First Description of a Tent Used by Platyrrhinus helleri (Chiroptera: Phyllostomidae)

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White-lined fruit bats of the genus Platyrrhinus Saussure (Chiroptera: Phyllostomidae) are found from southern Mexico south to southeastern Peru, Bolivia, Paraguay, Uruguay, and southern Brazil, where they live in mature and disturbed lowland rainforest, gardens, clearings and plantations, cloud forest, deciduous forest and Caatinga (Sanborn, 1955; Emmons and Feer, 1999). Ten species are commonly recognized in Platyrrhinus (Nowak, 1999), although a recent study has suggested that this number is an underestimate (Velazco, 2002).

Heller’s broad-nosed bat, Platyrrhinus helleri Peters is the most common and widespread Platyrrhinus species (Nowak, 1999). This species ranges from southern Mexico southward to Central America, and South America to Peru, Bolivia, and Amazonian and Central Brazil, and Trinidad (Ferrell and Wilson, 1991).

Platyrrhinus bats roost in caves or tunnels, culverts or under bridges, foliage or under branches, hollow trees, buildings, and under large leaves or palm fronds (Tuttle, 1976; Willig and Hollander, 1987; Ferrell and Wilson, 1991; Albuja, 1999; Nowak, 1999). Peracchi and Albuquerque (1971) observed smaller groups of P. lineatus roosting under leaves of the palm, Livistona oliviformis (Arecaceae), and larger groups roosting under Syagrus picrophylla (Arecaceae) leaves. Taddei (1973) observed eight individuals roosting beneath a Draegaena (Agavaceae) (approximately 3 m in height), and two individuals in a bromeliad (Bromeliaceae) 12 m off the ground. In Trinidad, Goodwin and Greenhall (1961) reported one individual of P. helleri roosting in a hollow olivier tree (Chuncoa obovata, Combretaceae) in association with Saccopyryx leptura Schreber, Micronycteris megalotis Gray, M. minuta Gervais, and Carollia perspicillata Linnaeus. They also reported two individuals roosting under leaves of the carat palm (Sabal glaucensens, Arecaceae).

No detailed descriptions of the roosts have ever been published for any Platyrrhinus species. In this study we present the first description of the tent of P. helleri in an undisturbed lowland wet forest at Cocha Cashu Biological Station (11°54’S,
71°18’W), elevation ca. 400 m, Manu National Park, Department of Madre de Dios, southeastern Peru. Mean temperature at the station is 23° to 24°C, and rainfall averages about 2000 mm annually (Terborgh et al., 1990). Rainfall is concentrated during a 5-mo rainy season extending from late November to early May. On average, less than 100 mm of rain falls monthly during the dry season. More complete descriptions of the area and its ecology are presented by Terborgh (1983), Foster et al. (1986), and Gentry and Terborgh (1990).

Bat tent observations were made from 12 August to 16 September 1994 during a study on diurnal vertebrates using Ficus spp. (Moraceae) at Cocha Cashu. On 12 August 1994, JGT found three adult males of *P. helleri* roosting (Fig. 1A) in a tent of *Eirmocephala megaphylla* (Asteraceae:...
Vernoniaeae). The bats were captured, weighed (13.5, 14.0, and 15.5 g), and then released. The shrub was located in Terra firme forest near a fruiting Ficus pertusa sensu lato tree. On 12 August two tents were found in the same plant, but only one of them was being used by bats as a diurnal roosting place. That tent was used by these bats for at least 35 days, when the observations ended. A third tent was built on 15 August in an adjacent shrub of the same species approximately 10 m from the previous one. These observations strongly suggest that P. helleri was the actual tent builder.

The tent architecture was ‘conical’, as described by Kunz et al. (1994; see Fig. 1B). The tents were formed by the leaves drooping downward after severe damage to the midrib caused by the bats chewing on it; the fallen tip forms a conical-shaped enclosure under which the bats roost. Bats severed the midrib near the base of the petiole (approximately 3 cm), and no damage was observed on the leaf surface. The main tent was located at the tip of one of the stems of the 2.40 m-height Eirmocephala shrub. This tent was formed by 15 leaves that formed the sides of the tent, with the following dimensions (in cm): roost height = 240, tent length = 49, diameter of tent entrance = 49. The second tent, located in the same shrub, was formed by 11 leaves, with the following dimensions (in cm): roost height = 195, tent length = 50, diameter of tent entrance = 37.5. The third tent, located in a 2.44 m-height Eirmocephala shrub, was formed by 12 leaves, with the following dimensions (in cm): roost height = 244, tent length = 50, diameter of tent entrance = 23.2.

This study constitutes the first description of the tent of P. helleri. It also constitutes the first record of phyllostomid bats using a plant species in the family Compositae. Among Microchiroptera, only the phyllostomid bat Uroderma bilobatum Peters is known to construct conical tents (Kunz et al., 1994). Convergently, conical tents have also been reported for the Megachiroptera bat, Cynopterus brachyotis Müller (Kunz et al., 1994). The general architecture of conical tents among these three species does not differ greatly, which may be explained by the overall similarities in leaf shape (elliptical) and leaf distribution (radial and alternate) of the plants used by them to build their tents. At least 15 species of phyllostomid bats have been reported to modify leaves of plants to construct tents as roosts (Kunz et al., 1994). With the exception of one species, the Carolliinae bat Rhipiphylla pumilio Peters, all the reported species belong to the subfamily Stenodermatinae (Kunz et al., 1994). Kunz et al. (1994) assignment of R. pumilio as a tentmaker was based on Charles-Dominique (1993) report on tent-use by this species. However, Charles-Dominique (1993) concluded that R. pumilio might not be the tent-builder, but rather using tents already built by other species of bats. Occupancy of tent roosts built by other species might not be infrequent, as has been reported by Simmons and Voss (1998) who found individuals of R. pumilio using tents previously occupied by Ectophylla macconnelli Thomas. This finding suggests that tent building in Microchiroptera has evolved only once in the Phyllostomidae (in the subfamily Stenodermatinae) and not twice as previously thought.

Dermanura Gervais and Uroderma Peters, two genera close related to Platyrrhinus, are known to build up to seven different types of tents (Kunz et al., 1994), and it may be that, Platyrrhinus has the same ability to build different tent types as these other genera. Further studies searching for roosting sites in this, and other species, are necessary to understand roosting site preferences and roosting behavior in general.
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LITERATURE CITED


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