

*This enigmatic pigeon inhabits deciduous and evergreen moist forests in the tropical and subtropical zones of western Ecuador and north-west Peru, but has occurred in lower montane cloud-forests. All types of forest within its range are threatened with near-total destruction, and the situation is compounded by its poorly understood seasonal displacements.*

**DISTRIBUTION** The Ochre-bellied Dove is known from Manabí, Los Ríos, Guayas, Chimborazo, El Oro and Loja provinces in western Ecuador, and Tumbes and Piura departments in north-west Peru, at elevations ranging from sea level to 1,830 m, but there are additional recent sightings as high as 2,625 m. Eighteen of the existing 19 museum specimens were collected between 1913 and 1931 at 11 localities in six widely scattered areas, although there have recently been a fair number of sight records. Coordinates in the following account are from Stephens and Traylor 1983, Paynter and Traylor 1977, Best 1991, 1992, Williams and Tobias 1991, or read from IGM 1989), with localities arranged north to south as follows:

**Ecuador** (*Manabí*) Chone, (20 m), 0°41'S 80°06'W (Chapman 1926; specimen in AMNH taken in December 1912); Cerro San Sebastián, 500-700 m, Machalilla National Park, at c.1°35'S 80°40'W (sightings January 1991, and one now in ANSP collected in August 1991: TAP, R. S. Ridgely *in litt.* 1991); (*Los Ríos*) río San Antonio-sur, (100 m), at 1°48'S 79°27'W (Hellmayr and Conover 1942; two specimens in FMNH taken in September 1931); Isla Silva-sur (sea level), near the border with Guayas, at 1°57'S 79°44'W (Hellmayr and Conover 1942; specimen in FMNH); (*Guayas*) Daule, (sea level), at 1°50'S 79°56'W (Chapman 1926; specimen in AMNH taken in April 1913); La Palma, (2-3 m), near the border with Los Ríos, at 1°55'S 79°41'W (Hellmayr and Conover 1942; specimen in FMNH taken in October 1931); Quebrada Canoas, Cerro Blanco reserve, at c.2°09'S 80°03'W (sightings January 1991: TAP); (*Chimborazo*) río Coco, 915 m, at 2°05'S 79°00'W (Chapman 1926); (*El Oro*) Santa Rosa, sea level, at 3°27'S 79°58'W (Chapman 1926; specimen in AMNH taken in July 1921); south of Piñas, 1,100 m, at 3°40'S 79°43'W (two seen in August 1980: Robbins and Ridgely 1990); 9 km by road west of Piñas, 850-900 m, at c.3°40'S 79°45'W (recorded in August 1980 and 1988: P. Greenfield *in litt.* 1989, Robbins and Ridgely 1990); wooded ravine east of Piñas (three birds seen on consecutive days in July 1990: P. K. Donahue *in litt.* 1990); Zaruma, 1,585 and 1,830 m, at 3°41'S 79°37'W (Chapman 1914a, 1926; four specimens in AMNH, one in MCZ, one in BMNH taken in September 1913); (*Loja*) north-east of but near Vicentino, 900 m, at 3°57'S 79°57'W (heard in February 1991: Best 1992); ravines around Quebrada Las Vegas, at c.1,250 m, 3°59'S 79°57'W (several recorded between August and October 1991: Williams and Tobias 1991); along the Vicentino–Alamor road (birds seen drinking on several occasions from August to October 1991: Williams and Tobias 1991); Alamor, 1,385 m, at 4°02'S 80°02'W (Chapman 1926; specimen in AMNH taken in September 1921; also captive bird, said to have been taken just above the town, seen in February 1991: Best 1992); west of Alamor (a small number found in degraded habitat in August and September 1991: Williams and Tobias 1991); Guainche, 975 m, between Alamor and Celica, at 4°07'S 79°59'W (Chapman 1926; specimen in ANSP taken in August 1921); west of Celica, 1,800 m (sighting in August 1989: R. S. Ridgely *in litt.* 1989); small forest patch above Celica (one seen in December 1990: M. Pearman *in litt.* 1991); Catacocha, 1,500-1,700 m, at 4°03'S 79°40'W (heard and seen in March 1991: Best 1992); north of El Empalme, c.4°15'S 79°50'W (one seen between August and October 1991: Williams and Tobias 1991); Quebradas Suquinda and Yaguana, 1,750 m, at 4°18'S 79°49'W and 4°19'S 79°48'W (sightings in September 1989 and July 1990: Best and Clarke 1991, R. Williams *in litt.* 1991); between Utuana and Sozoranga, 1,750-1,800 m, at 4°20'S 79°46'W (heard in February 1991: Krabbe 1991, Best 1992); just above the town of Sozoranga, at 4°20'S 79°47'W (sightings in early 1991: Best 1992); Quebrada Hueco Hondo, 500-1,000 m, Tambo Negro, at 4°24'S 79°51'W (sightings in September 1989 and heard calling March 1991: Best and Clarke 1991, Best 1992);

