

Notes on the natural history
of the casque-headed treefrog
Trachycephalus jordani
(STEJNEGER & TEST, 1891)

Trachycephalus jordani (STEJNEGER & TEST, 1891) is a treefrog mostly endemic to Ecuador. It inhabits the lowlands from extreme southwestern Colombia across western Ecuador to extreme northwestern Peru, between 0 to 1000 m elevation (ICOCHEA et al. 2004; FROST 2006). Although *T. jordani* is a common treefrog species in various habitats (including secondary forests and agricultural areas), very few information is available on most aspects of its natural history or ecology. Herein I present some information on the habitat preferences and diet of *T. jordani*.

Examined specimens are deposited at the following collections: Universidad San Francisco de Quito, Quito (DFCH-USFQ); Fundación Herpetológica G. Orcés, Quito (FHGO); National Museum on Natural History, Smithsonian Institution, Washington, D.C. (USNM). Some distributional data were obtained from records held in the following institutions and accessed through HerpNet data portal (<http://www.herpnet.org>) on 08 November 2006: California Academy of Sciences, San Francisco (CAS, collection database portal <http://www.calacademy.org/research/herpetology/catalog/>), Los Angeles County Museum of Natural History, Los Angeles (LACM), University of Illinois, Museum of Natural History, Urbana (UIMNH), The Field Museum, Chicago (FMNH, collection database portal <http://fm1.fieldmuseum.org/collections/search.cgi?dest=herps>), Natural History Museum and Biodiversity Research Center, University of Kansas, Lawrence (KU), and Museum of Comparative Zoology, Harvard University, Cambridge, (MCZ, collection database portal <http://collections.oeb.harvard.edu/Herp/AmphSearch.htm>). Classification of vegetation formations follows SIERRA (1999), with modifications proposed by CISNEROS-HEREDIA (2006b).

Information for *T. jordani* was obtained from 24 localities across western Ecuador (italics = specimen examined): Province of CAÑAR: CAS 104973, 70 km E Guayaquil. Province of EL ORO: near

Machala (pers. obs.). Province of ES-MERALDAS: FHGO-alive 2448, Río Verde. KU 221679–80, Castelnovo. DHMECN 1321–26, 2711–13, 2721, Cabo San Francisco. Province of GUAYAS: KU 111992–94, 40 km E Duran. CAS-SUA 2272, Milagro. CAS-SUA 6407 Isla Puná. C. MARTINEZ (pers. comm.): Loma Alta. STEJNEGER & TEST (1891): Guayaquil. Province of LOS RÍOS: DFCH-USFQ B174, USNM 285297–285307, KU 146582–146604, 164477–89, MCZ A-88441, 95413–428, MCDIARMID & ALTIG (1990): Río Palenque Scientific Center (00°35'S, 79°21'W, 200m). KU 132451–61, 4 km N Quevedo. ALMENDÁRIZ & CARR (1992): Jauneche. Province of LOJA: FHGO 3387, Cordillera Mangahurquillo (04°03'S, 80°16'W, 325 m elevation). FHGO-alive 2470, 2474, Quebrada Fayque Verde, Cañaverale, canton Zapotillo. FHGO 975, Puyango (03°53'S, 80°05'W, 300 m elevation). Province of MANABÍ: FHGO 979, Salango (0 m elevation). RON et al. (2004): Puerto Rico. CISNEROS-HEREDIA (2006a): Cerro La Mocora (ca. 550 m a.s.l.). Province of PICHINCHA: FHGO 616, 976–978, Hacienda Margarita, km 35 Santo Domingo de los Colorados– Quevedo road (300 m elevation). KU 142647, 217771, MCZ A-88442, Santo Domingo de los Colorados. KU 178888, 2 km E, 1 km S Santo Domingo de los Colorados. KU 202747, Tinalandia, 15.5 km SE Santo Domingo de los Colorados. KU 217772, La Concordia, Bosque Protector la Perla. CAS-SUA 10605, 35 km E of Santo Domingo de los Colorados, near Hacienda Lelia (Fig. 1).

All localities are restricted to deciduous, semi-deciduous, and seasonal evergreen habitats across the entire Pacific coastal region of Ecuador from 0 to 1000 m elevation. There are records of this species in all five coastal provinces (Esmeraldas, Manabí, Guayas, Los Ríos, and El Oro), and in the lowland regions of three inland provinces (Pichincha, Cañar, and Loja). The species inhabits a wide variety of vegetation formations in western Ecuador, including: Mangrove, Seasonal Lowland Evergreen forest, Lowland Semideciduous Forest, Lowland Deciduous forest, Lowland Dry Shrubs, Littoral Dry Shrubs, Littoral Spiny Shrubs, Seasonal Foothill Evergreen forest, and in the Cordillera de la Costa: Low Mon-



Fig. 1: Map of Ecuador showing the 24 localities of *Trachycephalus jordani* (STEJNEGER & TEST, 1891) mentioned in the text.

