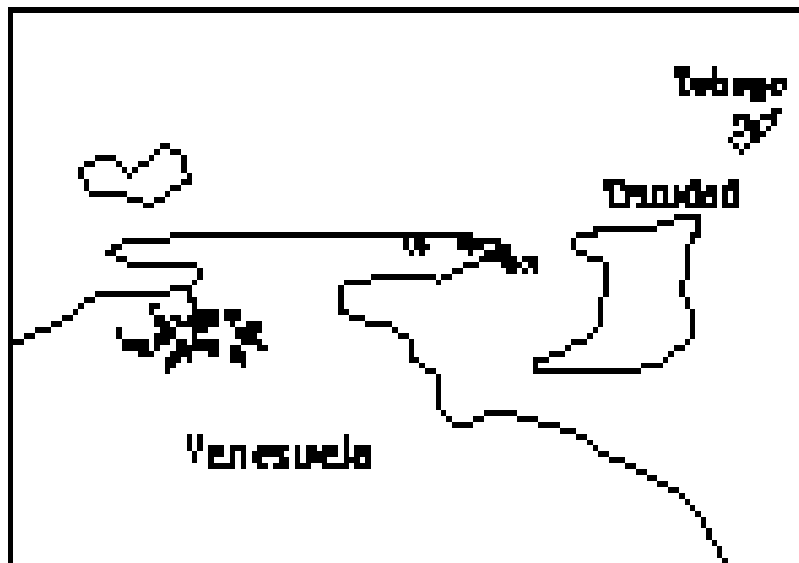


This large hummingbird is endemic to the montane forests of the coastal cordillera and Paria Peninsula, north-east Venezuela, and also the island of Tobago. On the mainland, it is threatened by widespread habitat loss, and on Tobago is only just starting to recover from the effects of a hurricane that destroyed much forest in 1963.

DISTRIBUTION The White-tailed Sabrewing is endemic to the Cordillera de Caripe (the eastern coastal mountain range) which runs along the borders of north-easternmost Anzoátegui, northern Monagas and Sucre states, and also the mountains of the Paria Peninsula (Sucre), Venezuela – an area to which five other threatened bird species are restricted (see Threats) – with a separate population on the island of Tobago, Trinidad and Tobago (see Remarks 1).



Venezuela Records of this large hummingbird, from roughly west to east and where longitudinal groupings occur, from north to south (treating the Paria Peninsula last), are as follows, with coordinates from Paynter (1982): Cerro Peonía¹ (10°11'N 64°07'W: on the border of all three states, but cited as evidence for the species's occurrence in Anzoátegui), a locality mentioned by Phelps and Phelps (1958); Quebrada Seca² (= Villarroel at 10°18'N 63°57'W, Sucre), near where a

male (in AMNH) was taken in February 1898; Cumanacoa³ (10°15'N 63°55'W, Sucre), where a male and two females (in AMNH) were taken in July 1896; San Rafael (c.10°15'N 63°55'W, and near Cumanacoa), and El Yaque⁴ (10°14'N 63°53'W, both in Sucre), where six males and two females (in CM) were taken (between 760 and 945 m) in November 1929 and January 1930; Cerro Turumiquire⁵ (10°07'N 63°52'W, the summit being in Monagas), where four males and five females (in FMNH) were collected at 1,830 m in February and March 1932, more recent records coming from the Turumiquire "Hydraulic" Reserve (G. Medina-Cuervo *in litt.* 1986: see Measures Taken); La Trinidad⁶ (c.10°12'N 63°57'W), which was apparently a coffee plantation (Chapman 1925) on the northern slope of Cerro Turumiquire, where four males and two females (in COP) were taken in February and March 1963 between 1,700 and 1,800 m; Carapas⁷ (c.10°12'N 63°56'W; also on the northern slope of Cerro Turumiquire, and adjacent to La Trinidad, Sucre), where a male and female (in AMNH) were taken in March 1925 at 1,700 m; Mirasol⁸ (c.10°10'N 63°50'W; likewise on the slopes of Turumiquire), where seven males and two females (in CM, LACM) were taken in December 1929 between 915 and 985 m; Santa Ana⁹ (10°20'N 63°45'W, Sucre), where a male (in AMNH) was taken in March 1898; Los Palmales¹⁰ (c.10°17'N 63°45'W, Sucre), where four males (in AMNH, USNM) were taken in a coffee plantation during February and December 1898; Rincón de San Antonio¹¹ (c.10°16'N 63°43'W, Sucre), where a male (in AMNH) was taken in March 1898; La Tigra¹² (10°15'N 63°45'W, Sucre), where a female (in AMNH) was collected in February 1898; Campo Alegre¹³ (10°10'N 63°45'W, Sucre), where five males and two females (in AMNH) were collected in February and March 1898; El Guácharo¹⁴ (10°09'N 63°32'W, Monagas), where two males (in AMNH, USNM) were taken in November 1898; Cerro Negro¹⁵ (c.10°14'N 63°30'W, on the border of Monagas and Sucre), a locality mentioned by Phelps and Phelps (1958); and Caripe¹⁶ (10°12'N 63°29'W:

