

**A NEW *PSEUDOMORPHA* KIRBY (COLEOPTERA:
CARABIDAE: PSEUDOMORPHINI) FROM THE SIERRA DE
LOS TUXTLAS, VERACRUZ, MEXICO**

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ABSTRACT. *Pseudomorpha tuxtla*, new species, is described from the Estacion de Biologia "Los Tuxtlas." The known distribution of this species is restricted to the Sierra de Los Tuxtlas region, thereby adding another endemic biotic element to the highly distinctive biogeographic characterization of this region.

KEY WORDS: Taxonomy, Zoogeography, area of endemism, Mexico.

RESUMEN. *Pseudomorpha tuxtla*, especie nueva, es descrita de la Estación de Biología "Los Tuxtlas." El patrón de distribución de esta especie está restringido a la región de la Sierra de Los Tuxtlas; de este modo, se agrega otro elemento biótico endémico a esta excepcional región biogeográfica.
PALABRAS CLAVE: Taxonomía, Zoogeografía, área de endemismo, México.

The Sierra de los Tuxtlas comprises an isolated volcanic massif of late Cenozoic age (Ferrusquía-Villafraña 1993) that forms an island of humid-montane habitats between the Sierra Madre del Sur and the Sierra Madre de Chiapas. It is characterized both by great species richness -e.g., 51% of the species of Papilionidae known in Mexico can be found there (Llorente-Bousquets and Luis-Martínez, 1993)- as well as great endemism. For example, the Los Tuxtlas massif joins the Tuxtepec area, and the "Crescent" area of northern Chiapas as areas in Mexico that support tree species restricted to lowland high precipitation situations (Wendt 1993). The accessibility to native habitats afforded by the Estacion de Biologia of the Universidad Nacional Autónoma de México has resulted in the discovery of numerous arthropod species with known distributions restricted to the Sierra de Los Tuxtlas. Recent discoveries include a ctenuchine moth (Pérez Ruiz and Sánchez Sarabia, 1986), a pseudothelphusid crab (Alvarez, 1989), a damselfly (Dunkle, 1989), a rhipiphorid beetle (Zaragoza Caballero, 1991), a carabid beetle (Liebherr, 1992), and a cerambycid beetle (McCarty, 1993). Many other species may be cited that exhibit distributional ranges that include the Sierra de Los Tuxtlas and montane regions to the north or south; e.g., the pierid butterfly *Dismorphia eumoe* (Doubleday) (Llorente-Bousquets and Luis-Martínez, 1988).

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Below we describe yet another endemic element permitting the recognition of the geographically restricted Los Tuxtlas region as a rich and highly distinctive area of endemism. This new species is a member of the carabid beetle tribe Pseudomorphini, genus *Pseudomorpha* Kirby, a genus distributed in Australia, and in the New World from Argentina to the southern United States (Notman, 1925; Baehr, 1994, 1997). The biology of most *Pseudomorpha* species is unknown, but, in several species larvae are known myrmecophiles (Lenko, 1972; Erwin, 1981). Larval morphology is characterized by physogastry in the later instars, and the possession of mushroom-shaped setae that may serve a secretory function (Erwin, 1981). Ovoviviparity, recorded in two species -*P. angustata* Horn and *P. hubbardi* Notman (Liebherr and Kavanaugh, 1985)- presumably evolved to enhance larval survival in the company of ants.

The tribe Pseudomorphini exhibits a cumulative distribution that encompasses Australia and New Guinea, the Oriental Region and South Africa plus the New World distribution of *Pseudomorpha* (Baehr 1997). Based on cladistic analysis of adult characters, Baehr (1994) found that *P. laevis* Chaudoir of Argentina is the adelphotaxon to the rest of the genus *Pseudomorpha*. This latter sister group includes 3 Australian species and 27 heretofore valid New World *Pseudomorpha* species (Csiki, 1933; Reichardt, 1977; Baehr, 1997). Such a hypothesis suggests that *Pseudomorpha* primitively possessed a distribution including Australia and southern South America, those areas possibly connected through eastern Antarctica (Crisci *et al.*, 1991) until Eocene vicariance of Australia and Antarctica (Smith *et al.*, 1981). Cladistic relationships of *Pseudomorpha* species found in northern South America, Middle America, Mexico, and the southern United States could have much to say about the area relationships of this biogeographically dynamic region.

