



***Phymonotus jacintotopos*: A new genus and species of shield-backed katydid (Orthoptera: Tettigoniidae: Tettigoniinae: Nedubini) from the San Jacinto Mountains of California, USA**

DAVID C. LIGHTFOOT¹, DAVID B. WEISSMAN² & NORIHIRO UESHIMA³

¹Museum of Southwestern Biology, Department of Biology, University of New Mexico, MSC03 2020, Albuquerque, NM 87131 USA. E-mail: dlightfo@unm.edu

²Department of Entomology, California Academy of Sciences, San Francisco, CA 94118 USA. E-mail: gryllus@gmail.com

³1435-1 Kubo-cho, Matsusaka, Mie 515-0044, Japan. E-mail: nori-ue@ma.mctv.ne.jp

Abstract

We describe the monotypic shield-backed katydid genus *Phymonotus* and species *jacintotopos* from the San Jacinto Mountains of southern California, USA. *Phymonotus* is unique in having an unusually enlarged dome-like pronotum, a distinctive song, and seven additional distinctive morphological features. We believe that *Phymonotus* is a Pleistocene relic taxon, now endemic to geographically isolated high elevation conifer forests of the San Jacinto Mountains. Nearest relatives *Agalothorax* and *Neduba* taxa occur in lower elevation environments throughout the surrounding region. *Phymonotus* is a member of the katydid tribe Nedubini which has a Gondwanan distribution with additional taxa in Australia and South America (Chile and Argentina). Western North American Nedubini apparently result from a South American dispersal event. We also describe characters newly used for the description and diagnosis of *Phymonotus*, the dorsal and ventral lobes of the titillators, and the dorsal sclerites of the titillators. We report evidence that *Phymonotus* males may produce thoracic glandular secretions that are offered to mating females.

Key words: *Agalothorax*, calling song, description, dorsal and ventral lobes of the titillators, dorsal sclerite of the titillators, karyotype, *Neduba*, San Jacinto shield-backed katydid, thoracic glandular secretions

Introduction

We here describe the shield-backed katydid *Phymonotus jacintotopos* Gen. et sp. nov. (Figs 1, 2) from southern California. This taxon is a member of the tribe Nedubini Rentz and Colless, which has a world geographic distribution consistent with Gondwanan origins. Most species occur in Australia (Eades *et al.* 2011: 13 genera and 50 species), others in South America (Eades *et al.* 2011: 5 genera and 21 species), and a geographically disjunct group of three genera, including *Phymonotus*, in western North America. *Phymonotus* is most closely related to the other North American Nedubini genera *Agalothorax* Caudell (5 species) and *Neduba* Walker (9 species). Other researchers (Rentz and Colless 1990, Cole 2009, 2010) included *Phymonotus* as an unnamed taxon in morphological and molecular phylogenetic analyses, respectively, and found *Phymonotus* to be a distinct taxon equivalent to the genus rank, sister to *Agalothorax* and *Neduba*. We concur with that phylogenetic placement, and provide a formal description. Also, we name and describe new morphological characters; the dorsal sclerite of the titillators, which is unique to *Phymonotus*, and the dorsal and ventral lobes of the titillators, which are present in all three genera, but differ among the genera relative to sclerotized structures. We report evidence that *Phymonotus* males may produce thoracic glandular secretions for mating females, which is unknown among other Tettigoniinae.

Material and methods

Specimens of *Phymonotus*, *Agalothorax* and *Neduba* were borrowed from the California Academy of Sciences, San Francisco, CA (CAS) and the Museum of Southwestern Biology, University of New Mexico, Albuquerque,