

ANNOTATED CHECKLIST OF BARK AND  
AMBROSIA BEETLES (COLEOPTERA: SCOLYTIDAE AND  
PLATYPODIDAE) ASSOCIATED WITH A TROPICAL  
DECIDUOUS FOREST AT CHAMELA, JALISCO, MEXICO

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ABSTRACT

An annotated checklist is presented of 99 species and 32 genera of bark and ambrosia beetles (Coleoptera: Scolytidae and Platypodidae) known from the tropical deciduous forest in the Estación de Biología Chamela and surrounding areas on the coast of Jalisco, Mexico. Important components of the fauna include the scolytid tribes Corthylini (26 spp., mostly *Araptus*, *Pityophthorus*), Micracini (18 spp., mostly *Pseudothysanoes*, *Hylocurus*) and Cryphalini (16 spp., mostly *Hypothenemus*). The fauna was poorly known: 29 species were previously undescribed, 36 are reported from Jalisco for the first time, and 3 are reported from Mexico for the first time. The area supports a characteristic fauna; 26 species are known only from the area and another 24 are known only from the Pacific Slope of Mexico. Most genera show neotropical affinities.

RESUMEN

Se presenta un listado comentado de 99 especies y 32 géneros de escarabajos descortezadores y de ambrosia (Coleoptera: Scolytidae y Platypodidae) conocidos de selva baja caducifolia en la Estación de Biología Chamela y áreas cercanas en la costa de Jalisco, México. Componentes importantes de la fauna incluyen los escolítidos de las tribus Corthylini (26 spp., principalmente *Araptus*, *Pityophthorus*), Micracini (18 spp., principalmente *Pseudothysanoes*, *Hylocurus*) y Cryphalini (16 spp., principalmente *Hypothenemus*). La fauna era pobremente conocida: 29 especies no estaban previamente descritas, 36 se reportan por primera vez de Jalisco, y 3 se reportan por primera vez de México. El área mantiene una fauna muy característica; 26 especies se conocen solamente de la zona y otras 24 se conocen solamente del vertiente del pacífico de México. La mayoría de los géneros demuestran afinidades neotropicales.

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Bark and ambrosia beetles are important components of temperate forest ecosystems, particularly those with a dominance of conifers. An extensive literature exists on those species in the northern temperate zones which are able to kill living trees. Even those species which do not invade healthy trees are among the first insects to invade moribund or recently dead woody tissue (Wood 1982). Despite the enormous diversity of neotropical species, information on biology and host associations is scanty, and their

importance as a group in tropical forest systems is largely unknown. Bright (1981) and Wood (1982) recently monographed the Scolytidae of Mexico and Central America, but the biology and ecology of most of these are still poorly known. Schedl (1972) listed the world species of Platypodidae but included no biological data; virtually no information exists on neotropical species. Recent studies in central Mexico have greatly increased our knowledge of the species in that area (Atkinson and Equihua 1985a, b, c, 1986b, Atkinson *et al.*, 1986).

We report here the results of an extensive collecting program in tropical deciduous forest and related communities on the Estación de Biología Chamela and surrounding areas. We discuss the composition of the fauna and its biogeographic affinities and present a checklist of the species, summarizing distributions, biologies, and host associations. Preliminary results were summarized earlier (Equihua *et al.* 1985). There have been many additions and corrections, and species accounts were not included.

#### METHODS

The Estación de Biología Chamela is a biological reserve and field station of the Instituto de Biología, Universidad Nacional Autónoma de México, on the coast of the state of Jalisco (municipio La Huerta, aprox. 19° 30' N, 105° 03' W), Mexico (Figure 1). The station covers 1600 ha, mostly below 150 m above sea level, and is 2 km from the coast at its closest. The mean annual temperature is 24.0° C, and the 10 year average rainfall is 748 mm. Most rain (aprox. 80%) falls in the 4 month period between 2 July and 4 November; no appreciable rainfall has been detected in the last 10 years between mid-February and late May (S. H. Bullock, Estación de Biología Chamela, personal communication). The vegetation of the station is mostly tropical deciduous forest, with some subdeciduous forest along the courses of the larger drainages. Estuarine and riparian communities are found nearby. A recent checklist includes more than 750 species of vascular plants from the station (Lott 1985).

