

This poorly known hummingbird has been recorded from west-central Ecuador to central Peru at elevations ranging from sea level to 3,050 m. It has been found in humid evergreen forest and, more commonly, in the transitional zone between dry and wet forests, and thus may occur primarily in moist forest, a seriously threatened habitat in western South America, and this may perhaps explain the relative paucity of modern records.

DISTRIBUTION The Little Woodstar has been found in the tropical and subtropical zones of western Ecuador and north-west Peru, and in the upper tropical to the lower temperate zones of eastern Ecuador south to central Peru, where it is mainly found in the middle río Marañón, but also occurs locally in the upper río Huallaga drainage. Part of this range could be represented by vagrants, but there are no data indicating where breeding takes place.

Ecuador Records (with coordinates from Paynter and Traylor 1977) from western Ecuador are as follows: (*Esmeraldas*) Esmeraldas (Chapman 1926); (*Pichincha*) below Hacienda Santa Rosa, at río Cinto, along the new Lloa-Mindo road, where a specimen (in MECN) was collected at 2,030 m in August 1987 (J. C. Mathéus *in litt.* 1989); (*Pichincha*) “Quito” (Hartert 1898a, Zimmer 1953); Santo Domingo de los Colorados (Oberholser 1902); Río Palenque Research Station (P. Greenfield *in litt.* 1991); (*Manabí*) Chone (Chapman 1926); Cordillera de Balzar (see Remarks), where a specimen (in BMNH) was collected in March 1880; Cerro Achi, c.1°23’S 80°38’W, at 550-600 m, recently (TAP); (*Chimborazo*) Citado, untraced, but probably = río Citado c.15 km west of Alausí (Gould 1871); Camipampa, untraced (Cory 1918); Cayandede (von Berlepsch and Taczanowski 1884-1886); between Chimborazo and Chimbo (Cory 1918); Chimbo (von Berlepsch and Taczanowski 1883, Chapman 1926); Huigra, 2°17’S 78°59’W (Chapman 1926); Pagma forest, untraced, but above Huigra (Chapman 1926); Chunchi (Chapman 1926); (*Los Ríos*) Babahoyo, where two specimens (in MNHN) were collected in September 1891; (*Guayas*) río Ayampe, on the Manabí border, recently (R. S. Ridgely *in litt.* 1991); Yaguachi (Taczanowski 1882); Guayaquil (Oberholser 1902); Durán (= Alfaro) (Chapman 1926); Naranjito, 2°13’S 79°29’W, where a specimen (in BMNH) was collected before 1920; río Pescado or Pogio, untraced (Zimmer 1953); (*Azuay*) Yunguilla valley, at 1,500 m, where four specimens (in BMNH) were collected in July 1939 and February 1940; (*El Oro*) El Bosque, at 1,400 m, where a specimen (in BMNH) was collected in July 1939; 28 km by road west of Catamayo (on the Portovelo road), where two birds were seen at 1,880 m in March 1990 (B. M. Whitney *in litt.* 1991); (*Loja*) Alamor, 4°02’S 80°02’W, and Guainche (between Alamor and Celica) (Chapman 1926).

Eastern Ecuador records come from: (*Napo*) Baisa (= Baeza), where two specimens (in BMNH) were collected in December 1877; below San José (= San José Nuevo) (Chapman 1926); río Napo (Zimmer 1953); (*Tungurahua*) near Baños (specimen in WFVZ); (*Morona-Santiago*) Macas, where two specimens (in BMNH) were collected in September 1937 and October 1940; (*Azuay*) Gima, where three specimens (in BMNH) were collected in March 1877; (*Zamora-Chinchipe*) Sabanillas (Zimmer 1953); Zamora (Chapman 1926); and on the Zumba-Chito trail, where a male was seen in March 1986 (M. Pearman *in litt.* 1990).

Peru Records on the Pacific slope come from: (*Piura*) Porculla (Bond 1954b); (*Lambayeque*) Las Pampas, at 150 m, where a specimen (in LSMZ) was collected in September 1983; and Seques (Zimmer 1953); in the río Marañón drainage (*Cajamarca*) San Ignacio (Zimmer 1953, Bond 1954b); Huarandosa (Zimmer 1953); Puerto Tamborapa (Bond 1954b); Tambillo (Zimmer 1953); Callacate (Zimmer 1953); (*Amazonas*) Tamiapampa (Taczanowski 1882); Guayabamba (= Santa Rosa de Huayabamba) (Zimmer 1953); Chirimote (Taczanowski 1882); San Pedro (Zimmer 1953); (*La Libertad*) Soquián (Bond 1954b); Succha (Salvin 1895, Baron 1897); in the middle río Huallaga drainage (*San Martín*) Uscho, on the Amazonas border (Zimmer 1953); in the upper río Huallaga drainage (*Huánuco*) Chinchao (Zimmer 1930); and Muña (Zimmer 1953).

