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XYLOPASSALOIDES (COLEOPTERA: PASSALIDAE) IN MESOAMERICA: RELATIONS, DISTRIBUTION AND NEW SPECIES

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ABSTRACT

Xylopassaloides, endemic to northern Mesoamerica, includes mid- to high-altitude, cloud forest species. Some species' distribution patterns are similar to those of certain species of *Ogyges*. Two new species of *Xylopassaloides* are described and the description of a third species is clarified. A key to the genus is given.

RESUMEN

Xylopassaloides, endémico del norte de Mesoamérica, incluye especies del bosque nebular de altitudes medias y altas. Algunas especies poseen un patrón de distribución semejante al de ciertas especies de *Ogyges*. Se describen 2 especies nuevas de *Xylopassaloides* y se clarifica una tercera. Se presenta una clave para distinguir las especies dentro del género.

The genus *Xylopassaloides* was established (Reyes-Castillo et al. 1987) to include 3 species. Exploration in eastern Guatemala and adjacent Honduras has resulted in the discovery of 2 more species and a range extension of a third.

Xylopassaloides moxi Schuster NEW SPECIES
(Fig. 1a)

DESCRIPTION. *Head*: Anterior border of labrum straight. Anterior border of clypeus straight. Fronto-clypeal suture well marked on sides, posterior border fading in middle; inner tubercles not crossing it. Frontal fossae without punctations.

Median frontal structure ("horn") without posterior basal groove, lateral ridges distinct with rounded apices. Supraorbital ridges divided posteriorly. Infraocular ridge indistinct, pubescent and punctate. Ligula with sharp central tooth. Mentum with lateral border somewhat curved. Width of first 2 antennal lamellae 3.3-3.5 times the length of a lamella at its base.

Thorax: Lateral depressions of pronotum with 6-7 punctations, other 2-3 punctations nearby. Marginal pronotal groove narrow, punctate.

Lateral depressions of mesosternum wide, rugose, and glabrous.

Metasternal disk delineated latero-posteriorly with more than 50 punctations on each side, anterior angles pubescent and punctate. Marginal fossae wide, punctate and pubescent.

Elytra with a few hairs on anterior vertical face; punctations strong, highly transverse.

Legs: Groove along anterior border of femur well marked. Meso- and metatibia without external lateral spines.

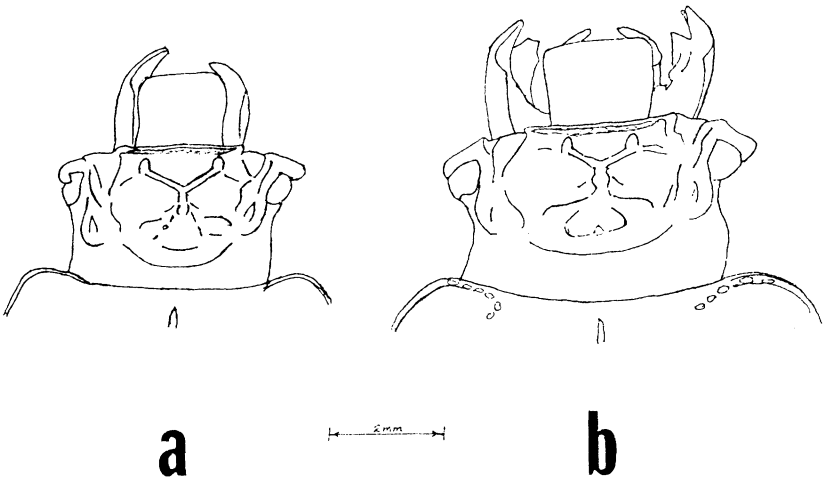

Fig. 1. Dorsal view of heads of (a) *X. moxi* and (b) *X. chortii*.

Dimensions (mm): Total length, mandibles to tip of elytra 24. Elytral length 12.5. Elytral width 8.7. Pronotum length 6.0. Pronotum width 8.0.

MATERIAL EXAMINED. One specimen.

TYPE MATERIAL. Holotype: GUATEMALA, Zacapa Dept., N.E. of Jones, Monte de Morán, 1600m alt., 8 IV 1983, S. Ubico collector. This specimen is in my personal collection and will eventually be deposited in the Florida State Collection of Arthropods, Gainesville, FL.

ETYMOLOGY. Named for the Pokomchi Maya word "mox" which is applied to some scarabaeoid beetles.

DISTRIBUTION AND ECOLOGY. This species is known only from the Sierra de las Minas of Guatemala above Jones, apparently in cloud forest. I have spent days above Jones looking for more specimens, but have found none.