From March, 1982, until February, 1983, a total of 8 collecting trips were made to the station by one or both of us for periods of 3 days to 2 weeks. Since January, 1985, Atkinson has resided at the station and has added many host records as well as several additional species. We collected most beetles from naturally infested host material. Supplementary collections were made with a blacklight trap and by cutting and leaving branches or trunks of suspected host plants for possible subsequent infestations. The type of host tissue consumed (phloem, wood, pith) was noted at the time of collection. The mating system was determined by direct observation of number and sex of adults found in gallery systems and gallery architecture when possible.

S. L. Wood (Brigham Young University, Provo, Utah) and D. E. Bright (Biosystematics Research Institute, Agriculture Canada, Ottawa) confirmed identifications and described new species (Wood 1983, 1984, Bright 1985a, b). Emily J. Lott (Herbario Nacional, Universidad Nacional Autónoma de México) and J. Arturo Solis-Magallanes (Estación de Biología Chamela) identified host plants.

#### FAUNISTIC ANALYSIS

We collected 99 species of bark and ambrosia beetles from the Chamela area (94 Scolytidae and 5 Platypodidae). Most species (69%) had not been reported from the area: these were either undescribed (29), unreported from Jalisco (36), or unknown from Mexico (3). These are summarized by subfamilies and tribes in Table 1. The largest groups are the Corthylini with 8 genera and 26 species (largest genera *Araptus*, 9 spp., and *Pityophthorus*, 8 spp.), the Micracini with 18 species in 3 genera (largest genera