**Peru** (*Tumbes*) Campo Verde, 750 m, at c.3°51'S 80°12'W (sightings in February and March 1986: M. Kessler *in litt.* 1988); Cerro San Carlos, near Campo Verde, c.750 m (small numbers seen in late July 1988: Parker *et al.* ms); (*Piura*) Cerro Chacas, 2,625 m, north of Ayabaca town, at 4°36'S 79°34'W (sighting in late September 1989: Best and Clarke 1991); Palambla, at 5°23'S 79°37'W (Koeppcke 1961; two specimens in AMNH collected in September and October 1922, and, like others collected there by H. Watkins, labelled 1,190-1,980 m). A bird seen at Canchaque, c.1,300 m, near Palambla in January 1986 appeared to be this species (M. Kessler *in litt.* 1989, Parker *et al.* ms). This dove now appears to be absent

from all lowland areas, mainly owing to habitat destruction (R. S. Ridgely *in litt.* 1989: see Threats).

**POPULATION** The only place the Ochre-bellied Dove has been reported to be common is at Campo Verde, Peru, where up to 25 were seen in one morning in late February and early March 1986 (M. Kessler *in litt.* 1988). In late July 1988 small numbers (up to six in a morning) were seen at c.750 m on the west slope of Cerro San Carlos, near Campo Verde (Parker *et al.* ms). On Cerro San Sebastián in Machalilla National Park it was seemingly rare in January 1991 (TAP), while a substantial population was found there in August 1991, presumably owing to increased song activity (R. S. Ridgely *in litt.* 1991). At Quebrada Canoas in the Cerro Blanco reserve, at least three males were heard in January 1991 along c.100 m of dense deciduous woodland bordering riparian forest in a deep ravine (TAP). In the Sozoranga region the species was found in deciduous forest perhaps as large as 20 km<sup>2</sup> at Tambo Negro, as well as in smaller patches of subtropical forest in Quebradas Yaguana and Suquinda; it was shy and occurred at low densities, although up to seven individuals were noted at once along a small stream where they gathered to drink at Tambo Negro, and 2-3 birds were found in each of the quebradas at Yaguana and Suquinda, alongside larger numbers of White-tipped Dove *Leptotila verreauxi*, in August and September 1989 (Best and Clarke 1991). Small numbers were recorded at various localities near Alamor in August–October 1991 (Williams and Tobias 1991), one was heard at Vicentino, three at Catacocha, four below Utuana, and three at Tambo Negro, with four seen just above Sozoranga, all in early 1991 (Best 1992). South of Piñas two birds were seen in August 1980, and west of Piñas there have been but two sightings, in August 1988 and April 1989, each of 2-3 individuals (P. Greenfield *in litt.* 1989), but a well-sized population may exist in western Azuay province, where much forest similar to that west of Piñas still remains (see account of El Oro Parakeet *Pyrhura orcesi*). It was not found at Palambra during a recent thorough survey (Parker *et al.* 1985), but may possibly still be found in less accessible forest nearby (NK), of which some can be seen from the road (T. S. Schulenberg *in litt.* 1988), and the possible recent sighting at Canchaque leaves hope that the species still inhabits that region. Almost all the semi-humid areas in the southern half of lowland western Ecuador are now cultivated (NK), and apart from the recent records in the vicinity of Alamor there are apparently no reports from any of the old localities reported by Chapman (1926), most of which are now totally deforested (Robbins and Ridgely 1990).