Xylopassaloides chortii Schuster NEW SPECIES
(Fig. 1b, 2b)

DESCRIPTION. *Head*: Anterior border of labrum straight. Anterior border of clypeus straight (Honduras), or slightly convex (Guatemala). Frontal-clypeal suture well marked, inner tubercles not crossing it. Frontal fossae without punctations.

Median frontal structure ("horn") with short (less than 1/2 the distance to lateral ridges) posterior basal groove (almost negligible in Honduran specimen), lateral ridges distinct with rounded apexes. Supraorbital ridges divided posteriorly. Infraocular ridge indistinct, pubescent and punctate. Ligula with sharp central tooth. Mentum with lateral border somewhat curved. Width of first 2 antennal lamellae 2.8-4.0 times the length of a lamella at its base.

Thorax: Lateral depressions of pronotum with 10-17 punctations, other 0-8 punctations nearby. Marginal pronotal groove narrow, punctate.

Lateral depressions of mesosternum narrow, rugose, and glabrous (Guatemala), or with a few hairs (Honduras).

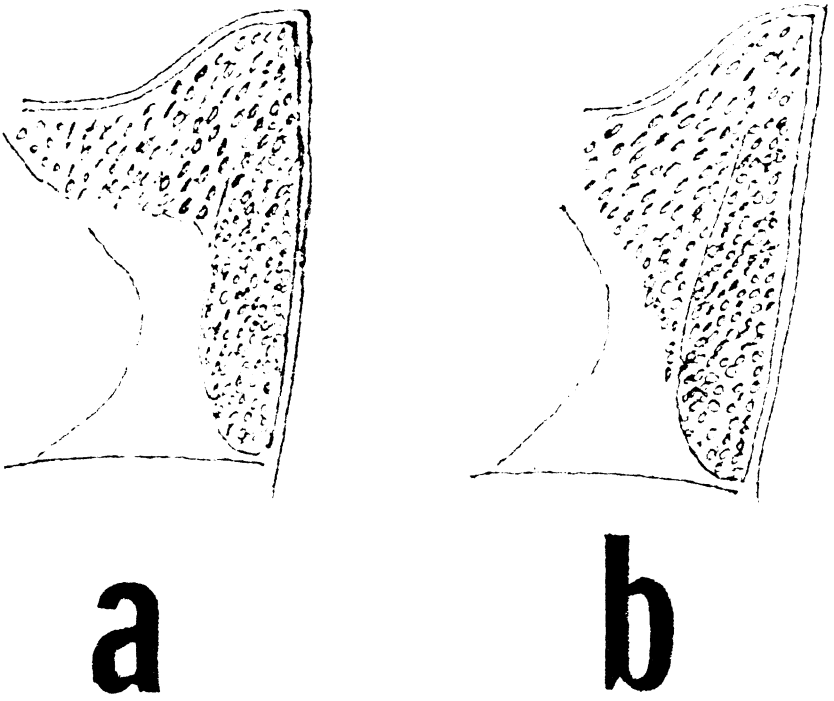

Fig. 2. Lateral metasternum of (a) *X. schusteri* and (b) *X. chortii*.

Metasternal disk poorly delineated latero-posteriorly, without punctations on each side, anterior angles pubescent and punctate. Marginal fossae wide, punctate and pubescent.

Elytra with a few hairs on anterior vertical face; punctations strong, highly transverse.

Legs: Groove along anterior border of femur weakly present (Honduras) or absent (Guatemala). Meso- and metatibia without external lateral spines.

Aedeagus: Asymmetrical, 3.8mm long. (n = 3)

Dimensions (mm): Total length, mandibles to tip of elytra: 24-28 $\bar{x}$ = 26.4, males 27, females 26.2. Elytral length: 12.8-14.8 $\bar{x}$ = 14.3, males 14.2, females 14.2. Elytral width: 8.8-9.7, $\bar{x}$ = 9.4, males 9.3, females 9.4. Pronotum length: 6.3-7.0, $\bar{x}$ = 6.8, males 6.8, females 6.8. Pronotum width: 8.3-9.0, $\bar{x}$ = 8.9, males 8.8, females 8.9.

MATERIAL EXAMINED. Eleven whole specimens: 7 females, 3 males, 1 unknown; and 1 male in pieces.

TYPE MATERIAL. Holotype: GUATEMALA, Zacapa Dept., S. of La Union, 1490 m alt., 27 III 1988, J. C. Schuster, collector #UW-3 male. The specimen is in my collection and will eventually be deposited in the FSCA collection in Gainesville, FL.

