



# Notes on the Natural History of the Endangered La Loma Treefrog, *Hyloscirtus colymba* (Anura: Hylidae), from Santa Fe National Park, Panamá

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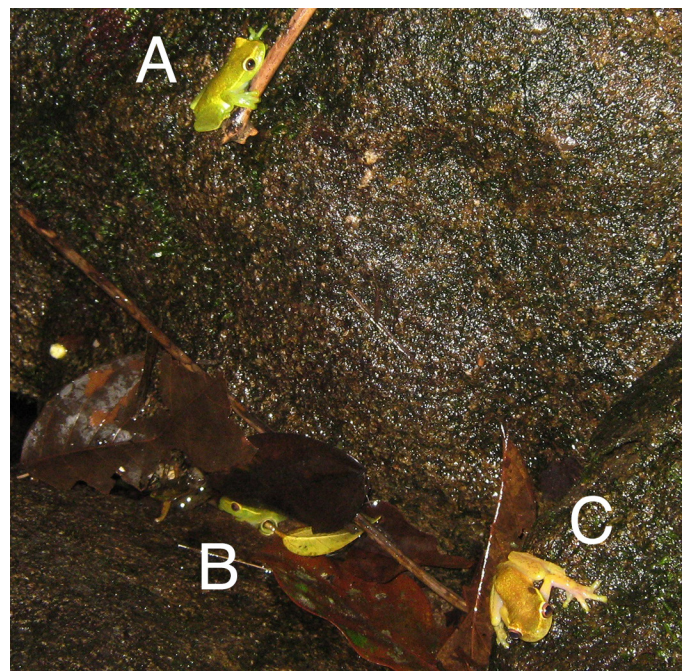
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Natural history observations of frogs in the genus *Hyloscirtus* are very limited (Mueses-Cisneros and Perdomo-Castillo 2011; Rivera-Correa and Faivovich 2014) and only a few observations have been made for *H. colymba* (Amphibia Web 2022). This treefrog is a nocturnal and arboreal species that lives at low to middle elevations (Jaramillo et al. 2010; Köhler 2011). The species is distributed from southeastern Costa Rica to eastern Panamá (Duellman 1970; Hertz et al. 2011; Köhler 2011; Samudio et al. 2015; Leenders 2016). Reports from northern Colombia, adjacent to eastern Panamá, should be checked to confirm the presence of the species in that country (Bernal and Lynch 2008; Leenders 2016; Batista et al. 2020). The Central American and Colombian populations exhibit bioacoustic and morphological differences, indicating the possibility of cryptic diversity (Botero and Alexander 2021). This species suffered dramatic population declines in western and central Panamá (Lips 1999; Lips et al. 2006; Crawford et al. 2010), and is considered Endangered by the IUCN Red List of Threatened Species (Batista et al. 2020). *Ex situ* conservation efforts with *H. colymba* in Panamá and the United States have been extremely difficult and unsuccessful in terms of captive breeding (Gagliardo et al. 2008; Gratwicke et al. 2016).

During the Sociedad Mastozoológica de Panamá’s fieldwork with camera traps at Santa Fe National Park in 2009, the first and last authors documented nocturnal observations of herpetofauna in the streams of Santa Fe National Park. The cloud forest was well preserved, with many bryophytes and bromeliads saturated with water. The weather was cloudy. At 1933 h on 20 October 2009, in El Pantano Corregimiento, Santa Fe District, Veraguas Province (8.57°N, 81.09°W; WGS84; 1,100 m asl), three *H. colymba* (two males and one female) were photographed and filmed (<https://youtu.be/MZJhSULupZE>). The two males were calling on rocks

approximately 0.25 m from the stream bank (Fig. 1 A & C). We considered this interaction to be courtship behavior, because the two males were not fighting but were watching the female while they called. Initially, we observed the female out of the water, and after one minute of observation, she hid under a rock in the water (Fig. 1B). During the five minutes of observation, the two males kept calling without showing signs of disturbance. Previous observations indicated that males are extremely cautious, calling from under large rocks and stopping their calling at the slightest disturbance (Duellman 1970). One published record from General de División



**Fig. 1.** La Loma Treefrogs (*Hyloscirtus colymba*): Males calling exposed on a rock (A & C) and a female partially submerged in water under a rock in Santa Fe National Park, Panamá. Photograph by Ángel Sosa Bartuano.



**Fig. 2.** A post-metamorphic La Loma Treefrog (*Hyloscirtus colymba*) on a rock in a stream at Alto de Piedra, Santa Fe National Park, Panamá. Photograph by Ángel Sosa Bartuano.

Omar Torrijos Herrera National Park reported a male-female interaction in *H. colymba*, but provided no details (Elizondo 2017). Researchers have found calling males in April, July, and December (Savage 2002). Leenders (2016), assumed that the dry season would be the appropriate time for laying eggs in the streams due to decreases in water levels.

We encountered one post-metamorphic *H. colymba* on a rock near the edge of a stream (Fig. 2) at 1117 h on 26 May 2015 in Alto de Piedra, Santa Fe Corregimiento, Veraguas Province (8.517°N, 81.121°W; WGS84; 810 m asl). This observation was near the locality of the first *H. colymba* report in the Veraguas Province from 2008 (see Hertz et al. 2011). The vegetation was saturated with water and the weather was partially cloudy without rain. These observations reinforce the conclusion of Elizondo (2017) that the occurrence of reproductive interactions and the presence of tadpoles and postmetamorphic individuals indicates that *H. colymba* is still able to breed in western Panamá. Our observations of *H. colymba* tadpoles and calling males, recorded between 2008 and 2010, along with that of Hertz et al. (2012), support the argument that a reproductively active population is extant in Santa Fe National Park. However, because our observations are not recent, we recommend new field surveys to gather additional information, especially in light of *Batrachochytrium dendrobatidis* (Bd) which has caused declines in amphibian populations in Santa Fe National Park between 2002 and 2004 (Brem and Lips 2008).

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