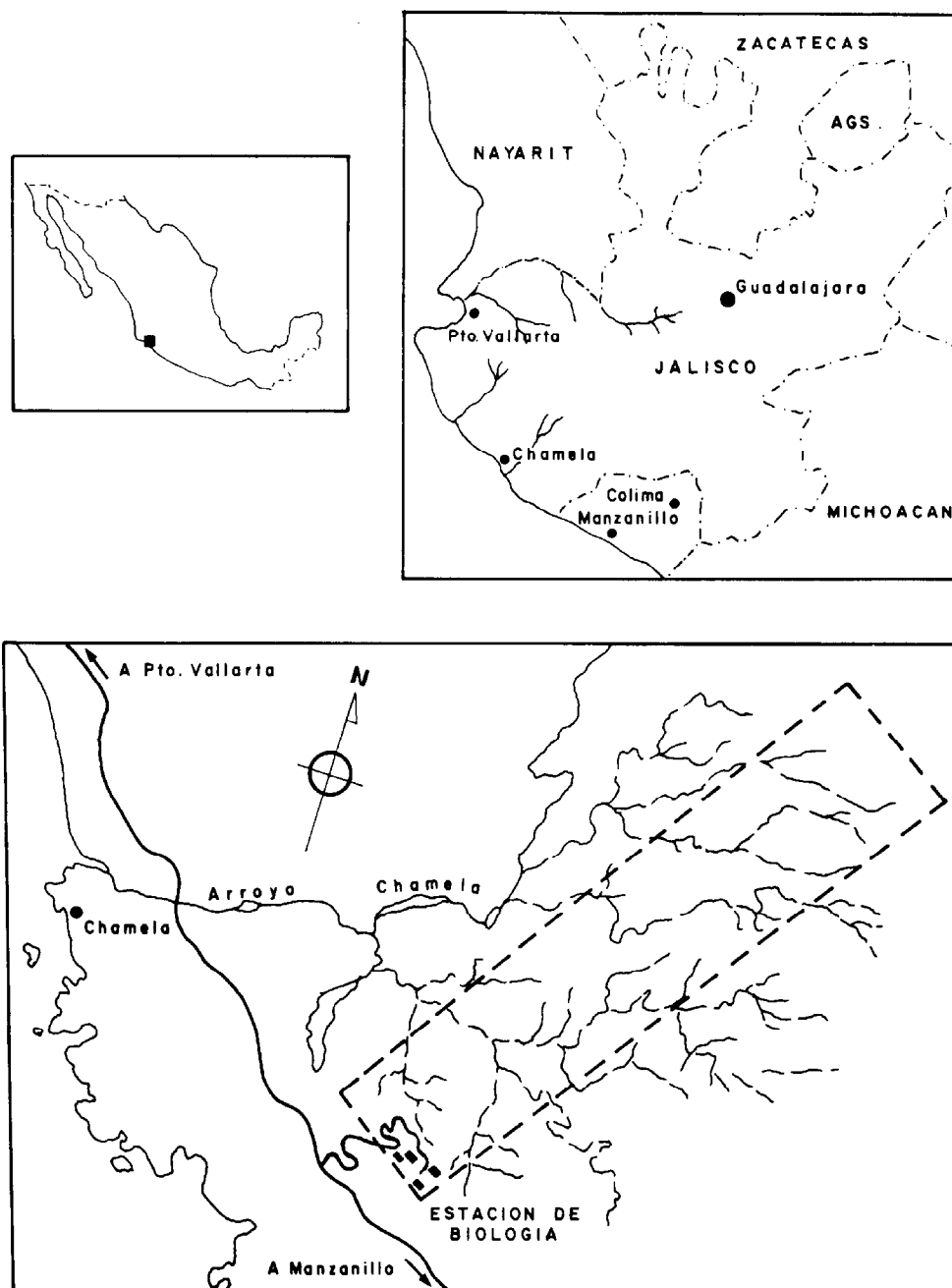


Fig. 1. Location of the Estación de Biología Chamela, Chamela, Jalisco, Mexico.

TABLE 1. TAXONOMIC SUMMARY OF BARK AND AMBROSIA BEETLES KNOWN FROM THE CHAMELA REGION, JALISCO, MEXICO.

Family/Subfamily	Tribe	No. Genera	No. Species
Platypodidae			
Platypodinae		1	5
Scolytidae			
Hylesininae	Bothrosternini	1	1
	Phloeotribini	1	5
	Phloeosinini	3	6
	Hypoborini	1	1
	Subtotal Hylesininae	(6)	(13)
Scolytinae	Scolytini	3	5
	Ctenophorini	3	9
	Micracini	3	18
	Cactopinini	1	2
	Xyleborini	2	5
	Cryphalini	5	16
	Corthylini	8	26
	Subtotal Scolytinae	(25)	(81)
	Subtotal Scolytidae	(31)	(94)
Total		32	99

*Pseudothyssanoes*, 10 spp., and *Hylocurus*, 6 spp.), and the Cryphalini with 16 species in 5 genera (largest genus *Hypothenemus*, 11 spp.). The Corthylini is the dominant tribe in most neotropical areas, and species of the Cryphalini are abundant in most tropical areas of the world. The relatively minor importance of the Xyleborini is unusual for a lowland tropical area and is probably related to the dry climate of the area. The diversity of the Micracini is unusually high compared to any area reported in the literature thus far.

Biogeographic affinities of the genera are shown in Table 2. Most show neotropical affinities and these also include the most species. The Mexican element referred to here includes those genera whose distributions are centered in Mexico, southwestern U.S., and northern Central America. The monotypic genus *Phloeoterus* is known only from the station and is closely related to *Dendroterus* (Mexican) and *Araptus* (neotropical). The genus *Pityophthorus* is centered in the nearctic realm, but the species found in Chamela belong to the *scriptor*, *lautus*, and *juglandis* groups of Bright (1981). These are basically distributed in the eastern and southern U.S., Mexico, and Central America. The genera *Phloeotribus* and *Scolytus* are widely distributed but are well represented in the neotropics.

