

This guan occupies a fairly restricted range in humid montane forest in southern Ecuador and northern Peru, and is probably declining owing to habitat destruction and hunting; an important reserve for it is Podocarpus National Park, Ecuador, but several others in Peru, notably on Cerro Chinguela, are needed.

DISTRIBUTION The Bearded Guan is confined to the southern quarter of Ecuador and adjacent north-western Peru (see Remarks 1). The record from Tamiapampa, Amazonas (Taczanowski 1882, 1884-1886, Hellmayr and Conover 1942), is undoubtedly erroneous (see Remarks 2). Localities for the species (north to south within provinces and departments respectively, with coordinates, unless otherwise stated, from Paynter and Traylor 1977, Stephens and Traylor 1983 or read from IGM 1989), are:

Ecuador (*Azuay*) río Mazan, above 3,050 m, at c.2°52'S 79°10-11'W (M. Pearman *in litt.* 1991; guans here were reported to be Andean Guan *Penelope montagnii* by Robinson 1988, so corroboration is desirable); Guasipamba, Ingapucará, Santa Isabel, at c.3°10'S 79°30'W (sightings in September 1990: F. Toral verbally 1990, who also reported a sighting of Andean Guan just north-east of Pucará; again corroboration is desirable); río Rircay (3°24'S 79°21'W in OG 1957b) where a tail-feather of this species (not *montagnii*) was found in 1991 (R. Williams *in litt.* 1992); (*El Oro*) Taraguacocho (the type-locality), Cordillera de Chilla, at 3°40'S 79°40'W (Chapman 1921, 1926; specimen in AMNH); (*Loja*) Huaico, 2,800 m, untraced, although there is an Angu Huiacu just south-west of Ona (just inside Loja), i.e. at c.3°30'S 79°10'W (read from IGM 1969b) (Hellmayr and Conover 1942; specimen in FMNH collected August 1939); between Selva Alegre and Manu, 2,850-3,000 m, Cordillera de Chilla, at 3°31'S 79°22'W (observed mid-May 1989: Rahbek *et al.* 1989; see Population); Acanama near San Lucas, c.3,000 m, at 3°42'S 79°13'W (observed mid-June 1989: Rahbek *et al.* 1989; coordinates from Bloch *et al.* 1991); San Lucas (2,500-2,750 m), at 3°45'S 79°15'W (apparently misquoted as San José by Vaurie 1966) (Ogilvie-Grant 1893, Chapman 1926; two specimens in BMNH); Finca de D. Espinosa, north side of Loja-Zamora road, 2,550 m, at 3°58'S 79°09'W (D. Espinosa and F. R. Lambert verbally 1991); every surveyed locality along the west slope of Podocarpus National Park from the Cajanuma area south to Quebrada Honda, 2,700 m (occasionally to 2,900 m), at c.4°05-10'S 79°10'W (evidently year-round: Rahbek *et al.* 1989, C. Rahbek *in litt.* 1992; see Threats, Measures Proposed); Malacatos, 1,600 and 1,900 m, at 4°14'S 79°15'W (Hellmayr and Conover 1942; four specimens in FMNH collected August 1939); Loma Angashcola, 2,550-3,100 m, at 4°34'S 79°22'W, and Cofradia, 2,600-2,740 m, at 4°34'30"S 79°22'W (large population found in July-August 1990: R. Williams *in litt.* 1991);

