

The Blue-throated Macaw is currently restricted to a small area of savanna and gallery forest in northern Bolivia, where it is exploited for the cage-bird trade although its precise whereabouts have not been discovered by ornithologists. It appears to be rare (possibly less than 1,000 birds in total) within its range and urgently requires fieldwork to determine its status and conservation needs.

DISTRIBUTION The Blue-throated Macaw (see Remarks 1) is known to be distributed in northern Bolivia, in the southern half of Beni department and in north-western Santa Cruz department, but it has never been found in the wild by field ornithologists, so that no precise data exist on its current whereabouts. There have been additional sightings and references from Argentina and Paraguay attributed to this species, at least some of which are attributed to its confusion with Blue-and-yellow Macaw *Ara ararauna* (Ridgely 1981a, Ingels *et al.* 1981).

Bolivia Records are from two departments, Santa Cruz and Beni. Apart from data on three museum skins, all information derives from trappers and dealers in the cagebird trade. Coordinates in the following account are from OG (1955a) and Paynter *et al.* (1975).

Santa Cruz The type was taken at Santa Cruz de la Sierra (480 m), Santa Cruz department, Bolivia, at 17°48'S 63°10'W, in or before 1863 (Dabbene 1920, 1921, Ingels *et al.* 1981), and there are two specimens taken on 26 January 1920, at 400 m, and 4 July 1922, at 500 m, from Buena Vista, Santa Cruz department, Bolivia, at 17°27'S 63°40'W (Ingels *et al.* 1981). A keeper at the zoological garden in Santa Cruz de la Sierra, where at that time (1983) three specimens of the macaw were kept, reported that they had been captured at San Ignacio de Velasco (300 m), at 16°22'S 60°58'W, in central Santa Cruz (Nores and Yzurieta 1986). However, the late N. Kempff Mercado reported that he had never heard of the species inhabiting this locality, that the six specimens at the Santa Cruz Zoo in 1984 had been captured on the ranch of Sr Gasser between Santa Rosa de Yacuma and Trinidad, and that another of their specimens (now dead and not preserved) had been captured near Buena Vista in western Santa Cruz (Nores and Yzurieta 1986, M. Nores *in litt.* 1989). At 10 de Mayo, a town c.75 km west of Buena Vista, Blue-and-yellow Macaws were found to be common, but no Blue-throated Macaws could be found (Nores and Yzurieta 1986). Trappers told Lanning (1982) that though they worked throughout Santa Cruz they had not found it in other than the north-western corner of the department.

Beni Traders reported to Lanning (1982) that they had found the species in the south-west of the department in the area from Santa Rosa (230 m), at 14°10'S 66°53'W, east 150 km to Santa Ana (220 m), at 13°45'S 65°35'W, and San Miguel (220 m), at 13°55'S 65°23'W, and also in the south-east of the department in the area of "Monteverde" near San Nicolas (220 m), at 14°16'S 64°25'W. A Bolivian resident familiar with the trapping and export of macaws reported that the range extends from 40 km south-west of Santa Rosa at Reyes (230 m), 14°19'S 67°23'W, east to San Nicolas, with the highest concentrations near Santa Rosa and San Nicolas (Riviere *et al.* 1986). One dealer reported that specimens exported to European zoos originate in southern Beni, south of Trinidad (240 m), at 14°46'S 64°50'W, along the upper río Mamoré (Ingels *et al.* 1981). Here the Blue-throated Macaw, Blue-and-yellow Macaw and Scarlet Macaw *A. macao* occur sympatrically, the Blue-throated being outnumbered by Blue-and-yellow by 100:1 (Ingels *et al.* 1981). Other dealers (especially R. Romero) likewise report the species from south-eastern Beni, south of Trinidad, in the drainage of the upper río Mamoré, where it occurs regularly, usually in pairs, and always greatly outnumbered by Blue-and-yellow, with which it often mingles (Ridgely 1981a). Traders reported to Lanning (1982) that they collected the species in south-eastern Beni near Caimanes (230 m) (misspelt "Canaima" in Lanning 1982: D. V. Lanning *in litt.* 1989), at 15°26'S 64°05'W, and in adjacent north-western Santa Cruz.

