

This conebill is confined to a small area in southern Peru and northern Chile, where it appears to be an altitudinal migrant, with breeding grounds and ecological needs as yet to be positively identified, although destruction of *Polylepis* is a threat.

DISTRIBUTION The Tamarugo Conebill is known from several sightings and at least 25 specimens, seen or taken at a number of localities in Arequipa and Tacna departments, Peru, and Tarapacá province, Chile. The known localities (with coordinates from Stephens and Traylor 1983, Paynter 1988, or read from the map in McFarlane 1975), are as follows:

Peru (*Arequipa*) south-eastern slope of Nevado Chachani (c.16°12'S 71°33'W), where birds were seen at 3,950 m in July 1986 and 1987 (T. S. Schulenberg *in litt.* 1988); the slope of Picchupicchu, on the road to Puno (c.43 km by road from Arequipa, and c.20 km by road from Chiguata), where records range from 3,400 to 3,900 m (Schulenberg 1987); (*Tacna*) c.25 km by road from Tarata on the Tacna-Llave road, where the bird has been recorded at 4,050 m (Schulenberg 1987);

Chile (*Tarapacá*) head of Lluta valley, where a birds was seen in March 1989, with six seen at two sites in February 1990 (P. J. Roberts *in litt.* 1989, 1990); (in Quebrada Azapa) San Miguel (c.18°29'S 70°14'W), where a bird was seen in February 1991 (G. Kirwan *in litt.* 1991), Azapa (c.18°31'S 70°11'W), and Ausipar (18°35'S 69°53'W), whence come specimens (in LSUMZ) taken between 195 and 1,200 m; Quebrada Vitor, near Vitor (c.18°45'S 70°20'W) at sea level (McFarlane 1975); (in Camarones valley, Arica department) Taltape (c.19°00'S 69°46'W), where birds have been seen at 780 m, and Conanoxa (19°03'S 69°58'W), where birds have been seen at 400 m (McFarlane 1975); and further south, Mamiña (20°05'S 69°14'W), between 2,600 and 2,950 m (Johnson and Millie 1972, McFarlane 1975); Pica, at 1,355 m (McFarlane 1975); and near the Panamerican Highway (c.20°30'S), c.50 km from Pica, whence comes the type-specimen (Johnson and Millie 1972).

POPULATION Too little is known to give an estimate. Largest numbers recorded were in Arequipa, where a flock of 20 birds was recorded in July 1983 (NK), and the species appears to be at least locally not uncommon (see Distribution and Ecology).

ECOLOGY In Peru, where the Tamarugo Conebill has been found in arid *Gynoxys* and *Polylepis* scrub, records range from 3,400 to 4,050 m; however, in Chile records come from near sea level up to 2,950 m (Schulenberg 1987: see Distribution). In Arequipa, during June 1983, the bird was common in *Gynoxys* at 3,600 m, but less common in the *Polylepis* at 3,900 m (Schulenberg 1987); however, in July 1983 only two birds were sighted in *Gynoxys* at 3,400 m, while a flock of 20 was seen in *Polylepis* at 3,650 m at the same locality (NK). In July 1986, 1987 and 1988, birds were seen in shrubs on Chachani, the 1987 sighting being a flock of 12 or more in the uppermost *Polylepis* at 3,950 m where no Cinereous Conebills *Conirostrum cinereum* were present (T. S. Schulenberg *in litt.* 1988). In Tacna small numbers were seen in low, open *Polylepis* woodland (Schulenberg 1987).

In Chile, the conebill has been found in tree plantations of tamarugal *Prosopis tamarugo*, as well as in riverine scrub, agricultural areas, and citrus groves (Schulenberg 1987). Johnson and Millie (1972) and Tallman *et al.* (1978) suggested that it breeds at high elevations and may wander to adjacent lowlands in the non-breeding season, but in Peru it appears to be almost totally absent from the known highland site in Arequipa during the presumed breeding season (late December to early March) (Schulenberg 1987); the only record from February was of a single bird (Schulenberg 1987) in 1983, an anomalous year with copious rain on the coast and severe drought in the Andes (R. A. Hughes *in litt.* 1988). Tamarugo Conebills have been recorded foraging in groups of 4-20 individuals, resembling Cinereous Conebills in the manner they gleaned insects from leaf surfaces and twigs of trees and shrubs (Tallman *et al.* 1978, NK). Six specimens had insects in their stomachs (Schulenberg 1987), and one had what appeared to be pollen (ZMUC).

In the *Gynoxys* shrubs in Arequipa, Tamarugo Conebills were common in flocks with smaller numbers of Cinereous Conebills: in *Polylepis* woodland at higher elevations they were recorded in conspecific groups that foraged by themselves or in loose association with mixed-species flocks that contained Plain-breasted and Straight-billed Earthcreepers *Upucerthia jelskii* and *U. ruficauda*, Andean

Threatened birds of the Americas

and Streaked Tit-spinetails *Leptasthenura andicola* and *L. striata*, and Black-hooded Sierra-finch *Phrygilus atriceps* (Schulenberg 1987). In Chile the species has been found with but outnumbered by Cinereous Conebills (Johnson and Millie 1972, McFarlane 1975).

The breeding season was assumed to be between late December and early March (Schulenberg 1987), but the three known immature or juvenile females were collected in August and September (1984) in Peru (specimens in LSUMZ), and during December (1971) in Chile (Johnson and Millie 1972), with two immature or juvenile males (unossified skulls) collected in August (1984) (LSUMZ). Two not fully adult males (in LSUMZ: 50% ossified skulls) were collected in June (1983) and August (1984), and some of the birds seen on Chachani in July (1986) were in immature plumage (T. S. Schulenberg *in litt.* 1988). Rain usually falls from January to March in Arequipa (R. A. Hughes *in litt.* 1988), with just one record there from late December to early March (a bird recorded in mid-February at 3,400 m) (Schulenberg 1987). Recent records from Chile involve six birds thought to be breeding in the Lluta valley in February 1990 (where a bird has also been seen in early March), with one seen in Quebrada Azapa in February 1991 (P. J. Roberts *in litt.* 1989, 1990, G. Kirwan *in litt.* 1991). Proof of breeding has yet to be obtained, and the precise location of the breeding grounds remains a puzzle.

THREATS *Polylepis* is widely, although illegally, cut and used for charcoal, and for this reason it is almost impossible to find mature trees in accessible areas on Picchupicchu (R. A. Hughes *in litt.* 1988). It is not known if the lack of large trees has a direct effect on the conebill, but widespread destruction of suitable habitat appears to be a major problem.

MEASURES TAKEN None is known.

MEASURES PROPOSED The altitudinal movements and more generally the ecological requirements of this bird are in urgent need of assessment before any realistic conservation initiative can be designed. However, the destruction of *Polylepis* woodland is clearly a threat, and the integrity of remaining blocks of both this and *Gynoxys* (within this species's range) need to be ensured as a priority, preferably in areas where forest over a broad altitudinal range can be preserved.