

**A NOTE ON *CAMPYLOPTERUS EXCELLENS* IN SOUTHERN
VERACRUZ, WITH A GUIDE TO SEXING
CAPTURED INDIVIDUALS**

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Abstract.—The Long-tailed Sabrewing (*Campylopterus excellens*) is a tropical hummingbird endemic to a small area on the Isthmus of Tehuantepec, Mexico. Almost nothing is known about this species. In the Sierra de los Tuxtlas, Veracruz, it appears to prefer tropical rainforest, and did not occur in censuses of local agricultural areas. Male song, displays and ritualized combat are described, and interspecific interactions with the congener *C. hemileucurus* are noted. A formula for sexing this monochromatic species is offered whereby (wing chord + tail) >123.9 mm = male and (wing chord + tail) <120.7 mm = female. Characters that may prove useful in aging individuals are noted. The breeding season is of unknown length, but probably begins before March.

**NOTA SOBRE *CAMPYLOPTERUS EXCELLENS* EN EL SUR DE VERACRUZ, CON
UNA GUÍA PARA DETERMINAR EL SEXO DE INDIVIDUOS CAPTURADOS**

Sinopsis.—*Campylopterus excellens* es un zumbador tropical endémico a una pequeña área del istmo de Tehuantepec, México. En la Sierra de los Tuxtlas, Veracruz, el ave parece preferir bosque pluvial tropical, y no aparece en los censos de localidades agrícolas. En este trabajo se describe el canto, despliegues y combates ritualizados del pájaro; además sus interacciones interespecíficas con su congénere *C. hemileucurus*. La siguiente fórmula permite identificar el sexo de este zumbador: largo del ala + cola >123.9 mm = macho; <120.7 mm = hembra. Algunas características que muy bien podrían ser de utilidad para determinar la edad de estas aves son ofrecidas. Se desconoce la época reproductiva del ave, sin embargo es muy probable que inicie previo a marzo.

The fate of neotropical species with limited distributions is currently jeopardized by high rates of habitat alteration. Often these species are poorly known. Here we examine data acquired on the Long-tailed Sabrewing (*Campylopterus excellens*) during research spanning many years in the Sierra de los Tuxtlas, Veracruz, Mexico. Wetmore (1941) first described "*Pampa pampa excellens*" based on four male specimens taken

by M. A. Carriker, Jr. in Los Tuxtlas, and thought that its range was probably restricted to the Tuxtla Mountains (Wetmore 1943:264). Lowery and Dalquest (1951:583) subsequently elevated Wetmore's race to specific status, based largely on skull morphology and other body size differences between *Campylopterus excellens* and the Wedge-tailed Sabrewing (*C. curvipennis*). These authors found that specimens from approximately 125 km south of Los Tuxtlas (30 km south-southeast of Jesús Carranza) were attributable to *excellens*, which extended the species' range to its presently known distribution: Los Tuxtlas and Jesús Carranza (American Ornithologists' Union 1983).

METHODS AND RESULTS

We have studied birds at several sites in Los Tuxtlas (for study periods, details of methods, and site descriptions see Rappole and Warner 1980, Winker et al. 1990). *Campylopterus excellens* was found to be a regular member of the understory avifauna at every location we studied. Capture rates in mist nets set on a 50 m grid have been just over one bird per 1000 net h when averaged across all sites. The species seems to prefer primary rainforest, but can be found in second growth, edge habitats, and in disturbed rainforest (selva). It was not recorded in line transect censuses of local agricultural areas (D. W. Warner, unpubl. data).

Male song is a wild jumble of tweets and gurgles (Fig. 1). A song that somewhat resembles it in quality is that of the European Starling (*Sturnus vulgaris*). The song is given from a stationary position, on the wing or in a series of flights from perch to perch, and is frequently preceded by a short, airy, trilling call. Males have been found displaying and singing in Los Tuxtlas from October through March. Males typically display and sing from dense tangles of vines or brush, near the ground or in the canopy of the rainforest, and are encountered singly or in small groups of 2–3. One male, singing from a single perch, cocked its wings and waved them back and forth with slow flapping movements, tilted its head back and turned it from side to side, and spread its tail and cocked it up and down (dorso-ventrally). From above it would probably appear like a scintillating green jewel. Not all singing males observed have displayed in this fashion. In fighting, males chase each other among the branches and leaves, making contact with vegetation and with each other, sounding like a "herd of bumblebees" (field notes KSW 9 Jan. 1985). In a canopy display situation they would often lock together in battle (perhaps by grasping feet) and descend tumbling in a buzz/rattle toward the ground, separating 2–3 m above it.