Searches for the macaw in southern Bolivia in southern Santa Cruz, Chuquisaca and Tarija departments in 1981-1982 proved negative, and local inhabitants did not know of any "blue and yellow" macaws in the region (Lanning 1982). However, a "blue and yellow" macaw captured in 1975, on the southern edge of Bolivia in the area of Yacuiba (580 m), Tarija, at 22°02'S 63°45'W, is presumed to be this species (Olrog 1979), although a photograph of the bird leaves the identification equivocal (Ingels *et al.* 1981).

Argentina The species has been reported from Misiones province in northern Argentina (Orfila 1936, Pereyra 1950), although the source of this information has so far not been located (Ingels *et al.* 1981). A

sight record of three pairs in 1952 in a deep valley of the río Carapari near Bolivia in Salta province, north-west Argentina, and a previous sighting at Orán somewhat further south in Salta (Hoy 1969), were presumably of this species (Ridgely 1981a, Nores and Yzurieta 1988b), although later searches have not revealed it there and local residents do not know it; possibly the birds in question were only wanderers from further north (Ridgely 1981a). Lynch Arribálzaga (1920) reported the species from the area of río Bermejo in Chaco province, Argentina, and as the río Bermejo also runs in Salta and along the border of Formosa province, Ingels *et al.* (1981) assumed that this record was the basis for Olrog's (1959) inclusion of those provinces in the bird's range; Olrog (1963, 1968, 1979) himself was quick to deny all evidence of the species in the country.

Paraguay The persistent inclusion of this country in the range of the Blue-throated Macaw appears to rest entirely on its mention by de Azara (1802-1805) (Ingels *et al.* 1981); there is, however, an extraordinary discussion of the species by Podtiaguin (1941-1945), treated here under Remarks (2). De Azara (1802-1805) wrote that according to the Guaraní Indians, this macaw now occurs neither south of 24°30'S, nor within 50 leagues (c.275 km) of the capital, where it was previously common. The macaw described by de Azara seems to be referable to Blue-and-yellow Macaw (Ingels *et al.* 1981), Blue-throated Macaw (Ridgely 1981a), or both (Nores and Yzurieta 1986). Although neither of the two species seems to occur in Paraguay today (Ridgely 1981a), at least Blue-and-yellow Macaw did so formerly (Sánchez Labrador 1767, Brabourne 1914, Dabbene 1920), and records of Blue-throated Macaw from Villa Franca, Desmochados and "Guzu-Cua" (possibly Guazú-Cuá), Paraguay (SOMA 1935-1942), may in fact be referable to Blue-and-yellow Macaw (Ingels *et al.* 1981). Nevertheless, as both species occur sympatrically in Bolivia they may well have done so in Paraguay in the past.

POPULATION One exporter estimated a total of about 1,000, another a total of about 500 (Lanning 1982). The estimate of 5,000 to 7,000 by Riviere *et al.* (1986) is based on the proportion of Blue-throated Macaws caught relative to Blue-and-yellows, while in the same paper they admit that the reason none was trapped prior to 1979 was that no trappers had "caller birds" to lure them in. In 1981 about 60 (Lanning 1982) and between 1979 and 1984 approximately 175 were exported (Riviere *et al.* 1986). Nilsson (1985) reported that 111 were imported into the U.S.A. between 1980 and 1983, but that by 1984 the importation had ceased.

ECOLOGY The region inhabited by the species lies at elevations between 200 and 250 m, and is tropical savanna with scattered "islands" of trees and ribbons of gallery forest along the watercourses; the savanna is inundated by rains from October to April, the trees and palms being on slightly higher land and on better-drained soils (Lanning 1982). Traders report that the macaw's preferred food is palm nuts (Lanning 1982). According to the traders the species travels in pairs, rarely small flocks of up to five, and has not been seen to congregate in large flocks as the Blue-and-yellow Macaw sometimes does, although (*contra* N. Kempff Mercado *per* M. Nores *in litt.* 1989) it sometimes mingles with that species (Ridgely 1981a, Lanning 1982). Captive birds are smaller and slimmer than Blue-and-yellow Macaws, and built for flying very fast; they appear notably inquisitive, and their high trilling call is much closer to Red-fronted Macaw *Ara rubrogenys* than to anything made by Blue-and-yellow, all of which lends weight to the possibility that the species is adapted for travelling long distances in search of various unpredictable foods and has little to do with the Blue-and-yellow Macaw (J. Abramson verbally 1992). According to the hunters, the macaw nests in cavities in trees from November to March, and raises one or two young per nest (Lanning 1982). The second egg is laid two days after the first (Riviere *et al.* 1986, Leibfarth 1988), and the incubation period is 28 days for each egg; the young leave the nest 90-94 days after hatching (Leibfarth 1988).