Paratypes: 10 specimens with same locality as holotype: 27 III 1988, F. Franco; 1475 m alt., 27 III 1988, J. Schuster (1 male, pieces); 1550 m alt., 28 III 1988, J. Schuster (2 females); 1500 m alt., 1 V 1992, J. Monzon (4 females, 2 males); 1 specimen from

HONDURAS, Ocotepeque Dept., El Portillo Mtn. where the main highway from Nuevo Ocotepeque to San Pedro Sula crosses the first pass, 1900 m alt., 2 VII 1985, J. Schuster, (1 female).

ETYMOLOGY. Named in honor of the Mayan Chortí Indians of the area around La Unión.

DISTRIBUTION AND ECOLOGY. This species is known from two isolated sites: a small mountain above La Unión, in Guatemala, and a mountain more than 50 km to the SSE in Honduras. Both sites have small remnants of cloud forest near their tops and are well separated by lowland areas. The Honduran specimen is significantly smaller than those from La Unión.

Xylopassaloides schusteri Reyes-Castillo, Fonseca & Castillo
(Fig. 2a)

Reyes-Castillo et al. (1987) had only 1 specimen from which to describe this species. On the basis of 13 specimens, I would clarify the variability of some of the characters they used, especially in their key.

1. The frontal ridges are not always parallel to the fronto-clypeal suture; indeed, they may occasionally be at 45 degrees to it. As a result, the frons may be somewhat wider, not always narrow.
2. The frons may, but more often not, have a central groove.
3. The anterior marginal groove on the front femur may be lightly present.
4. The internal tubercles sometimes partially cover the fronto-clypeal suture.
5. The aedeagus is asymmetrical.

Dimensions of specimens examined: Total length 20-24, x = 22. Elytral length 9.9-13.1, x = 11.6. Elytral width 7.0-8.5, x = 7.3. Pronotal length 5.2-6.1, x = 5.7. Pronotal width 6.7-8.1, x = 7.5.

DISTRIBUTION AND ECOLOGY. This species was originally found in the Cuchumatán Mountains east of Todos Santos at 2900m. It is now known from these mountains N. of San Pedro Soloma, Huehuetenango Dept., at 2380m, 2520m, 2525m, and 2825m, as well as in the Sierra de Xucanéb, Alta Verapaz Dept., municipality of San Cristobal Verapaz at 1350m and Chelem Ha above Tucurú at 2200-2300m, and in the Sierra de Santa Cruz, Izabal Dept., Sexán. All these regions are (or were) cloud forest.

On the basis of the above information, the key given in Reyes-Castillo et al. (1987) may be modified as follows:

Key to the Genera of Proculini with Enlarged Clypeus

1. Mesepimeron glabrous, anterior border of labrum straight or slightly convex 2
1′ Mesepimeron pubescent, anterior border of labrum concave 4
2. Internal tubercles extend over the fronto-clypeal suture, median frontal structure of "falsus" type (see Reyes-Castillo 1970), mandible with 3 apical teeth ..... *Pseudacanthus*
2′ Internal tubercles not reaching or barely crossing the fronto-clypeal suture, or absent; median frontal structure of "marginatus" type; mandible with 2 or 3 apical teeth 3
3. Fronto-clypeal suture well defined, elytral punctation strong, width of first 2 antennal lamellae 2.8-4.0 times the length of a lamella at its base ..... *Xylopassaloides*

3′ Fronto-clypeal suture absent or poorly defined; elytral punctation weak, absent in some, (strong only in *Ogyges crassulus*); width of first 2 antennal lamellae usually more than 4.0 times the length of a lamella at its base (3-4 times in *O. laevior*) ..... *Ogyges*

Key to the Species of *Xylopassaloides*

1. Metasternal disk well delimited with many punctations in latero-posterior corners ..... *X. moxi* sp. nov.
1′ Metasternal disk poorly delimited, without punctations in latero-posterior corners 2
2. Mesotibias with lateral spines, pronotum with many punctations, frontal fossae punctate, northern slopes of central massif of Chiapas ..... *X. pterocavis*
2′ Mesotibias without lateral spines, pronotum with few (<15) punctations, frontal fossae smooth 3
3. Anterior-lateral corner of metasternum with hairs running from mesocoxa to extreme posterior of lateral groove, Honduras-Guatemala border area (fig. 2b) ..... *X. chortii* sp. nov.
3′ Anterior-lateral corner of metasternum with hairs running from mesocoxa to a point approximately 1/2 way down lateral groove (fig. 2a) 4
4 Median frontal structure with a posterior groove from the base to the level of the lateral ridges, Guatemala: Cuchumatan Mtns to Sierra de Santa Cruz ..... *X. schusteri*
4′ Median frontal structure without a posterior groove, Sierra Madre of Chiapas ..... *X. pereirai*