at 800 m on the eastern slope at the eastern end of the coastal range, Monagas), near where a male (in BMNH) was taken in June 1867 (see Remarks 2).

On the Paria Peninsula (Sucre), records come from: Cerro Humo¹⁷ (c.10°40'N 62°30'W), where observations are from between 800 and 1,220 m (Phelps and Phelps 1958, Gardner and Brisley 1989; also G. Medina-Cuervo *in litt.* 1986, B. Swift *in litt.* 1986, M. Pearman *in litt.* 1991); and on the western end of the peninsula, Pargo¹⁸ (10°43'N 62°03'W), where a male and female (in YPM) were collected in February 1937; Yacua¹⁹ (10°39'N 61°59'W), where a male and female (in YPM) were taken also in February 1937; Cerro "El Olvido" (c.2.5 km west of Cerro Azul, on the ridge between Cerros Patao and Azul), where Bond *et al.* (1989) recorded the species between July and September 1988; Cerro Azul²⁰ (c.10°40'N 61°56'W), mentioned by Phelps and Phelps (1958); above Cristóbal Colón²¹ (= Macuro at 10°39'N 61°56'W, i.e. on the slopes of Cerros El Olvido and Azul), where five males and six females (in AMNH) were taken in May and June 1913 at 460 m; and Cariaquito²² (c.10°40'N 61°55'W), where a specimen (in ANSP) was taken in 1911 (presumably away from the coast, towards Cerro Azul).

Trinidad and Tobago The presence of the White-tailed Sabrewing has only been confirmed on Tobago²³ (see Remarks 1).

Tobago Records from this island prior to the extensive forest destruction caused by Hurricane Flora in 1963 (see Population and Threats) include: Richmond (March 1897); Englishman Bay; Mondland; Castare; Parret Hall (all records from May 1903) (specimens in AMNH, BMNH, ROM); Hillsborough Stream, and various points along the main ridge between Parlatuvier and Roxburgh where birds were seen in February and June 1934 (Belcher and Smooker 1934-1937); and Pigeon Peak, where birds were found in February 1954 (Junge and Mees 1958). Not until the mid-1970s was the species noted again (see Population), when small groups were increasingly found in isolated pockets of forest on Main Ridge (ffrench 1988), with records coming from the East Tobago National Park (Thelen and Faizool 1980).

POPULATION This species generally seems to be abundant in areas where suitable habitat remains.

Venezuela On the Paria Peninsula, the White-tailed Sabrewing is still found to be common in available habitat, with for example 5-6 birds seen in one day on Cerro Humo in 1978-1979 (G. Medina-Cuervo *in litt.* 1986), six seen on 4 March 1984 (B. Swift *in litt.* 1986), and five seen there on 5 January 1989 (Gardner and Brisley 1989). This fact is also reflected in the study made on Cerro El Olvido in 1988 (Bond *et al.* 1989), when the bird was found to be abundant to 840 m and common to 880 m, with nine territorial males found on the transect which ran up the mountainside (giving a density of 1.5 pairs/ha). The collection of 11 birds above Macuro in 1913 (see Distribution) seems to confirm the species's historic abundance on the peninsula. B. Swift (*in litt.* 1988) suggests that the population of this species in the Paria Peninsula National Park (see Measures Taken) is a viable one.

The situation in the Cordillera de Caripe is less well known: historically the species was common (according to a label on a specimen in AMNH), and certainly the collection of specimens (see Distribution for numbers taken at particular localities) in the area suggests this; however, while there are few recent records, with the bird being judged "not very common" in the Turumiquire reserve in the late 1970s (G. Medina-Cuervo *in litt.* 1986), R. Ramírez (*in litt.* 1988) found it one of the commonest species captured in mist-nets during 1985-1986 fieldwork in forests around the Monagas-Sucre borders.