THREATS If the population is only 500-1,000 birds, and 60 birds were exported in one year (Lanning 1982), then trapping must be a serious threat to the species (Low 1984). It is not known to what extent this abuse continues at present, and one of the significant threats to the species is conservationists' fundamental ignorance of its distribution, status, ecological needs, level of exploitation and loss of habitat.

MEASURES TAKEN In 1983 all further international trade of the species became prohibited as it was placed on Appendix I of CITES (WTMU 1988), and it also became formally protected against capture and

trade within Bolivia in 1984 (Riviere *et al.* 1986). However, its greatest protection is afforded by the remoteness of its habitat and its elusiveness (Riviere *et al.* 1986). There are at least four reports of successful breeding in captivity (Hayward 1983, Kiessling 1985, Riviere *et al.* 1986, Leibfarth 1988).

MEASURES PROPOSED The first priority with this species is to find it in the wild, then to assess its ecological needs, status and the pressures upon it, and to draw up an effective management plan based on these findings. Fieldwork to discover the chief centres of occurrence within Bolivia should be conducted as soon as possible, on a coordinated basis (e.g. through ICBP), since there are many individual plans and proposals to undertake the work. Meanwhile, thorough inspection of all shipments of “blue and yellow” macaws should be undertaken both at export and import sites (Lanning 1982), and particularly the throat should be investigated, as it is often painted black so as to look like Blue-and-yellow Macaw (B. Woods E. *in litt.* 1986). The captive population needs to be managed carefully to maintain genetic diversity, and a studbook is being established (Clubb and Clubb 1991). This is clearly a species that could benefit from concerted efforts to maximize captive numbers through aviculture, with a view to stemming any illegal pressure on wild birds, and to establishing a good reserve until more is learnt of the wild population.

REMARKS (1) The species has been known for over 100 years as Caninde Macaw or Wagler's Macaw under the scientific name *Ara caninde*, based on a description from Paraguay by de Azara (1802-1805). It is not clear, however, whether de Azara was referring to a single specimen or giving a general description of the birds he observed: if the former it was possibly a hybrid, as he noted that the crown was green (it is blue in Blue-throated Macaw, green in Blue-and-yellow), the face had three horizontal black lines (again as in Blue-and-yellow, Blue-throated having four or five that are blue-green) and the gular area was broadly turquoise blue (as in Blue-throated), not black (as in Blue-and-yellow). It is thus hard to accept Dabbene's (1920) view that the description of the throat was acceptably of Blue-and-yellow Macaw, or the statement by Ingels *et al.* (1981) that de Azara's description is unequivocally of that species. Dabbene (1920) renamed the blue-throated species on the basis of the specimen taken at Santa Cruz de la Sierra, first calling it *A. azarae*, and later (Dabbene 1921) *A. glaucogularis*. However, Dabbene's papers went largely unremarked, and the use of *A. caninde* persisted (e.g. Forshaw 1981). Ingels *et al.* (1981) designated the specimen on which Dabbene (1920) had based his description as the type, and suggested the English name Blue-throated Macaw.

(2) Podtiaguin (1941-1945; specifically 1944: 114-115) referred to two specimens (young birds) being collected at Colonia Esperanza on 18 June 1939, and another at Colonia Nueva Italia in “Dep. Villeta” (Villeta is south of Asunción), adding that in certain years the species travels widely, that it is not then rare to find it in Paraguay, and that the only reason it is not more often reported is the complete absence of ornithologists in the country. These skins appear to be lost and the entire commentary fails to match the facts as given in the account above.