The biogeographic affinities of the species are shown in Table 3. Those species known only from the Chamela area and those from the Pacific slope of Mexico are approximately of equal importance; species from lowland Mexico and Central America, and those which are widely distributed in the neotropics follow closely in terms of number of species. Although at the genus level the Chamela fauna has wider-ranging affinities, at the species level it shows a very local character. The fauna includes 7 genera which have circumtropical distributions (and include 25 species), but only 8 of these species are widely distributed. Several species of *Hypothenemus*, *Xyleborus*, *Xylosandrus*, *Platypus*, and *Hypocryphalus* found in the Chamela area are known or suspected to have been introduced into the new world in historic times. There is little

TABLE 2. BIOGEOGRAPHIC AFFINITIES OF GENERA OF BARK AND AMBROSIA BEETLES FROM THE CHAMELA REGION, JALISCO, MEXICO.

Distribution	No. Genera	No. Species	Genera
Neotropical	18	51	<i>Araptus</i> , <i>Chramesus</i> , <i>Cnemonyx</i> , <i>Cnesinus</i> , <i>Corthylus</i> , <i>Dendroterus</i> , <i>Gymnochilus</i> , <i>Hylocurus</i> , <i>Microcorthylus</i> , <i>Pseudothysanoes</i> , <i>Pycnarthrum</i> , <i>Scolytodes</i> , <i>Scolytopsis</i> , <i>Stegomerus</i> , <i>Styphlosoma</i> , <i>Thysanoes</i> , <i>Tricolus</i>
Circumtropical	7	25	<i>Cryptocarenum</i> , <i>Hypocryphalus</i> , <i>Hypothenemus</i> , <i>Platypus</i> , <i>Scolytogenes</i> , <i>Xyleborus</i> , <i>Xylosandrus</i>
Mexican	4	8	<i>Cactopinus</i> , <i>Chaetophloeus</i> , <i>Dendroterus</i> , <i>Phloeoterus</i>
Nearctic	1	8	<i>Pityophthorus</i> *
Other	2	7	<i>Phloeotribus</i> , <i>Scolytus</i>
Total	32	99	

\*Chamela species belong to the *scriptor*, *lautus*, and *juglans* groups of Bright (1981), which are basically neotropical in distribution.

TABLE 3. BIOGEOGRAPHIC AFFINITIES OF SPECIES OF BARK AND AMBROSIA BEETLES OF THE CHAMELA REGION, JALISCO, MEXICO.

Distribution	No. Species
Chamela Region Only	26
Pacific slope of Mexico	24
Lowland Mexico and Central America	21
Widespread Neotropical	17
Widespread World Tropics	8
Other	3
Total	99

reason to believe that the species thus far known only from the vicinity of the station are really narrow endemics, as most of the Pacific coast of Mexico from Nayarit to Chiapas has been poorly collected. At the genus level there are broad similarities between the fauna of Chamela and that of southern Morelos, Mexico, another area dominated by tropical deciduous forest and forming part of the Pacific Slope (Atkinson et al., 1986). We believe that the fauna of Chamela is representative of a distinct fauna of bark and ambrosia beetles associated with tropical deciduous forest in Mexico. It differs markedly from that associated with humid lowland forests in southeastern Mexico and Central America both in generic and tribal level composition and in biogeographic affinities (Atkinson and Equihua 1986b). We suspect that this faunal element roughly coincides with the distribution of tropical deciduous forest given by Rzedowski (1978).

## EXPLANATION OF CHECKLIST

This checklist is based entirely on the authors' collections (with the exception of a few collections made by Felipe Noguera, Estación de Biología Chamela). There is no additional material from the region in major Mexican collections nor are there any prior references in the literature, other than descriptions of new taxa collected by us. The following information is included for each species: valid name, summary of feeding habits, degree of host specificity, and reproductive habits (in parentheses), summary of known distribution, collections, and comments. Classification of feeding habits follows Wood (1982) (ph=phloeophagy, xm=xylomycetophagy, m=myelophagy, x=xylophagy, s=spermatophagy). Three degrees of host specificity are recognized: monophagy (=mo, restricted to hosts of a single genus), oligophagy (=ol, restricted to hosts of a single family), and polyphagy (=po, found in 2 or more unrelated plant families). Assignment of degrees of host specificity was based on our observations, a critical review of the literature, and our admittedly subjective judgment. Terminology for reproductive systems follows Kirkendall (1983) (mg=monogyny, bg=bigyny, pg=polygyny, ipg=inbred polygyny). Distributions are summarized from Atkinson and Equihua (1985a,b,c, 1986b), Atkinson et al. (1986), Bright (1981, 1985,a,b), Schedl (1972), and Wood (1982). An asterisk after the species name indicates a new state record for Jalisco; a double asterisk indicates a new record for Mexico. Since all collections were made by the authors in a restricted area with little altitudinal variation only host and collection numbers are given for the collections. Specimens cited with collection numbers prefixed by the letter "S" are deposited in the insect collection of the Centro de Entomología y Acarología, Colegio de Postgraduados, Chapingo, Mexico; collections prefixed by "FANM" and "THA" are deposited in the Instituto de Biología, Universidad Nacional Autónoma de México, México, D.F. Significant new host associations are indicated in bold face. Comments on biology and ecology are included when these represent significant new information. Subfamilies and tribes follow the order given by Wood (1982); genera and species are ordered alphabetically within tribes.