POPULATION Despite the large number of old specimens of this hummingbird, there are relatively few recent records, except for recent (mid-1980s) importations into (West) Germany (Collar and Andrew 1988). These imports presumably originated in western Ecuador, whence also came (from Pichincha) a 1987 specimen in MECN, with recent records from the Manabí–Guayas border, two birds in El Oro, and one in Zamora-Chinchipec. There appear to be only two recent reliable records from Peru.

ECOLOGY Although sometimes found in wet evergreen forest and at the edges of cloud-forest, the Little Woodstar apparently prefers moist and semideciduous forests that are only seasonally green (TAP, and habitat descriptions in Taczanowski 1884-1886, Baron 1897, Zimmer 1930, Paynter and Traylor 1977, and Stephens and Traylor 1983). During an El Niño year of heavy rainfall in north-western Peru (1983), the species appeared in scrubby woodland that often remains leafless for up to eight months or more, thus strongly suggesting that the hummingbird may expand its range into dry regions during wet years, and then withdraw into evergreen forests in drier times (TAP). There have been 14 weak to moderate and nine strong to very strong El Niño occurrences from 1900 to 1987 (Quinn *et al.* 1987), and most recently in 1992 (M. B. Robbins *in litt.* 1992). In western Ecuador the bird is found from sea level to c.2,250 m, and from c.900 to 3,050 m in eastern Ecuador and Peru (approximate elevation of localities as given by Paynter and Traylor 1977, Stephens and Traylor 1983, J. C. Mathéus *in litt.* 1989 and on specimen labels in ANSP and BMNH). Most east Ecuadorian specimens were taken from c.900 to 1,800 m, but three from Gima were presumably taken near 3,000 m (Paynter and Traylor 1977). Most Peruvian records are from c.900 m to 2,150 m, but Tamiapampa and San Pedro are at c.2,700-2,750 m (Taczanowski 1884-1886, Baron 1897), and at Succha Baron (1897) found the species from 2,745 to 3,050 m. The 1987 specimen from Pichincha was collected from the canopy of a 20 m tall tree in an area of humid forest with many large *Clusia* and *Cedrela* trees (heavily laden with epiphytes), a large *Alnus* stand near the river, and many bushes such as *Palicourea* (Rubiaceae) and *Cavendishia*, *Psammisia* and other ericaceans; it was taken on 18 August and had a slightly enlarged ovary (J. C. Mathéus *in litt.* 1989). At río Ayampe, Manabí–Guayas, several females were seen feeding at *Muntingia* trees; the threatened Esmeraldas Woodstar *Acestrura berlepschi* was also feeding from the same trees, but tended to be more in the canopy, while *bombus* remained lower, at edge situations, although there was some overlap (R. S. Ridgely *in litt.* 1991): the male seen on the Zumba–Chito trail in March 1986 was trap-lining flowers on a scrubby hillside (M. Pearman *in litt.* 1990). In El Oro during March 1990, a male was seen perching for long periods atop shrubs and low trees in an opening in a heavily wooded quebrada (at a point overlooking the quebrada): this bird performed a display flight on two occasions when approached by a female-plumaged individual (B. M. Whitney *in litt.* 1991).

THREATS Most of the moist forest in western Ecuador has already been destroyed, and only the wettest forest on steep slopes survives in many parts of the Andes in southern Ecuador and northern Peru. The Machalilla National Park is ineffectively protected (TAP: see equivalent section under Grey-backed Hawk *Leucopternis occidentalis*).

MEASURES TAKEN The species occurs at the Río Palenque reserve, Pichincha and Machalilla National Park, Manabí (55,000 ha: IUCN 1992), Ecuador (see equivalent section under Grey-backed Hawk).

MEASURES PROPOSED Proper management of the Machalilla National Park must be initiated to ensure the integrity of the habitat, although much more needs to be learned about the distribution, habitat requirements and behaviour of this enigmatic species before any specific measures can be taken. Details of initiatives proposed to preserve the threatened species endemic to south-west Ecuador and north-west Peru are given in Measures Proposed under Grey-backed Hawk.

REMARKS Concerning the authenticity of the locality Cordillera de Balzar, see Remarks 2 under Saffron Siskin *Carduelis semiradskii*.