Discussion

Reyes-Castillo et al. (1987) group this genus with other genera which possess a swollen ("fat-lipped") anterior clypeal border, and present a key to genera with this characteristic. In my opinion, *Xylopassaloides* is more related to *Vindex*, a genus with a narrow ("razor-lipped") anterior clypeal border. Characteristics Reyes-Castillo et al. (1987) used to separate *Xylopassaloides* from other passalids include: apex of mandibles bidentate, frontal fossae glabrous, hypostomal process very close to external labial border, elytra highly punctate, mesepimeron glabrous, anterior labral border straight and edeagus asymmetrical. *Vindex* also possesses each characteristic mentioned. The last character, edeagal symmetry, is poorly studied in passalids. Reyes-Castillo et al. (1987) indicate that asymmetry is unique in *Xylopassaloides* within the Proculini, known only from the Passalini in *Passalus zikani* Lued. and *Paxillus leachi* MacLeay (Buhrnheim 1978). I have recently observed it in *Passalus guatemalensis* (Kaup) and in a species of *Vindex*, both from the Sierra de las Minas, Guatemala, the latter at 2590 m altitude.

The only characteristic mentioned that separates *Xylopassaloides* from *Vindex* is the form of the clypeus, which seems to be a matter of degree. I have more than 10 species of *Vindex* in my collection, many undescribed. Some species have the clypeus at a 45 degree angle; in others it begins vertically, flaring out anteriorly and distally to a greater or lesser extent. In *Xylopassaloides*, the clypeus, beneath the "fat lip", is vertical, ending in a "razor lip". Usually it is much shorter vertically and recessed more than that of *Vindex*.

These characteristics, as well as larval similarity (Schuster 1992), indicate a very close relationship between *Xylopassaloides* and *Vindex*. The separation of these 2 genera is somewhat arbitrary. *Vindex* are usually flatter species, subcortical in habit, though exceptions exist. *Xylopassaloides* are all more rounded, usually burrowing

deeper into the wood. Both genera have very similar median frontal structures; however, the frontal ridges of *Vindex* end in internal tubercles which cross the frontal-clypeal suture, usually projecting far over the clypeus. In *Xylopassaloides*, the inner tubercles rarely reach the frontal-clypeal suture (Fig. 1). When they do, they barely project beyond it. All *Xylopassaloides* have reduced eyes and wings, as do a few *Vindex*.

Biogeography. All species of *Xylopassaloides* are allopatric. Altitudinally, they range from 1300 m to 2900 m; most of that range is encompassed by *X. schusteri*. The other species range from 1300 m to 1900 m. They seem to be rather mid-range species, altitudinally.

Other mid-altitude, flightless, cloud forest passalids of Mesoamerica include *Proculus* and some *Ogyges*. Work needs to be done on *Proculus*; however, *Ogyges* has been recently monographed (Schuster & Reyes-Castillo 1990). Species of *Ogyges* with similar distributions to species of *Xylopassaloides* include *O. marilucasae* (Reyes-Castillo & Castillo) at 1850-1970 m (Reyes-Castillo & Castillo 1986), analogous to that of *X. pereirai*, at 1880 m (Reyes-Castillo et al. 1987), both isolated in the Sierra Madre of Chiapas; and *O. furcillatus* Schuster & Reyes-Castillo in the Sierra de las Minas of Guatemala, as is *X. moxi*. Nevertheless, the latter 2 species are apparently not sympatric, *O. furcillatus* occurring only above 1900 m and *X. moxi* known only at 1600 m. *Xylopassaloides schusteri*, occurring generally above 2000 m, nevertheless has a wide range in Guatemala. This distribution is somewhat analogous to that of *O. laevior* which ranges from Chiapas (northern slopes of Central Massif) to the Sierra de las Minas and the Sierra de Xucaneb. However, where *O. laevior* is usually replaced above 2400 m by other, endemic, species of *Ogyges*, *X. schusteri* is also found at these higher elevations. *Xylopassaloides* is sympatric with at least 1 species of *Ogyges* everywhere except La Union, Zacapa, an area that has been collected thoroughly for passalids. There, and at El Portillo in Honduras, *X. chortii* is apparently the least common species of passalid.

Ogyges occurs further south to Nicaragua, yet so many mountains need to be explored in Honduras that I would not be surprised if more *Xylopassaloides* species, as well as *Ogyges* species, exist there.

Acknowledgments

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