ANNOTATED CHECKLIST OF THE BARK AND AMBROSIA BEETLES  
ASSOCIATED WITH TROPICAL DECIDUOUS FOREST AT  
CHAMELA, JALISCO, MEXICO

## PLATYPODIDAE

1. *Platypus compositus* Say, 1824\* (xm,mg,po); SE U.S., Mexico, Antilles, Venezuela, Guyana, Brazil, Argentina. U.V. light (S-755, S-846). No known hosts at Chamela but polyphagous in the Southeastern U.S. (Blackman 1922, Chamberlin 1939).

2. *Platypus excisus* Chapuis, 1865\* (xm,mg,ol); Mexico, C. America, Cayenne, Brazil. *Lonchocarpus guatemalensis* Benth. (NEW HOST) (S-818); *Pithecellobium dulce* (Roxb.) Benth. (NEW HOST) (S-478); U.V. light (S-755, S-783, S-821, S-846); host unknown (S-808). Widely collected in tropical communities in Mexico, always in leguminous hosts (Atkinson & Equihua 1986b, Atkinson et al. 1986). It is most commonly collected in small diameter host material (< 10 cm).

3. *Platypus parallelus* (Fabricius, 1801). (xm,mg,po); tropical America and Africa. *Tabebuia* sp. (NEW HOST) (S-428); *Guapira* sp. (NEW HOST) (S-724); *Croton pseudoniveus* Lundell (NEW HOST) (S-817); *Ficus* sp. (S-819); *Spondias purpurea* L. (NEW HOST) (S-825); *Brosimum alicastrum* Sw. (NEW HOST) (S-883); *Thouinidium decandrum* (Humb. & Bonpl.) Radlk. (NEW HOST) (THA-263), U.V. light (S-755, S-783, S-846); Host unknown (S-857, 868). Most commonly collected species of *Platypus*

on the station; found mostly in large diameter material (> 30 cm) in shaded, more humid sites.

4. *Platypus pulchellus* Chapuis, 1865\*. (xm, mg, po); Mexico, C. America, Guyana, Surinam, Brazil. U.V. light (S-755, S-783, S-846). No known hosts at Chamela, assumed to be polyphagous as are the majority of species in the genus.

5. *Platypus segnis* Chapuis, 1845\*. (xm, mg, po); Mexico, C. America, S. America to Bolivia. U.V. light (S-755); host unknown (S-351, S-846). No known hosts at Chamela; polyphagous elsewhere (Atkinson & Equihua 1984b, Atkinson et al. 1986).

## SCOLYTIDAE

### HYLESININAE

#### Bothrosternini

6. *Cnesinus setulosus* Blandford, 1896\*. (m,mg,po); Tamaulipas and Jalisco to Panama. *Conocarpus erecta* L. (NEW HOST) (S-353); U.V. light (S-755); *Acacia* sp. (S-362); *Morisonia americana* L. (NEW HOST) (THA-372); Bignoniaceae (S-474); *Clytostoma binatum* (Thunb.) Sandw. (NEW HOST) (THA-262); host unknown (S-770, S-860).

#### Phloeotribini

7. *Phloeotribus geminus* Wood, 1983. (ph,mg,mo?); known only from Chamela. host unknown (S-731). Gallery transverse, biramous. Found in small branches, 1.5 cm diameter.