Trinidad and Tobago The White-tailed Sabrewing was formerly a fairly common to common resident of hill forest (Main Ridge) on Tobago (e.g. "found in some numbers" near the summit of Pigeon Peak in 1954), but in 1963 Hurricane Flora was thought to have destroyed all suitable forest, and indeed the species was not seen for a decade (Junge and Mees 1958, ffrench 1973, R. ffrench *in litt.* 1986, ffrench 1988). However, since 1974-1975, small groups have been increasingly located in small patches of forest that escaped the worst of the storm (R. ffrench *in litt.* 1986, ffrench 1988). Despite the fact that the species appears to be holding its own in these forest remnants, the area of forest has hardly increased in 10 years

and the species remains extremely rare and endangered (Thelen and Faizool 1980, R. ffrench *in litt.* 1986, ffrench 1988).

ECOLOGY In the Cordillera de Caripe, the White-tailed Sabrewing has been recorded from 760 to 1,830 m (Meyer de Schauensee and Phelps 1978 claim 700 to 2,000 m), but on the Paria Peninsula this range is 460 to 1,200 m (see Distribution). The reason for this geographic difference in altitudinal range is that this species (along with the rest of the montane fauna on the peninsula) responds directly to habitat rather than altitude *per se* (Bond *et al.* 1989). On isolated peaks and ridges, and coastal mountains (including peninsulas and islands), the vegetation zones are lower (vertically compressed) than on extensive mountain ranges or those further from the sea: this is known as the “Massenerhebung” effect, and is caused by a combination of high humidity, low nutrient availability and exposure to prevailing winds (these all being factors that effect the Paria Peninsula: Bond *et al.* 1989).

Whether on Tobago, Paria Peninsula or the “mainland”, the White-tailed Sabrewing inhabits lower and upper montane forest (i.e. pre-montane and montane tropical forest in the upper tropical and subtropical zones: Phelps and Phelps 1958, G. Medina-Cuervo *in litt.* 1986, Bond *et al.* 1989). Birds have been recorded as common in mature secondary growth and plantations (occurring to c.600 m on the Paria Peninsula: R. Ramírez *in litt.* 1988, Bond *et al.* 1989). On Cerro Humo, B. Swift (*in litt.* 1986) found birds in the wet part of a coffee grove, while Gardner and Brisley (1989) concluded that the species was most obvious at *Heliconia* sp. on the forest edge near a stream. The bird seems to adapt well (at least on Cerro Humo and Cerro El Olvido) to plantations with *Heliconia* and other flowering shrubs (C. Sharpe *in litt.* 1992). The precise requirements of this species remain unknown, but it appears utilize mature secondary forest at lower altitudes, and to flourish in forest of various types and structures higher up (from 35 m tall closed canopy forest to lower, relatively open canopy cloud-forest: Bond *et al.* 1989).

Various food sources have been recorded including flowering bromeliads (ffrench 1973), banana blossoms and other flowering plants (B. Swift *in litt.* 1986), with Bond *et al.* (1989) noting that flowering *Palicourea* sp. trees appeared to be the sole food-plant for the species within the primary forest between July and September 1988; flycatching behaviour has also been observed (Bond *et al.* 1989). Birds perch 1-6 m up (low to middle branches; Meyer de Schauensee and Phelps 1978), and have been seen on exposed twigs in areas opened up by tree-falls and in dense understorey shrubs where the canopy is closed (B. Swift *in litt.* 1986, Bond *et al.* 1989).

Breeding has only been recorded on Tobago: one nest found on 23 February 1934 was placed in the fork of a branch in a coffee-like shrub c.2.5 m above the water of Hillsborough stream (Belcher and Smooker 1934-1937); another nest was discovered with two eggs on 14 February 1954, attached near the end of a pendular twig, c.1.75 m from the forest floor - the female was seen visiting the nest and incubating (Junge and Mees 1958). Also during February 1954 male birds were in “full song” (Junge and Mees 1958) although singing has also been noted as prominent (on Tobago) during April (ffrench 1973). None of the 11 Venezuelan specimens collected near Macuro (see Distribution) during May and June 1913 were in breeding condition, although male birds were noted as “territorial” during surveys from July to September (Bond *et al.* 1989). Interestingly, female birds were rarely seen during the July–September fieldwork on Cerro El Olvido (Bond *et al.* 1989), which may suggest that they were incubating, or feeding young: however, it should be noted that of c.110 sexed specimens, the ratio of males to females was 2:1.