tane Cloud forest, Foothill Semideciduous forest, and Seasonal Foothill Evergreen forest. Similar vegetation formations are occupied by the species in extreme southwestern Colombia (Department of Nariño); and northwestern Peru (Department of Tumbes) (ICOCHEA et al. 2004, this paper). *Trachycephalus jordani* occurs and breeds in primary and secondary forests, as well as plantations, gardens, and even human buildings (in certain altered areas it reaches even higher densities than in pristine area, e.g., Mompiche and Río Palenque). *Trachycephalus jordani* is among the few frogs found in mangroves, together with *Chaunus marinus* (LINNAEUS, 1758) and *Scinax quinquefasciatus* (FOWLER, 1913). It is an explosive breeder, using ponds and open flooded areas for reproduction (MCDIARMID & ALTIG 1990, pers. obs.). Males call from inside the water (e.g., several males heard and observed at ponds in littoral shrubs and pastures in Mompiche, April 2006) or from perches in shrubs or low trees (e.g., a male was heard calling during the late evening and early night from an arboreal bromeliad ca. 5 m above ground in old-growth Low Montane Cloud forest in Cerro La Mocora on June 2000). *Trachycephalus jordani* is mostly nocturnal (85% of 28 specimens with

available field data were active at night), but during the breeding season males can be heard calling during the late afternoon and evening. Otherwise, during the day individuals of *T. jordani* usually hide inside cavities of trunks or bamboos, amidst palm or banana leaves, inside bromeliads, or inside human settlements. Dissection of the digestive tract of five specimens of *T. jordani* revealed mainly arthropods parts (Orthoptera, Lepidoptera, and Coleoptera); but specimen FHGO 3387 had shells and parts of at least two terrestrial snails (Mollusca: Gastropoda), elytra and head of one adult beetle (Coleoptera), one larva of moth (Lepidoptera), and remains of wood and soil. Feeding on mollusks (molluscivory) has been reported few times in anurans (SAVAGE 2002; NUSSBAUM et al. 1983; METTER 1964), and this is the first report for *T. jordani*. The absence of mollusks on the other specimens suggests opportunistic feeding.

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REFERENCES: ALMENDÁRIZ, A. & CARR, J. L. (1992): Amphibians and reptile list; January-February trip; pp. 128–130. In: PARKER, T. A., III & CARR, J. L. (Eds.): Status of forest remnants in the Cordillera de la Costa and adjacent areas of southwestern Ecuador, RAP Working Paper 2; Washington, D. C. (Conservation International). CISNEROS-HEREDIA, D. F. (2006a): Amphibia, Machalilla National Park, western coastal Ecuador.- Check List, Sao Paulo; 2 (1): 45–54. CISNEROS-HEREDIA, D. F. (2006b): Distribution and ecology of the Western Ecuador frog *Leptodactylus labrosus* (Amphibia: Anura: Leptodactylidae).- Zoological Research, Kunming; 27 (3): 225–234. FROST, D. R. (2006): Amphibian species of the world. Version 4. <<http://research.amnh.org/herpetology/amphibia/index.html>> New York (American Museum of Natural History) [Accessed on December 2006]. ICOCHEA, M. J. & COLOMA, L. A. & RON, S. & CISNEROS-HEREDIA, D. F. (2004): *Trachycephalus jordani*. <<http://www.globalamphibians.org>>, Global Amphibian Assess-

ment. Washington, D.C. (IUCN, Conservation International, NatureServe) [Accessed on December 2006].
McDIARMID, R. W. & ALTIG, R. (1990): Description of a bufonid and two hylid tadpoles from western Ecuador.- *Alytes*, Paris; 8 (2): 51–60. METTER, D. E. (1964): A morphological and ecological comparison of two populations of the tailed frog, *Ascaphus truei* STEJNEGER.- *Copeia*, Washington, D.C.; 1964: 181–195.
NUSSBAUM, R. A. & BRODIE, E. D., Jr. & STORM, R. M. (1983): Amphibians and reptiles of the Pacific northwest. Idaho (University Press of Idaho), 168 pp. RON, S. R. & CANNATELLA, D. C. & COLOMA, L. A. (2004): Two new species of *Physalaemus* (Anura: Leptodactylidae) from western Ecuador.- *Herpetologica*, Johnson City; 60: 261–275. SAVAGE, J. M. (2002): The amphibians and reptiles of Costa Rica. Chicago (Univ. Chicago Press), 934 pp. SIERRA, R. (1999): Propuesta preliminar de un sistema de clasificación de vegetación para el Ecuador continental. Quito (Proyecto INEFAN/GEF-BIRF EcoCiencia), 194 pp. STEJNEGER, L. & TEST, F. C. (1891): Description of a new genus and species of tailless batrachian from tropical America.- *Proceedings of the United States National Museum*, Washington, D.C.; 14: 167–168.

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