8. *Phloeotribus opimus* Wood, 1969. (ph,mg,mo); Jalisco, Morelos, to Costa Rica. *Ficus insipida* Willd. (THA-383).

9. *Phloeotribus setulosus* Eichhoff, 1868\*. (ph,mg,mo); Veracruz and Jalisco to Brazil and Peru. *Brosimum alicastrum* Sw. (S-883). Wood (1982) lists several unrelated hosts for this species but *B. alicastrum* appears to be the only host in the Chamela area. It was only collected once but the characteristic galleries were seen on several occasions in fallen branches of this tree.

10. *Phloeotribus texanus* Schaeffer, 1908\*. (ph,mg,mo); SE U.S., Nuevo León. *Celtis iguaneus* (Jacq.) Sarg. (S-807, S-862, S-864). Gallery transverse, biramous; in host material ranging from 2-10 cm. diameter, frequently associated with *Chramesus subopacus*. Teneral adults move about freely and feed on remnants of phloem under bark before emerging, often nearly erasing the pattern of galleries.

11. *Phloeotribus* sp. (ph,mg,mo); Undescribed species (S. L. Wood, personal communication), also known from southern Morelos (Atkinson et al., 1986). *Phyllostylon brasiliense* Capanema (THA-354, THA-369). This Large species of *Phloeotribus* makes transverse, biramous galleries in large branches and trunks (> 5 cm diameter) of weakened or dead host trees. Both the parental and larval galleries heavily score the sapwood, even in material with thick phloem. Galleries are initiated by females.

#### Phloeosinini

12. *Chramesus exul* Wood, 1983. (ph,mg,mo); known only from Chamela. *Croton* sp. (S-410, S-411, S-427); *C. sp.* (S-727); *C. pseudoniveus* Lundell (NEW HOST) (S-817, THA-264, FANM-166); host unknown (S-730, S-740, S-758, S-773). Gallery transverse, biramous.

13. *Chramesus securus* Wood, 1983. (x,mg,mo); known only from Chamela. *Lonchocarpus* sp. (THA-250, FANM-190, FANM-200); Leguminosae (S-365, S-425, S-740, S-781); host unknown (S-442, S-814). Gallery longitudinal, in phloem and sapwood; larvae mine sapwood.

14. *Chramesus subopacus* Schaeffer, 1908\*. (ph,mg,mo); Florida and Arizona to Honduras. Sapindaceae (S-778); *Celtis iguaneus* (Jacq.) Sarg., (S-779, S-807, S-839, S-862, S-873). The collection from a sapindaceous vine (S-778) is apparently an "accidental host" since this species is most frequently associated with *Celtis* spp. The gallery is transverse and biramous.

15. *Chramesus vitiosus* Wood, 1969\*. (ph,mg,mo); Nayarit and Jalisco. *Lonchocarpus guatemalensis* Benth. (NEW HOST) (S-409); *L. constrictus* Pitt. (NEW HOST) (THA-361, THA-362); Leguminosae (S-425, S-728, S-740); host unknown (S-806, S-814, S-821, S-874). Egg gallery longitudinal, frequently scoring sapwood.

16. *Dendrosinus mexicanus* Wood, 1983. (x,mg,mo); Jalisco, Morelos. *Guapira* sp. (S-372, S-413, S-724). The egg gallery is transverse, biramous, up to 5 cm total length. The gallery is excavated at a depth of 1.5-3 cm into the wood. Larvae develop entirely in wood, each individual emerging through a separate hole on emergence. Successful attacks (with emergence) were observed in host material from 10-40 cm diameter; attacks in smaller diameter material were usually aborted, or larval mortality was virtually complete. In galleries with active larvae the surrounding wood is normally stained blue or black, probably by associated fungi.

17. *Pseudochramesus* sp. \*\* (ph,mg,mo). *Cynometra oaxacana* Brandegee (THA-360). This is the first record of any species of this genus in Central America or Mexico; all other described species are South American. Although it was only collected once, galleries have been observed on many occasions in its host tree. Galleries are initiated by females and are transverse, biramous, and almost entirely in the phloem. Successful attacks have been observed in host material ranging from 3-30 cm diameter.