**ECOLOGY** The Ochre-bellied Dove inhabits the undergrowth and floor of both evergreen and deciduous forest, with records from the latter habitat even during the leafless period (June to December: see above), when significant numbers were recorded at Tambo Negro (M. Kessler *in litt.* 1988, Parker *et al.* ms, Robbins and Ridgely 1990, Best and Clarke 1991, Best 1992). Although formerly found down to sea level it now mostly occurs at 500-1,800 m, locally as high as 2,625 m (see below). It may previously have been most numerous in moist forests that once covered large areas in the río Guayas basin and slopes of the coastal cordillera to the north-west, a habitat that has been almost entirely destroyed (Dodson and Gentry 1991; for a description of Ecuadorian moist forest see Dodson *et al.* 1985), but it also occurs in dry deciduous forest, wet lower montane forest, semi-deciduous (subtropical) cloud-forest, and humid cloud-forest (see below). On Cerro San Sebastián, Ecuador, and Cerro San Carlos, Peru, the species was observed in evergreen moist forest with a dense understorey of small trees and woody vines, both important components of this habitat (TAP, Dodson *et al.* 1985). At Campo Verde, Peru, the species occurs in a mixed evergreen forest (Wiedenfeld *et al.* 1985) that may be too humid for the bombaceans *Ceiba trichistandra* and *Cavanillesia platanifolia*, both dominant in the dry forest habitat of adjacent areas where the dove occurs seasonally (M. Kessler *in litt.* 1988, Parker *et al.* ms). In the Sozoranga, Catacocha, Celica and Ayabaca regions the species was found in tall deciduous forest dominated by emergent *C. trichistandra*, as well as more varied, evergreen and semi-deciduous forest patches at higher elevations (TAP); at Tambo Negro, south of Sozoranga, birds were observed in August and September 1989 when the forest was dry and leafless but the understorey still green (Best and Clarke 1991). At Cerro Chacas, Peru, where all forest below 2,000 m has been cleared, it was found in humid cloud-forest at 2,625 m in late September 1989, this representing the only temperate zone record (Best and Clarke 1991, Best 1992). West of Piñas, Robbins and Ridgely (1990) reported it uncommon or rare in wet cloud-forest (1,100 m), with two in August of 1980 and 1988. In late February and early March 1986 at Campo Verde it was not encountered in the nearby drier, lower forest (M. Kessler *in litt.* 1988), while in late July 1988 it was only in the semi-deciduous forest on the west slope of Cerro San Carlos at 750 m (Parker *et al.* ms). Observations outside forest include a group of four feeding in low scrub, adjacent to degraded forest in a

ravine just above Sozoranga (Best and Clarke 1991, Best 1992), and in August–September 1991 one bird was seen near El Empalme in *Acacia* scrub adjacent to an area of *C. trichistandra* dominated woodland, and a small number were found in heavily degraded habitat west of Alamor, twice on the edge of maize fields, but otherwise in hedges and small areas of woodland (Williams and Tobias 1991). That the Ochre-bellied Dove may breed in deciduous as well as evergreen forest is suggested by seasonal song activity recorded in both habitats (M. Kessler *in litt.* 1988, Parker *et al.* ms, Robbins and Ridgely 1990, Best and Clarke 1991, Best 1992; see below). The seasonal movements of this enigmatic dove are unclear: at Piñas (very wet evergreen forest), birds have only been found during July and August, despite intensive searching throughout the year (B. J. Best *in litt.* 1992). Seasonal movements are apparent at a number of other sites such as Quebrada Hueco Hondo, Machalilla National Park and the Cerro Blanco reserve, although the species is apparently resident at Quebrada Yaguana, near Sozoranga (C. Clarke *in litt.* 1992). The dove may withdraw from deciduous forest during the driest parts of the dry season (which, however, varies in intensity from year to year) into more humid areas, although they may simply move to the more humid elements within deciduous forest, such as river courses (Best 1992).

The Ochre-bellied Dove is typically wary and difficult to observe, inhabiting the forest floor and undergrowth, often walking quietly on the shaded forest floor beneath low trees and bushes (or scrub) where the leaf-litter is especially thick (TAP, M. Kessler *in litt.* 1988, Parker *et al.* ms, Best and Clarke 1991, Williams and Tobias 1991). On being disturbed, birds typically fly a few metres and perch in the undergrowth (dense tangles of vines or a low branch of a nearby tree), or land back on the ground (TAP, M. Kessler *in litt.* 1988, Best and Clarke 1991, Williams and Tobias 1991). The species is most easily observed during the first half of the day when drinking, which at Tambo Negro during August and September 1989 (the driest part of the dry season) took place at stream beds which still maintained pools or slow trickles of water, and up to seven birds could then be seen together (Best and Clarke 1991). Similarly, in August and September 1991, birds were seen drinking on several occasions in small pools along the sandy Alamor–Vicentino road (Williams and Tobias 1991). At Tambo Negro, in August and September 1989, birds were noted to feed on the marble-sized fruits of a *Trichilia* tree, which they removed with a downward tug (Best and Clarke 1991). Birds apparently call from perches c.2 m above the ground (Robbins and Ridgely 1990, Williams and Tobias 1991).