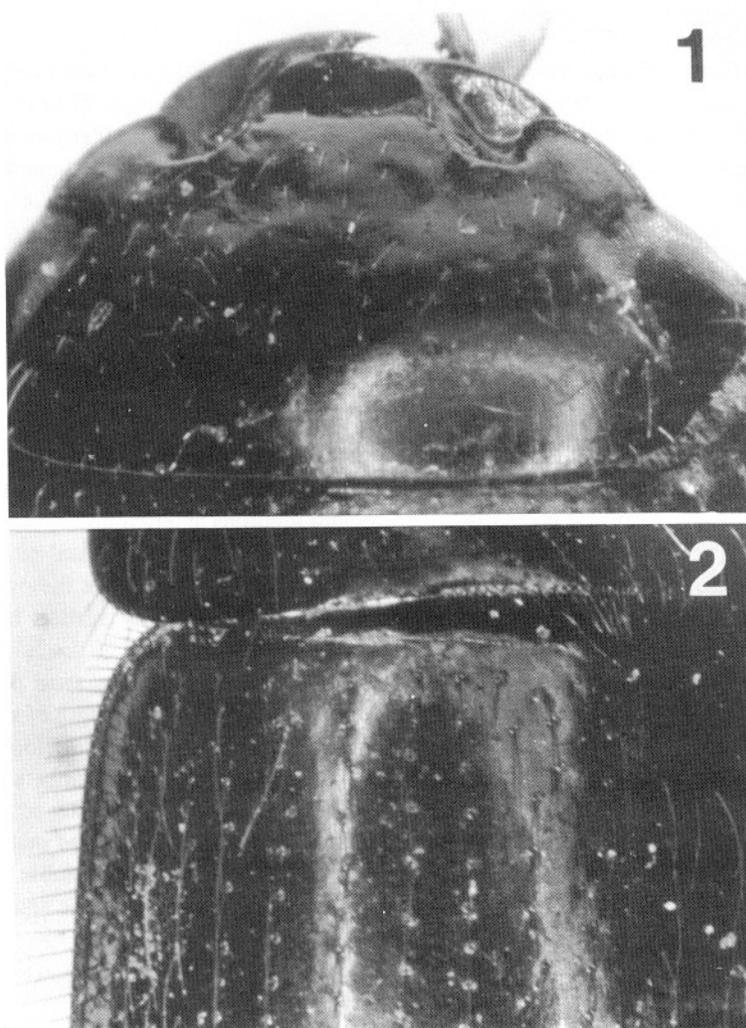
Pseudomorpha tuxtla, new species

(Figs. 1-2)

HOLOTYPE. MEX: Veracruz, Est. Biol. "Los Tuxtlas", 26-VII-1990, 150 m el., at light, J.K. Liebherr, CAS-CU-UCB Field Exp./Holotype ♀, *Pseudomorpha tuxtla*, J. K. Liebherr and K. W. Will 1997 (deposited in Instituto de Biología-Universidad Nacional Autónoma de México).

Diagnosis. Body large, overall length 8.9 mm, ovoid, elytra evenly narrowed in posterior half of length; preocular lobes indistinct, lateral areas of clypeus barely protruding (Fig. 1); head with sparse irregular setae, vertex glabrous near pronotum; pronotal lateral margins glabrous, hind angles bearing 4-5 stout setae, median basal marginal bead lined with about 40 densely packed setae, disc irregularly setose; prosternal process margined, with ring of setae; elytra with long setae in striae,

intervals nearly impunctate (Fig. 2), slightly alutaceous due to isodiametric microsculpture.