#### Hypoborini

18. *Chaetophloeus minimus* Wood, 1967\*. (ph,mg,ol); Jalisco and Colima. *Apollanesia paniculata* Presl (NEW HOST) (THA-389); Leguminosae (S-360, S-870); host unknown (S-821). Found in bark of 2 different host species. The gallery is typical of the genus, consisting of a cave-like nuptial chamber, with 2-3 short egg galleries leading from it. The egg galleries were longer with respect to the diameter of the nuptial chamber (3-4 X diam.) than we have observed in other species of the genus (*lasius*, *sulcatus*, *mexicanus*, *confinis*, *struthanthi*, *penicillatus*) in which the length of these rarely exceeds the diameter of the chamber. The eggs are not deposited in niches, but are left tightly packed in the frass left in the egg galleries. Orientation of egg galleries is irregular, often curved.

#### SCOLYTINAE

##### Scolytini

19. *Cnemonyx equihuai* Wood, 1983, (ph,mg,mo); known only from Chamela area. *Hura polyandra* Baill. (S-383, FANM-212, FANM-240). Gallery transverse, biramous, in branches 2-3 cm diameter.

20. *Cnemonyx splendens* (Wood, 1961)\*. (ph,mg,mo). Jalisco. *Hippomane mancinella* L. (NEW HOST) (THA-320). Transverse galleries in trunks and branches of host tree. This species appears capable of invading living tissues of its host, as well as



fallen or killed material. This is the first known locality for this species; it was described from infested wood intercepted at the U.S.-Mexican border.

21. *Scolytopsis puncticollis* Blandford, 1896\*. (ph,mg,ol); Veracruz and Jalisco to Argentina, Cuba. *Conocarpus erecta* L. (NEW HOST) (S-353, THA-258); host unknown (S-364). This species is also reported from *Laguncularia racemosa* (L.) Gaertn. and *Terminalia amazonia* (Gmel.) Exell in Pulle, both of the Combretaceae (Atkinson and Equihua 1985b, 1986a). *L. racemosa* is common in the Chamela area and grows in close association with *C. erecta*, also of the Combretaceae.

22. *Scolytus cristatus* Wood, 1969. (ph,mg,mo); Jalisco to Venezuela. *Heteropterys laurifolia* (L.) Adr. Juss. (NEW HOST) (S-469, S-829, S-858). Galleries transverse to diagonal, uni- or biramous; in phloem of lianas of *Heteropterys laurifolia* (Malpighiaceae) ranging in diameter from 3-10 cm. This is the first known host for this species.

23. *Scolytus propinquus* Blandford, 1896\*. (ph,bg,ol); Chihuahua to Costa Rica. Leguminosae (S-357, S-363); *Lonchocarpus guatemalensis* Benth. (NEW HOST) (S-818); *L. constrictus* Pitt. (NEW HOST) (THA-351); *L. eriocarinalis* Micheli (NEW HOST) (THA-370); host unknown (S-780, S-806). Found in host material ranging from 5-30 cm diameter; gallery transverse, biramous.

#### Ctenophorini

24. *Gymnochilus reitteri* Eichhoff, 1878\*. (ph,mg,mo); Durango to Panama. *Ficus* sp. (S-774). Found in broken or fallen branches. Gallery transverse, biramous.

25. *Pycnarthrum amersum* Wood, 1983 (ph,mg,mo); known only from Chamela area. *Brosimum alicastrum* Sw. (S-883). Galleries transverse, biramous, up to 10 cm total length. Found in host material from 15-50 cm diameter.

26. *Pycnarthrum furnerium* Wood, 1971\*\*. (ph,mg,mo); Jalisco to Honduras. *Ficus insipida* Willd. (NEW HOST) (THA-351); *F.* sp. (S-369). First known host for this species. The gallery is longitudinal and biramous; it was collected in branches ranging from 1-10 cm diameter.