THREATS The threats that the White-tailed Sabrewing faces are representative of those faced by the other five threatened species within its Venezuelan range, namely: Scissor-tailed Hummingbird *Hylonompha macrocerca* (only on the Paria Peninsula), White-throated Barbtail *Margarornis tatei* (on the Cordillera de Caripe and Paria), Venezuelan Flowerpiercer *Diglossa venezuelensis* (on the Cordillera de Caripe and Paria), Paria Redstart *Myioborus pariae* (only on the Paria Peninsula) and Grey-headed Warbler *Basileuterus griseiceps* (only in the Cordillera de Caripe: see relevant accounts), and are thus best treated for each of the discrete areas in question.

In the Cordillera de Caripe, human population pressure is severe: extensive deforestation of montane forest over much of the area has resulted and is the major threat (G. Medina-Cuervo *in litt.* 1986, Ridgely and Tudor 1989). Cutting of forest for agriculture and pasture has taken place (and is increasing),

especially in the Turumiquire area (despite its inaccessibility) and, although farmers spare certain lauraceous trees to shade coffee plantations, the remaining forests (particularly palms) have been widely cleared (G. Medina-Cuervo *in litt.* 1986, Bosque and Ramírez 1988). The agricultural practices of campesinos in El Guácharo National Park are one specific cause of habitat destruction (CNPPA 1982), with the park (especially around Cerro Negro, and even more so around Caripe) suffering from repeated burnings and the removal of palm forest (R. Ramírez *in litt.* 1988): unfortunately, these agricultural activities have intensified since the 1970s (Bosque and Ramírez 1988: see following paragraph). In April 1991, a large forest fire devastated 1,760 ha of Cerro Negro (inside the national park), and although this area is being reforested by hand, it is difficult to assess what effects the fire had on the various species known to occur there (e.g. Grey-headed Warbler had been recorded there fairly frequently until that time: see relevant account) (M. L. Goodwin *in litt.* 1992).

On the Paria Peninsula (the information in this paragraph, unless otherwise stated, is from C. Sharpe *in litt.* 1989), almost all suitable habitat occurs in the national park (see Measures Taken): however, a recent increase in cash-crop agriculture practised by the local people has caused the destruction, through uncontrolled burning, of this higher-altitude forest. The main cause of the problem is the cultivation of “ocumo blanco”, a root crop which demands completely clear ground for growth – most easily achieved by burning: its cultivation has been expanded on purely economic grounds in response to high market prices, replacing the former widespread cultivation of cacao. The situation progressively worsens with increasing density of farmers as one moves westwards, and unfortunately the richest cloud-forest is also found in the west. The forest destruction has caused landslides on the steep slopes of the peninsula, and streams have dried up. In June 1989 visible changes from 1988 were large areas of forest burned, several obvious recent landslides, and exceptionally dry terrain, many fruit crops having failed and other crops suffering from severe insect damage (thought to be caused by nutrient exhaustion brought on by monocultural farming practices). Cerro Humo, close to the mainland, has been affected by widespread deforestation, accessibility by roads, settlements and agriculture (a reflection of what is happening in the Caripe area), and Cerro Patao from cultivation (up to 800-1,000 m). Fortunately, the easternmost end around Macuro remains inaccessible by road, and fairly untouched although human disturbance is still creating pressure (G. Medina-Cuervo *in litt.* 1986, Bond *et al.* 1989). Perhaps the most serious development in recent years is the “Proyecto Cristobal Colón” proposal to construct a pipeline across the Paria Peninsula to connect gas reserves off the north coast to a port on the south side of the peninsula; some plans have shown that this pipe may run through the national park (C. Sharpe verbally 1991, M. L. Goodwin *in litt.* 1992).

On Tobago, the main threat was and is forest destruction. In 1963, Hurrican Flora destroyed much of the highland forests, and only small isolated patches managed to escape the worst of it: in one of these patches, an apparently stable population of birds was found in 1974-1975 (see Population). Although the forest is now regenerating it has hardly increased in 10 years, and must still be regarded as at risk from future hurricanes or human destruction (R. ffrench *in litt.* 1986, ffrench 1988).