Figs. 1-2. *Pseudomorpha tuxtla*, holotype female. 1. Head, dorsal view, showing nearly obsolete preocular lobes, sparse, irregular setation on the frons, and glabrous vertex. 2. Base of left elytra, dorsal view, showing striae indicated by regular rows of long, decumbent setae.

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DESCRIPTION. *Head.* Clypeus and frons with sparse, irregular setae, 5 setae across width of clypeus, about 10 across width of frons, vertex glabrous; frontoclypeal suture obsolete, difficult to trace; preocular lobes only slightly expanded beyond curvature of compound eyes (Fig. 1); antennae short, extending to only middle of procoxae; mentum tooth equitriangular, lateral sides as long as median base.

Prothorax. Pronotal base broad, distance between tightly rounded front angles $0.65 \times$ distance between rounded hind angles; pronotal disc with a uniform, sparse covering of decumbent setae; pronotal lateral margins glabrous, hind angles with 4-5 posteriorly directed, stout setae; median base finely margined, with about 40 setae lining the marginal bead across median half of pronotal basal width; 4 equally spaced, semierect setae along posterior margin between median basal setae and those at hind angles; prosternal process finely margined along posteroventral margin, ringed with fringe of 9 setae surrounding two median setae. *Elytra.* Striae uniformly setose, indicated by elongate decumbent setae in nearly regular rows, setae more irregularly covering regions between striae 8 and 9, the setal bases not disturbing flat cuticular surfaces between setae; intervals nearly smooth, their surface composed of isodiametric sculpticells and irregularly interspersed punctures the size of sculpticells (Fig. 2); elytral lateral margins evenly narrowing behind midlength of elytra; elytral disc domed, very convex, sutural margin slightly upraised in apical half of length. *Legs and pterothorax.* Profemora glabrous anteroventrally except for very short setae near coxae; metasternal process unmargined, its apical projection depressed relative to a ring of 12 setae on the posterior margin of the mesosternum between the mesocoxae; posterior region of mesosternum nearly vertical between mesocoxae; mesocoxae with four stout ridge setae.

Abdomen. Second visible ventrite covered with dense, fine, long setae posterad the metacoxae; setal patch on third visible ventrite covering entire length of segment across middle $2/3$ of width; fourth visible ventrite with three rows of long setae across middle $1/3$ of width; fifth and sixth visible ventrites with only a sparse covering of shorter setae; sixth and apical visible ventrite with 5-6 long setae each side on apical margin (female specimen). *Female reproductive tract and ovipositor.* The single known specimen was not dissected, as it was deemed preferable to have such a dissection completed in the context of a comprehensive cladistic analysis of New World *Pseudomorpha*.

Etymology. The species is named after the type locality as a noun in apposition.

Identification. *Pseudomorpha tuxtla* will key to couplet 11 of Notman's (1925) key; the couplet resolving *P. vandykei* and *P. consanguinea*. From *P. vandykei*, the new species can be diagnosed by its larger size, complete punctate striae bearing long

decumbent setae, and shorter antennae not surpassing the middle of the procoxae. From *P. consanguinea*, the new species can be diagnosed by its obsolete frontoclypeal suture, shorter antennae, and the complete, punctate, and setose elytral striae.

Relationships. The beaded basal pronotal margin lined with setae would appear to be a derived condition within *Pseudomorpha*, and is shared with *P. pilatei* Chaudoir of Yucatan, *P. alutacea* Notman of New Mexico, and *P. tenebroides* Notman, *P. vandykei* Notman, and *P. consanguinea* Notman of Arizona.

ACKNOWLEDGEMENTS

We thank Dr. Harry Brailovsky, Instituto de Biología, Universidad Nacional Autónoma de México, for his assistance during our field work at "Los Tuxtlas" and other sites in México. JKL thanks John Doyen and Vince Lee for their support and advice throughout the 1990 field trip. This research was supported by U.S. National Science Foundation grant BSR-8614628.

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Recibido: 22 abril 1997.

Aceptado: 2 junio 1997.