

This rare furnariid is confined to a few humid patches of Polylepis woodland in the Andes of south-east Peru and, at least previously, adjacent Bolivia; its habitat is scarce and has suffered extensive (recent) clearance for firewood and lack of regeneration through burning.

DISTRIBUTION The Royal Cinclodes (see Remarks 1) is known from four areas in southern Peru and adjacent Bolivia, but may now be gone from the two southern localities (see Threats).

Peru The species is known from Cuzco, Apurímac and Puno departments, and from the evidence below it was apparently once distributed along the entire Cordillera Real, presumably restricted to humid *Polylepis* forest, a habitat now largely destroyed (Fjeldså 1987).

Cuzco A single bird was seen at 3,600 m in the Peñas canyon, near the Ollantaytambo–Quillabamba road, north of Ollantaytambo, Cordillera Vilcanota, in 1982 (Fjeldså *et al.* 1987); later in 1982 the species was photographed in a *Polylepis* woodland at 4,250 m, c.1.5–3.5 km south-west of Abra Málaga (c.13°08'S 72°19'W), a short distance from the Peñas canyon, and in December 1983 a pair in breeding condition was collected in the same wood, with an additional pair observed (Fjeldså *et al.* 1987). There are subsequent reports from the Abra Málaga wood at least up to 1988 (TAP; B. P. Walker *in litt.* 1988).

Apurímac In November 1989 it was discovered at 4,100–4,550 m in remnant patches of mature *Polylepis* woodland in the mountains south-east of Abancay (Fjeldså 1991): ten patches of habitat, each 1–4 ha in size, were found in the Cerro Runtococha and Cerro Morococha region at 13°40–41'S 72°46–47'W, with c.30 patches at 13°41–46'S 72°35–42'W, one of them being a cluster covering c.75 ha on Cerro Balcón at 13°42'S 72°42'W, the rest being only 1–4 ha each (J. Fjeldså *in litt.* 1989; coordinates read from IGM 1978a with the patches indicated by J. Fjeldså).

Puno The type-specimen was collected near the Aricoma Pass (the pass is at 4,815 m), at c.14°17'S 69°47'W, on 17 May 1931 (Carriker 1932; elevation and coordinates from Stephens and Traylor 1983). While surveys in the 1980s failed to find any tracts of habitat (see Threats), the southern parts of the Carabaya mountains were not investigated (Fjeldså 1987), and what is probably suitable *Polylepis* habitat has been seen there from the air (TAP).

Bolivia A specimen in BMNH collected by C. Buckley in 1876, overlooked for many years, is from Tilo Tilo (2,135 m, although the bird was undoubtedly taken higher), at c.16°10'S 68°00'W, Yungas province, La Paz department, Bolivia (Fjeldså *et al.* 1987; elevation and coordinates from Paynter *et al.* 1975).

POPULATION Judging from the paucity of museum specimens and field observations, the species was never common anywhere during this century. It was found to occur at low density in Apurímac in November 1989, with an estimated population of c.40 pairs in the existing (fragmented) 100–200 ha of prime habitat, each pair occupying a territory of 1.5–2 ha (J. Fjeldså *in litt.* 1990). At Abra Málaga one to two pairs have been reported annually since the rediscovery of the species in 1982 (TAP, Fjeldså *et al.* 1987, B. P. Walker *in litt.* 1988). Some of the unexplored small patches of apparently suitable habitat elsewhere in the Vilcanota mountains and the larger woodlands in the Carabaya mountains presumably hold the species, which may also occur in other remote parts of the Cordillera Real (NK). However, the species's habitat is very patchy and scarce (see Threats), so even at best the total population must be very small.

ECOLOGY The species's 1–2 km² area of semi-humid woodland at Abra Málaga is mainly *Polylepis* (2–8 m tall, growing in small dense patches rarely covering more than 100 m²) with a few *Gynoxys* trees, on a steep, north-facing slope with many rocky places, especially under the trees; the ground is covered with coarse grasses *Luzula* and thick layers of moss (Fjeldså *et al.* 1987). For much of the year the mountains are blanketed in clouds; it rains every few days (or for periods of many days), and snow several centimetres deep regularly briefly covers the ground, especially during the dry season (June–September) (Fjeldså *et al.* 1987). In Apurímac the *Polylepis incana* and *P. subsericans* woodlands at 4,100–4,600 m are exceptionally dense and lush (with strong regrowth along most edges and in clearings), most trees being 10–15 m tall with trunks 40–100 cm thick and the larger ones heavily laden with mosses and vines, notably *Salpichroa* (Solanaceae), which forms curtains 5–10 m high hanging from the canopy; the forest

floor is shady, with thick litter and moss and an undergrowth of nitrophilous plants in patches (most other *Polylepis* woods, in contrast, represent mosaic habitat with broken canopies, small gnarled trees, and minimal regeneration because of grazing and burning of grass) (Fjeldså 1991).

The bird observed for nearly 30 minutes in the upper part of Peñas canyon hopped on large, lichen-encrusted and moss-covered rocks in a boggy area bordered by shrubs and small trees, probing and flaking off large pieces of moss and earth, presumably to uncover prey items; several Bar-winged Cinclodes *Cinclodes fuscus* in close proximity were foraging in the adjacent bog rather than on the rocks (Fjeldså *et al.* 1987). One individual was observed poking at the mossy bases of *Polylepis* trees at the edge of the Abra Málaga wood in 1985, and a pair was seen probing the bases of many *Polylepis* trees and adjacent, often rocky ground in 1988 (B. P. Walker verbally 1987, *in litt.* 1988). In prime habitat in Apurímac, November 1989, birds vigorously turned over the mossy forest floor with their beaks, typically digging a 500 cm² patch down to 5 cm, tossing the moss up to 1 m away and leaving large mounds of it as if pigs had rummaged through the wood; in some places they turned over litter (*Polylepis* bark and leaves) and excavated the decaying wood of fallen trunks; a pair would probably thus work their entire territory of 1-2 ha in a year or two (J. Fjeldså *in litt.* 1990). Presumably only mature (i.e. more or less closed-canopied) woodland provides enough shade for the regeneration of the moss (J. Fjeldså *in litt.* 1990). During a snowstorm a bird was seen digging through the snow with its long beak (Fjeldså 1991). The stomach of a bird collected in Apurímac contained two 1.5 cm long weevils, possibly of the subfamily Otiorrhynchinae (ZMUC label data).