MEASURES TAKEN Within this species's range, two national parks exist: (1) El Guácharo National Park, 82,900 ha (including Alejandro de Humboldt Natural Monument) covering Cerro Negro (CNPPA 1982, *World Birdwatch* 12,1-2 [1990]: 4) was increased to this size in 1989, when Mata de Mango (66,000 ha of primary forest) was added (R. Roca *in litt.* 1992); and (2) Paria Peninsula National Park, 37,500 ha (of which almost 80% maybe primary forest), covering all the montane areas between Cerro Humo and Cerro Azul (Bond *et al.* 1989), however, the south slope of Cerro Humo, which supports excellent cloud-forest habitat and populations of all the threatened species, is not within the boundaries of the park and is under increasing agricultural pressure (C. Sharpe *in litt.* 1992). The extension of El Guácharo National Park in 1989 added a large area of forest, including a hilly region (200-1,600 m) which probably favours (differentially) this species, White-throated Barbtail, Venezuelan Flowerpiercer and Grey-headed Warbler, although records of all four species are lacking (R. Roca *in litt.* 1992). In the Paria Peninsula National Park, the protected status has had little or no practical effect locally: although some people are aware of the park's existence, few understand its significance and hence cannot respect the boundaries or regulations, and there is little control on cultivation or hunting (Bond *et al.* 1989), although

there are four park guards (who are hampered by a lack of resources and training: C. Sharpe *in litt.* 1989). At Turumiquire there is a “hydraulic” (presumably watershed) reserve, but this is heavily occupied with scattered human settlements, there is very little control, and this species is no longer common there (G. Medina-Cuervo *in litt.* 1986; see Population).

On Tobago, the White-tailed Sabrewing occurs in the East Tobago National Park (Thelen and Faizool 1980).

MEASURES PROPOSED Within the range of this species, there occur 12 other endemic birds (ICBP 1992, Crosby *et al.* in prep.), of which five are threatened (see accounts of species mentioned in Threats), and any conservation initiative in this area must consider the requirements of all six threatened species present. The ecological needs of these six species are inadequately known, and require work: however, the priorities for this assemblage are to determine the amount of available habitat remaining in the Cordillera de Caripe; ascertain which of the four species reported for the area are still present; and instigate protection for the forest. Such efforts should perhaps focus on obtaining information from the recently enlarged El Guácharo National Park, which may hold viable populations of this species, White-throated Barbtail, Venezuelan Flowerpiercer and Grey-headed Warbler (see relevant accounts). On the Paria Peninsula, almost all suitable areas for the five species that occur (see Threats) are within the national park: again, protection of the forests needs to be ensured; and the distribution of each of the species between Cerro Humo and Cerro Patao needs investigation. The omission of the excellent forest area on the south slopes of Cerro Humo from the park needs to be addressed, and must be incorporated into the park's boundaries as soon as possible. Bond *et al.* (1989) were unable to discover what the objectives of the Paria Peninsula National Park are, and put forward the following: (1) to conserve the montane forest and the fauna of the peninsula as an example of this biotype, and as a representative portion of the Cordillera de Caripe–Paria Peninsula centre of endemism; (2) to achieve the above by increasing the awareness of the local community (an education campaign would be desirable) and national scientists; and (3) to encourage limited, small-scale tourism to provide a small revenue for guides and to spread awareness of the park. Various other proposals, survey ideas and methods of implementation have been put forward (Bond *et al.* 1989, C. Sharpe *in litt.* 1989, *Env. Conserv.* 17 [1990]: 367-368).

In Tobago, the primary requirement is the regeneration of the highland forest, which will be most efficiently achieved by protecting the areas involved from encroaching agriculture and grazing animals (it may be appropriate to stress the area's watershed value). Since Trinidad and Tobago calls itself “the land of the hummingbird” (James and Hislop in press), a campaign on Tobago to make this the island's emblem could help focus attention on the need to achieve greater security for its habitat. The conservation and management of forest on the island ought also to benefit the little-known threatened endemic race *oberi* of the Striped Owl *Asio clamator* (see King 1978-1979, French 1992).

REMARKS (1) Cory (1918) and Peters (1945) both suggested that this species is known from Trinidad, although Junge and Mees (1958) and French (1973) stated that it remains unrecorded from Trinidad and the Bocas Islands. Twelve specimens (in BMNH, FMNH, MNHN, USNM, YPM) are all simply labelled “Trinidad” or “Trinity”, one having the date of collection, 1860. Whether these birds were taken on Trinidad, or represent trade-skins collected on Tobago or in Venezuela (see Phelps and Phelps 1948) is unknown. The collectors of these birds, where known, were Balston, Elliot (in 1860), and possibly F. T. Jencks. (2) Caripe and Cerro Negro are often referred to as “Cerro Negro, Caripe” (e.g. Phelps and Phelps 1950). In this and other cases (see accounts for the species mentioned under Threats), Caripe (10°12'N 63°29'W, and south-east of Cerro Negro) was probably the base used for collecting on the slopes of the mountain, and not a collecting locality in its own right.