At a site in an overgrown, untended orchard with 6–10 m second growth beside primary forest, males were observed in a ritual form of battle in which two contestants would rise from their song perches, come together in the lower understory, then rise in a whirring duel of wing and bill sparring, breaking up and descending to their respective perches upon reaching the more open upper canopy. At this same overgrown orchard a male Violet Sabrewing (*Campylopterus hemileucurus*) occasionally ap-

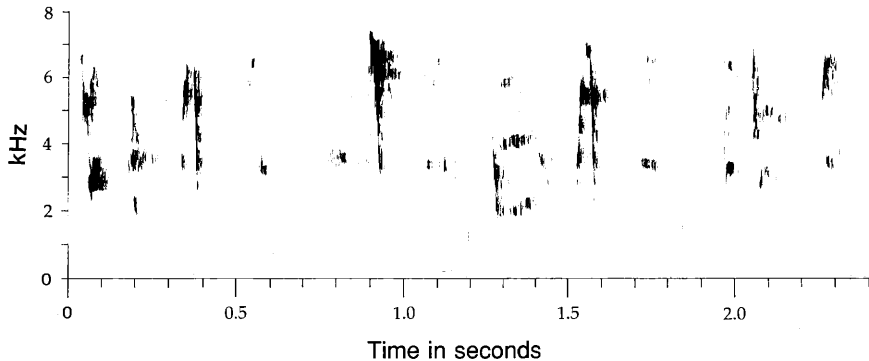


FIGURE 1. The first 2.5 s of the song of a male Long-tailed Sabrewing (*Campylopterus excellens*), exhibiting its cacaphonic nature.

peared and gave chase to the two resident male *excellens*. This interspecific aggression was clearly related to song, rather than food, as the male *hemileucurus* sought the singing *excellens* out on their perches and instigated chases. These chases were observed several times in Feb. and Mar. 1986, and were rapid and violent. In one instance a male *excellens* was driven into a vegetative tangle so dense that it became lodged and was incapacitated for about 1 min. In all cases the *hemileucurus* was clearly dominant; *excellens* males were always fleeing rather than chasing, and they frequently emitted whining distress calls. This interspecific aggression may reflect some form of interspecific territoriality in which song elicits an aggressive response in a sympatrically breeding congener (see Payne 1986:111). *C. hemileucurus* males were found singing nearby during this same period, and the descriptions of *hemileucurus* by Skutch (1967: 20) suggest possible overlap in habitat use and perhaps even song.

An excellent series of Long-tailed Sabrewings collected in the mid-1970s in the vicinity of Cerro Balzapote (near Volcán San Martín) in Los Tuxtlas allowed us to examine morphological differences between the sexes of this monochromatic species. The lengths of the wing chord, tail and bill (from posterior of nasal operculum to tip) were measured to the nearest 0.1 mm with vernier calipers. Body mass was taken to the nearest 0.1 g with a triple-beam balance at time of collection. Although monochromatic, the sexes are morphologically distinct. Males were larger than females in all of four characters examined (Table 1). There was no overlap in tail length or body mass between the sexes in this sample, allowing us to offer the following guidelines to sexing birds in the hand. As body mass is variable and tail measurements between the two sexes in this sample have a non-overlap zone of only 0.9 mm, we recommend that sexing birds in the hand follow a "wing chord + tail" formula: birds with $WCH + TL > 123.9$ can probably be called males, and those with $WCH + TL < 120.7$ should be classed female. Due to slight shrinkage during the drying of museum specimens, it is likely that any birds found

TABLE 1. Comparative measurements (mm) and body mass (g) of male and female *Campepylopterus excellens* from Cerro Balzapote, Veracruz. Mean, standard deviation (min.-max.).

	Males (22)			Females (18)		
	\bar{x}	SD	Min.-Max.	\bar{x}	SD	Min.-Max.
Wing chord	71.1	2.21	(66.6-74.8)	65.6	0.98	(63.1-68.0)
Bill ^a	29.5	0.96	(27.8-30.7)	27.9	0.94	(26.2-30.0)
Tail	59.9	2.34	(55.5-64.4)	49.8	2.35	(42.4-54.6)
Mass	10.8	1.05	(9.2-12.7)	6.8	0.52	(5.9-8.0)
WCH + TL ^b	131.0	3.04	(123.9-135.8)	115.4	2.35	(110.4-120.7)

^a Bill measured from posterior of nasal operculum to tip.

^b Wing chord + tail, recommended for use in sexing captive birds.

to fall in the 120.7-123.9-mm size are female, but caution should be used here. Care will also have to be taken in applying these characters in the field because it is possible that *C. excellens* and *C. curvipennis* (a species we have not studied) occur sympatrically in southern Veracruz and north-eastern Oaxaca (Lowery and Dalquest 1951). Another means of sexing individuals in a captive sample is to graph along two axes the characters WCH + TL versus mass. This method separated the sexes in our sample into two discrete groups.

Accurate aging awaits study of marked birds. In comparison with the "adult," the juvenal plumage shows the underparts buffier, with less blue on the crown, and the tips of the outer rectrices with much dirty buff in females, and less dirty buff in young males. Adult (presumably after-second-year, or ASY) females have a distinct white tail tip pattern, while adult (presumably ASY) males have very little or no paleness to the rectrix tips. Back color appears to be a duller green in juveniles of both sexes, and buffy feather tips seem to be a character of the true juvenal plumage (we have no specimens completely in this plumage). As the juvenal plumage is replaced, there still appears to be less brilliant green and more bronze in younger birds. Pale tips to the outer rectrices in males seems to parallel a lesser width of the rachis and a slighter bend in the outer primaries, and together these characters may be useful in distinguishing hatching-year/second-year (HY/SY) birds from older males, whose outer primaries have a wide rachis and a pronounced angularity. A properly marked population would answer this and other questions. Our banding programs did not include hummingbirds.

Breeding condition was not noted in any of the female specimens (taken August-May), and specimen data suggest that male testes are enlarged from September through May. An individual captured near Volcán Santa Martha on 17 Mar. 1985 seemed to be in largely juvenal plumage. A male (BellMNH 31283) from 26 Apr. 1974 has almost completed the first prebasic molt.

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