The pair collected in Cuzco in early December 1983 had enlarged gonads, but showed no trace of a brood-patch, so they were presumably at the start of the breeding season (Fjeldså *et al.* 1987), as appeared to be the case with a non-moulting female with somewhat enlarged ovae, taken in Apurímac in late November 1989 (specimen in ZMUC). The closely related Stout-billed Cinclodes *C. excelsior* builds its nest at the end of a tunnel dug in a bank by the bird itself (Graves and Arango 1988).

THREATS The *Polylepis* woodlands near Abra Málaga have been halved in extent during the last 10 years (B. P. Walker *per* J. Fjeldså verbally 1990). During a search for the species in Puno department (including the Aricoma Pass) and La Paz department, Bolivia, in 1987, none of its habitat could be found, and local inhabitants in the Aricoma region confirmed that no *Polylepis* remains there (Fjeldså 1987). The widespread burning of bunch-grass to promote its fresh growth often includes stands growing between *Polylepis* trees, and is believed to be an important factor preventing *Polylepis* from regenerating (Fjeldså 1987). In Apurímac the woodlands are also dwindling owing to widespread cutting for use as firewood, not by the few local inhabitants, who restrict their use to dead branches, but by passing caravans heading for the market in Abancay (J. Fjeldså verbally 1990).

MEASURES TAKEN A poster printed on waterproof paper, showing mature *Polylepis* woodland with some of its characteristic birds, and calling for protection of this habitat, was made by J. Fjeldså in 1990; in January 1991 a batch of these was given to the Asociación Conservación del Selva Sur (a nature conservation group based in Cuzco, Peru) for distribution in target areas; education of local families and placing of posters began in August 1991 around *Polylepis* woodland areas in Apurímac and in the southern Cordillera Vilcabamba (J. Fjeldså verbally 1991).

MEASURES PROPOSED This bird merits further searches: at Abra Málaga the species is rare, even in the woodland where it has been found, so it may occur in similar woodlands in the same region even though investigators have so far failed to detect it (Fjeldså 1987); moreover, the southern Carabaya mountains in Puno department should be investigated (see Distribution). High priority should be given to the mapping and inventory of remaining stands of *Polylepis* (Fjeldså 1987), especially in Cordillera Vilcanota, with special attention going to a large humid tract reported to exist c.50 km north-east of Inquisivi, La Paz, Bolivia (J. Fjeldså verbally 1991). Reforestation with *Polylepis* around existing woods could be initiated, and the local people employed in such efforts: “air-layering” (in which a cut is made in a small branch and kept open with a match-stick or other object, a small polythene bag with moist soil is attached around it, and after two or three weeks roots have formed, and the branch can be cut and planted) has proved the fastest way of propagating *Polylepis* trees (J. Brandbyge verbally 1991). The Tunari National Park in Cochabamba, Bolivia, clearly demonstrates how *Polylepis* regenerates and invades grassland when the latter is kept free of grazing and burning (Fjeldså 1987). Further suggestions are in

Measures Proposed under White-cheeked Cotinga *Zaratornis stresemanni*.

REMARKS (1) Although originally described as a species *Upucerthia aricomae* (Carriker 1932), Bond (1945) regarded it as a race of the Stout-billed Cinclodes *Cinclodes excelsior*, a morphologically and to some extent behaviourally similar species of bushy páramo habitats in Colombia and Ecuador (Fjeldså *et al.* 1987). This treatment has been followed by subsequent authors, but the finding of important colour-pattern differences not previously noted, as well as the habitat of the geographically very isolated *aricomae* (Fjeldså *et al.* 1987, Fjeldså and Krabbe 1990), suggest that the latter is perhaps better regarded as a full species. As the main part of *aricomae*'s range appears to have been in Cordillera Real, the vernacular name Royal Cinclodes is invented here. Vaurie (1971, 1980) considered *excelsior* (with *aricomae*) to belong to the genus *Geositta*, a view strongly resisted by observers familiar with the birds in the field (e.g. F. Vuilleumier in Vaurie 1980: 334, Fjeldså *et al.* 1987).

The *Polylepis* woodlands near Abra Málaga and in Apurímac support a rich variety of *Polylepis*-adapted birds (Parker and O'Neill 1980, J. Fjeldså *in litt.* 1990). In addition to several wide-ranging but generally local species, e.g. Tawny Tit-spinetail *Leptasthenura yanacensis*, Line-fronted Canastero *Asthenes urubambensis* (not known from the Apurímac woods), Stripe-headed Antpitta *Grallaria andicola*, Giant Conebill *Oreomanes fraseri* and Thick-billed Siskin *Carduelis crassirostris* (Parker and O'Neill 1980, Fjeldså 1987), they are inhabited by two species known from only a few scattered localities in Peru: Ash-breasted Tit-tyrant *Anairetes alpinus* and White-browed Tit-spinetail *Leptasthenura xenothorax* (see relevant accounts). The threatened White-tailed Shrike-tyrant *Agriornis andicola* may also occur sympatrically with these species at some localities (e.g. in south-central Cuzco), although it has different habitat requirements (see relevant account).