Peru (*Piura*) Cerro Chacas, 2,625 m, Ayabaca province, at 4°36'S 79°44'W (pair observed and several birds heard 23-24 September 1989: Best and Clarke 1991); slope of Cerro Mayordano, 2,950 m, c.44 km by road east-south-east of Ayabaca, Ayabaca being at 4°38'S 79°43'W (three specimens in MHNJP collected in late September 1987); both slopes of Cerro Chinguela, 2,400-2,900 m, Piura and Cajamarca departments, at c.5°07'S 79°23'W (Parker *et al.* 1985; two specimens in LSUMZ collected August 1975 and June 1980); Huancabamba, 2,600 m, at 5°14'S 79°28'W (Vaurie 1966; specimen in FMNH collected May 1954; see Remarks 3); below Cruz Blanca, 1,800-3,000 m, at c.5°20'S 79°32'W (sightings: Parker *et al.* 1985); Palambla, 1,220 m, at 5°23'S 79°37'W (Carriker 1934; two specimens in ANSP collected June 1933); Abra de Porculla, 1,830 m, Piura, near border of Lambayeque department, at 5°51'S 79°31'W (Carriker 1934; two specimens in ANSP collected May 1933); (*Lambayeque*) upper reaches of Quebrada Paltorán, mainly above 1,500 m, but regularly down to 1,200 m, at 5°44'S 79°40'W (Ortiz 1980; coordinates read from IGM 1966); Bosque de Chiñama, 2,200-2,500 m, Ferreñafe province, at 6°02'S 79°27'W (sightings by I. Franke and others in August 1988: T. S. Schulenberg *in litt.* 1989; coordinates read from IGM 1967); (*Cajamarca*) Tambillo, east slope of West Andes, at 6°10'S 78°45'W (Taczanowski 1879, Hellmayr and Conover 1942; two specimens in MHNJP: Koepcke 1961); Llama (2,100 m), at 6°31'S 79°08'W (Koepcke 1961; two specimens in MHNJP collected April 1951); 7 km north and 3 km east of Chota, 2,635 m, Chota at 6°33'S 78°39'W (two specimens in LSUMZ collected September 1977); Hacienda Udima, c.1,800 m, near Taulis, at 6°49'S 79°06'W (Koepcke 1961; specimen in MHNJP collected December 1952); trail to Monte Seco, 1,800 m, río Saña drainage, possibly the same as Hacienda Montesco at c.6°52'S 79°05'W (skeleton in FMNH collected May 1987); and Hacienda Taulis, 1,700, 2,400, c.2,500 and 2,700 m, at 6°54'S 79°03'W (Koepcke 1961; five specimens, two in AMNH collected June and July 1926, three in MHNJP collected February and August 1952 and April

1954).

POPULATION The species was described in the last century as “common” in northern Peru (Taczanowski 1884-1886), and it is probably true that this was its status in both countries until habitat loss became so widespread (C. Rahbek *in litt.* 1992). It was regarded as uncommon in Peru by Parker *et al.* (1982), and on Cerro Chinguela it was found to be uncommon and probably decreasing (Parker *et al.* 1985). It may, however, still be fairly common in unexplored areas within its range, and there are no recent reports of its status in the vicinity of Hacienda Taulis (T. S. Schulenberg *in litt.* 1988), where seven of the known 29 specimens were collected. The Ecuadorian population in 1989 was estimated to be between 500 and 3,000 pairs, probably about 1,500 pairs; the Cordillera de Chilla apparently has the greatest density, but only some 10 patches of habitat (e.g. 4 km² in extent), each holding 5-10 pairs (Rahbek *et al.* 1989, C. Rahbek *in litt.* 1992); about 400 km² of habitat in Cordillera Cordoncillo and Páramos de Matanga (the latter now virtually devoid of forest: NK) might hold the species (although it has yet only been found in the southern end of this region); and about 1,000 km² of habitat exists from Podocarpus National Park to the Peruvian border, possibly more, especially if much forest remains below 2,500 m on the east slope; for the two last areas a density of one pair per km² was estimated (M. K. Poulsen, C. Rahbek, J. F. Rasmussen and H. Bloch *in litt.* 1990).

ECOLOGY This species inhabits humid montane forest and cloud-forest (Delacour and Amadon 1974, Parker *et al.* 1985, Rahbek *et al.* 1989, B. J. Best and C. T. Clarke *in litt.* 1989), usually between 1,500 and 3,000 m, but regularly down to 1,200 m in Lambayeque (see Distribution). Recent observations were mostly of pairs or small groups of 3-4 (Parker *et al.* 1985, Rahbek *et al.* 1989, B. J. Best and C. T. Clarke *in litt.* 1989). At Chota they were found to be remarkably tame (T. S. Schulenberg *in litt.* 1988), and a similar behaviour was seen in three localities in Ecuador (Rahbek *et al.* 1989).

