Terborgh *in litt.* 1986), but if it proves widespread there, as surmised by Ridgely (1981a), total numbers may reach thousands.

ECOLOGY The Golden-plumed Parakeet normally inhabits temperate cloud-forest and elfin woodland at 2,400-3,400 m, mean 2,875 m (Ridgely 1981a, Graves 1985, Hilty and Brown 1986), in Ecuador notably *Podocarpus* forest (Gretton 1986), but occasionally it may be found as low as 1,400 m (see Distribution); in Peru it is a bird of "stunted timberline forests" (O'Neill 1987). Birds usually perch largely hidden in the canopy and rarely stay more than 5-10 minutes in each tree (A. Gretton verbally 1988, NK). In Puracé National Park birds roost in the páramo zone above 3,000 m and at dawn descend in compact, noisy flocks to the remnant Andean woodlots in the steep canyons (Negret and Acevedo 1990).

Of 25 perches recorded in one day in early August 1986 at Río Mazan, 20 were in *Podocarpus* trees, and all positive records of feeding at Río Mazan in August and September 1986 and 1987 concerned *Podocarpus* cones (Gretton 1986 and verbally 1988, J. R. King verbally 1988, King 1989). Of 19 feeding observations in Alto Quindío Acaime Natural Reserve, Colombia, 11 involved fruit of *Podocarpus oleifolius* and eight those of *Prumnopitys montanus*; visits to fruiting trees by a flock might last an hour and a half, but generally were much shorter and involved much nervous flying between trees (Renjifo 1991). Birds also forage on *Croton* seeds, fruits of *Ficus* and Melastomataceae, and, according to local reports, cultivated maize (Negret and Acevedo 1990, Renjifo 1991). One stomach of a September bird in the eastern Andes of Ecuador held over 500 tiny seeds, one seed 5x3 mm, sand and a little earth (NK). If the birds depend largely on cones, they may suffer the same unpredictability in crops that make both

species of *Rhynchopsitta* parrots in Mexico nomadic (see relevant accounts). The species is certainly nomadic, such that it may disappear from a site after being recorded there for many years, only to reappear much later (TAP), and there are records of flocks passing over non-forested regions in Colombia (Hilty and Brown 1986) and Ecuador (Gretton 1986, J. R. King verbally 1988); at Río Mazan it was considered to be seasonal outside the breeding season (King 1989).

The only records of breeding are two laying females and a male with greatly enlarged testes all taken on 26 February at Puracé, Colombia (specimens in USNM, YPM), two birds mating in a flock of eight individuals, early August 1986 at Río Mazan (A. Gretton verbally 1988), and birds apparently nest-prospecting in holes in dead *Ceroxylum quindiuense* palms in Alto Quindío, Colombia, in May 1990 (Renjifo 1991).

THREATS In Colombia and perhaps Ecuador numbers have declined owing to heavy deforestation, while the population in Peru seems to be stable (Ridgely 1981a, Negret and Acevedo 1990). The land in Caldas, Risaralda, Quindío and Tolima in Colombia is now largely deforested, as is the region surrounding Volcán Puracé (Ridgely 1981a), and indeed the intervening area has suffered similarly (R. S. Ridgely *in litt.* 1988). The nomadic or erratic movements of the species suggest that it may be particularly at risk from loss of habitat, and render it highly problematic to conserve simply through protected areas. Selective logging of *Podocarpus* could cause the elimination of local populations (L. M. Renjifo *in litt.* 1992). Hunting is also identified as a problem in Colombia, where the species is sometimes trapped as a “pest” on maize crops (Negret and Acevedo 1990), although the numbers involved must be small. Trade appears to be no problem: birds are virtually unknown in captivity (Ridgely 1981a).

MEASURES TAKEN The species is known to occur (see Distribution) in nine protected areas: (Colombia) Alto Quindío Acaime, Cañon del Quindío and Tungurahua Natural Reserves, Ucumarí Regional Park, Munchique, Puracé and Los Nevados National Parks, (Ecuador) Río Mazan (now apparently effectively protected: see equivalent section under Violet-throated Metaltail *Metallura baroni*) and Podocarpus National Park, and (Peru) Río Abiseo National Park; however, it undoubtedly occurs in Manu National Park, Peru (R. S. Ridgely *in litt.* 1989).

MEASURES PROPOSED More research on this poorly known parrot is needed before measures can be taken (Ridgely 1981a). In particular, the causes of its nomadism urgently require study and, assuming that these are related to a patchy and unpredictable food supply, the forests that appear to provide its needs with greatest frequency (including for breeding) should be catalogued, mapped and, as far as possible, given protection. The recent record based on voice from Tungurahua Natural Reserve, Colombia, should be followed up, particularly as *Podocarpus oleifolius* is abundant there (L. M. Renjifo *in litt.* 1992).

The Golden-plumed Parakeet is sympatric with a large number of other threatened species, whose best interests should also be considered in any initiatives: for lists of these species and details of other proposals see the equivalent sections under Bicoloured Antpitta *Grallaria rufocinerea* (for Alto Quindío Acaime Natural Reserve), Multicoloured Tanager *Chlorochrysa nitidissima* (for Ucumarí Regional Park), Colourful Puffleg *Eriocnemis mirabilis* (for Munchique National Park), Bicoloured Antpitta (for Puracé National Park), Rufous-fronted Parakeet *Bolborhynchus ferrugineifrons* (for Los Nevados National Park), Violet-throated Metaltail (for Río Mazan) and Bearded Guan *Penelope barbata* (for Podocarpus National Park).

REMARKS This bird occupies its own genus, but as its calls are somewhat like those of larger species of *Aratinga* it is probably referable to that genus (R. S. Ridgely *in litt.* 1989 and in Hilty and Brown 1986), although B. M. Whitney (*in litt.* 1991) has pointed out that some calls are distinctive (see also comments in Forshaw 1989), its facial plumes are also distinctive, and it neither overlaps *Aratinga* altitudinally nor is replaced geographically by a member of that genus.