In the Sozoranga region and Cerro Chacas the Ochre-bellied Dove was never heard in August and September (1989) in sharp contrast to the very vocal White-tipped Dove (B. J. Best and C. Clarke *in litt.* 1989), while it was very vocal in the Sozoranga region in semi-deciduous forest near Utuana in early February and early March (1991), and in deciduous forest at Tambo Negro in early March (1991) after five weeks of rain (Best 1992); however, a bird was heard west of Alamor, Loja, during late August 1991 (Williams and Tobias 1991). Near Piñas, El Oro, the species was heard calling in August, but not in September, February, March or April (P. Greenfield *in litt.* 1989, Robbins and Ridgely 1990, Best 1992, NK), and at Campo Verde it was very vocal in late February and early March (M. Kessler *in litt.* 1988), although none was heard there in July (Parker *et al.* ms). On Cerro San Sebastián there was little singing in the wet season in January, whilst in August 1991, when few other species of bird were breeding, song activity was high and the one specimen collected was in breeding condition (R. S. Ridgely *in litt.* 1991). However, a little further south in the Cerro Blanco reserve, song activity was high in January 1991, and a male was seen displaying before a female (TAP). The specimen from Daule was taken in April and had slightly enlarged gonads (AMNH). The remaining 17 specimens were taken in July–October and in December: three taken in September at Zaruma and one in October from Palambla all had inactive gonads, whilst two September birds from Palambla and Zaruma had them slightly enlarged (specimens in AMNH, ANSP, BMNH, FMNH and MCZ).

**THREATS** This species is threatened by massive deforestation throughout its small range. Most of its forest habitat below 700 m has disappeared altogether. The landowners of the few small subtropical valleys at Sozoranga, where the species has been noted, have no current desire to cut the trees down, but a change of mind will cause the doves to disappear from the subtropical zone in this region (B. J. Best and C. Clarke *in litt.* 1989). Most places where the dove is found in the Catacocha, Sozoranga and Celica regions, however, will be cleared if conservation action is not taken immediately (NK), and although it occurs in heavily degraded habitat near Alamor, it is unknown if such areas could sustain viable breeding populations (Williams and Tobias 1991). Settlers claiming rights to the land live inside Machalilla National Park, and continue to clear small areas of moist forest for agriculture (TAP). There is little

control over human activities within Tumbes National Forest, despite the presence of military authorities who restrict access to the area. The planned re-opening of the main road leading into this forest will no doubt result in increased logging and hunting (TAP).

**MEASURES TAKEN** The species is known to occur in three protected areas, Machalilla National Park, the Cerro Blanco reserve and Tumbes National Forest (see Grey-backed Hawk *Leucopternis occidentalis* for details).

**MEASURES PROPOSED** Effective protection of the three reserves where the species is known to occur should be a high priority: aside from Tumbes, Machalilla National Park is perhaps the most important area for this and many other threatened endemics of the region, especially Ochraceous Attila *Attila torridus* (see relevant account). Intensive searches for the species should be undertaken, concentrating on its temporal distribution and assessing its precise ecological requirements. The area 10 km from Sabanilla, Loja, which comprises relatively good deciduous forest, seems ideal for this species and should be checked for its presence (M. B. Robbins *in litt.* 1992; see equivalent sections under Grey-backed Hawk and Saffron Siskin *Carduelis siemiradzkii*). Additional dry/moist forest reserves should be established in south-west Ecuador, especially in the Chilla mountains, El Oro province, the Celica mountains and Tambo Negro, Loja Province, as these areas host a wide range of other threatened bird taxa. All the threatened bird species endemic to lowland south-west Ecuador and north-west Peru should be considered in a conservation action plan for this region, for which see the equivalent section under Grey-backed Hawk.