There are few reliable data on food, save that a pair was seen eating yellowish green fruits (slightly larger than cherries) of an unidentifiable (probably undescribed) tree on several occasions in Podocarpus National Park (Rahbek *et al.* 1989). Although not proven, the large amount of undigested seeds in its droppings makes it seem likely that the guan is an important disperser of seeds (NK).

A report in Delacour and Amadon (1973) that the nesting season coincides with that of the Wattled Guan *Aburria aburri*, with chicks being met with from December to February, precisely echoes one in Taczanowski (1884-1886), and is supported by an observation of two adults with a two-thirds grown chick in Podocarpus National Park, March 1990 (B. M. Whitney *in litt.* 1991); however, at Acanama a pair with chicks was observed on 17 June (Bloch *et al.* 1991), on Cerro Chinguela a female with two small young was found on 29 July (Parker *et al.* 1985), at Cofradia a very recently fledged juvenile was in the company of its parents (including roosting on what was believed its former nest) in late July 1990 (R. Williams *in litt.* 1992), and a female from Taulis collected on 24 July had slightly enlarged ovaries (specimen in AMNH).

THREATS Ninety-nine per cent of Podocarpus National Park is out to mining concession (deposits of gold exist within its area), and although up to 1991 only a small part was being mined the situation remains very unsatisfactory, particularly with the development of new plans involving a Norwegian company (ECUNOR) and concomitant considerations of reducing the park's legal extent to one-third of its present size (C. Rahbek *in litt.* 1992, also Toyne and Jeffcote 1992, Sheean 1992; see Measures Proposed). Moreover, a cadre of illegal independent goldminers is already present in the park, and is capable of inflicting as much damage on it in the long term as the Norwegian company (E. P. Toyne *per* C. Rahbek verbally 1992). Pressure from settlers in the region is relatively high, and will greatly increase in future; at Quebrada Honda, for example, some dwellings have already been established inside the park boundary and small-scale logging is occurring (C. Rahbek *in litt.* 1992), and colonists are clearing forest at río Bombuscara and do not accept the park as a legally established entity (Toyne and Jeffcote 1992).

Hunting and habitat destruction are blamed for the probable decline of the Bearded Guan in northern Peru (Parker *et al.* 1985); forest at Abra de Porculla and Palambra is now mostly destroyed within 10 km of the highways in both areas, although good habitat still exists to the north and south of Palambra (T. S. Schulenberg *in litt.* 1989, TAP). The confiding nature of the species renders it especially vulnerable to hunting (Rahbek *et al.* 1989). In 1977 the species was noted to be hunted at Chota by the few people in this area who then had guns (T. S. Schulenberg *in litt.* 1988). In the río Rircay it is hunted, according to

locals (R. Williams *in litt.* 1992). Increased mining in Podocarpus National Park will inevitably increase the hunting pressure on the species, as the workforce will remain poor and in need of supplementary protein (C. Rahbek *in litt.* 1992).

MEASURES TAKEN The species occurs in Podocarpus National Park, Ecuador, established in 1982 and covering 146,000 ha (Rahbek *et al.* 1989, Toyne and Jeffcote 1992), but see Threats. It may also occur at Río Mazan, now apparently effectively protected (see equivalent section under Violet-throated Metaltail *Metallura baroni*).

MEASURES PROPOSED Only one large protected area, Podocarpus National Park, contains viable populations of this and other upper montane forest and páramo endemics of southern Ecuador and adjacent northern Peru; it harbours a further six threatened species, namely Golden-plumed Parakeet *Leptosittaca branickii*, White-breasted Parakeet *Pyrrhura albipectus*, Red-faced Parrot *Hapalopsittaca pyrrhops*, Neblina Metaltail *Metallura odomae*, Coppery-chested Jacamar *Galbula pastazae*, and Masked Mountain-tanager *Buthraupis wetmorei* (see relevant accounts; also Bloch *et al.* 1991). This park is in urgent need of better protection and management (Bloch *et al.* 1991), not only because of new plans to mine a very large portion of it (see Threats) but also because a large part of the Bearded Guan population in the region occurs just outside the park boundaries; with relatively minor extensions the park could become the world stronghold of the species (C. Rahbek *in litt.* 1992).

Additional montane forest reserves in southern Ecuador and adjacent northern Peru are badly needed. The remaining tracts of forest in the Cordillera de Chilla (El Oro, Ecuador) not only support large populations of the present species, but may also be a stronghold for other threatened species such as the Red-faced Parrot (see relevant account). Forests on the eastern slopes of Cerro Chinguela (Piura, Peru) support these and a variety of additional little-known species, including the near-endemic Neblina Metaltail, and the only Peruvian populations of more than 20 additional cloud-forest species (Parker *et al.* 1985). Several large areas of upper montane forest (at 2,000-3,300 m) still exist on the western slope of the Andes in Piura between Ayabaca and Cruz Blanca (I. Franke verbally 1991), and a reserve in this region would protect a great diversity of montane plant and animal species confined to a small area on the western slopes of the Andes (TAP). Large patches of similar forest also survive to the south, in the upper río Sana and río Chanchay valleys in central Cajamarca (including known collecting sites for the Bearded Guan such as Chugur, Taulis, Seques, and Paucal) (I. Franke verbally 1991).

REMARKS (1) North of Cordillera de Chilla or western Azuay (see Distribution), the Bearded Guan is replaced by the Andean Guan *Penelope montagnii*, which occurs in west Ecuador south possibly to Azuay, and in east Ecuador south at least to Cordillera Zapote-Najda, east-south-east of Cuenca, in west Morona-Santiago province near the border of Azuay (NK; specimens in ZMUC). It is yet to be established where on both the west and the east slope the two replace one another. Although not found there during a recent survey (Krabbe 1991), a high elevation species of *Penelope* may occur in Cordillera del Condor along the Peruvian border in south-east Ecuador, but it remains to be established whether it is *montagnii* or *barbata*. South and east of río Marañón *montagnii* reappears from Cordillera de Colán, Amazonas, southwards (Parker *et al.* 1985), raising the suspicion that the Bearded Guan is but a sub- or semispecies of the Andean Guan (NK).

Peruvian specimens have been separated as the race *inexpectata* (Carriker 1934, Koepcke 1961), but Carriker was apparently unaware of the existence of *barbata* when he applied the name (Hellmayr and Conover 1942), while Koepcke seems to have compared the Peruvian birds with only a single Ecuadorian specimen. Traits of the distinguishing characters of *inexpectata* (general coloration and somewhat vermiculated belly) were reported to occur in some Ecuadorian specimens by Fjeldså and Krabbe (1990), who suspected they were only signs of immaturity, so the validity of *inexpectata* seems doubtful, and it was not recognized by Delacour and Amadon (1973). (2) Birds collected in the last century at Tambillo and Tamiapampa, Peru, were originally ascribed to "*Penelope sclateri*" (Taczanowski 1884-1886), but were later identified as belonging to the *Penelope argyrotis* (Band-tailed Guan) group (of which *barbata* has been judged a race) by Hellmayr and Conover (1942, also 1932), who added: "but whether they are the same as *P. a. barbata* or a separate form with more denuded throat can only be determined by actual comparison". Actual comparison seems not to have occurred, as Vaurie (1966b, 1968), and Delacour and Amadon (1973) made no reference to this issue yet failed to mention Amazonas (for Tamiapampa) in the

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distribution of *barbata*, nor did either locality earn mention under their treatments of the Andean Guan *P. montagnii*, to which the form *sclateri* belongs. As *montagnii* has been collected in Amazonas (see Distribution), it seems likely that Taczanowski's description refers to the Tambillo specimens only (T. S. Schulenberg *in litt.* 1988). (3) This specimen is presumably from above Huancabamba to the east or west, for the town lies in a semi-arid valley devoid of forest (TAP).