27. *Pycnarthrum hispidum* (Ferrari, 1867). (ph,mg,mo); Texas and Florida to Panama. *Ficus* sp. (S-378, S-393, S-819); U.V. light (S-755, S-783).

28. *Pycnarthrum reticulatum* Schedl, 1940\*. (ph,mg,mo); Jalisco and Veracruz to Panama. *Ficus* sp. (S-393, S-774); U.V. light (S-755, S-821, S-846).

29. *Scolytodes amoenus* Wood, 1967. (ph,mg,mo); Tamaulipas, Jalisco. *Ficus* sp. (S-774).

30. *Scolytodes plumeriacolens* Wood, 1983. (ph,mg,mo); known only from Chamela area. *Plumeria rubra* L. (S-736, S-881). In phloem of small branches, 2-4 cm diameter. The gallery is basically longitudinal. Like *S. plumeriae*, it can attack living host plants.

31. *Scolytodes plumeriae* Wood, 1969\*. (ph,mg,mo); Jalisco and Puebla to Costa Rica. *Plumeria rubra* L. (S-881). The galleries of this species vary considerably in orientation but are mostly longitudinal, usually with one but occasionally two branches. Eggs are placed in widely spaced niches; larval development is entirely in the phloem.

32. *Scolytodes tenuis* (Wood, 1971). (ph,hpg,mo); Jalisco to Honduras. *Ficus* sp. (S-404, S-774, S-834), *F. insipida* Willd. (THA-349). This harem polygynous species breeds in twigs and small branches (< 2 cm diameter) of native figs. Galleries are initiated by males, which are joined by up to 5 females, each of which excavates a separate egg gallery. Attacks are mostly limited to shaded-out branches on living trees.

#### Micracini

33. *Hylocurus dissimilis* Wood, 1984. (x,bg,po); known only from Chamela. Sapindaceae (S-727); Sterculiaceae (S-769); Leguminosae (S-822); host unknown (S-426, S-800,

S-877). The gallery is typical of the genus (Wood 1982). This species is capable of completing several generations in the same piece of host material.

34. *Hylocurus elegans* Eichhoff, 1872\*. (x,bg,po); Nayarit to Colombia. *Acacia* sp. (S-362); *A. hindsii* Benth. (NEW HOST) (S-500, S-820); *A. cochliacantha* Humb. & Bonpl. (NEW HOST) (S-475); *Lonchocarpus* sp. (NEW HOST) (S-373); Leguminosae (S-425, S-746); *Ficus* sp. (NEW HOST) (S-404); *Cordia dentata* Poir. (NEW HOST) (S-476); Sapindaceae (S-778); *Hura polyandra* Baill. (NEW HOST) (FANM-212); host unknown (S-810, S-877). Gallery as described for genus by Wood (1982).

35. *Hylocurus inaequalis* Wood, 1956\*. (x,by,po); Nayarit to Oaxaca. *Ziziphus amole* (Sesse & Moc.) M. C. Johnst. (NEW HOST) (S-356); *Cordia dentata* Poir. (NEW HOST) (S-476); *Acacia* sp. (S-362); *A. cochliacantha* Humb. & Bonpl. (NEW HOST) (THA-245); *Apoplanesia paniculata* Presl. (NEW HOST) (THA-350); *Lonchocarpus constrictus* Pitt. (NEW HOST) (THA-362); *L.* sp. (S-485); Leguminosae (S-363, S-406, S-728, S-766, S-779); *Hura polyandra* Baill. (NEW HOST) (S-383); host unknown (S-401, S-496, S-723).

36. *Hylocurus micaeaeus* Wood, 1984. (x,bg,?); known only from Chamela. Host unknown (S-764). Gallery as described for genus (Wood 1982).

37. *Hylocurus scitulus* Wood, 1984. (x,bg,mo); known only from Chamela. *Acacia* sp. (S-748); *A. hindsii* Benth. (NEW HOST) (S-809, S-820); *A. cochliacantha* Humb. & Bonpl. (NEW HOST) (THA-245); host unknown (S-810, S-875). Gallery as described for genus by Wood (1982).

38. *Hylocurus secus* Wood, 1984. (x,bg,?); known only from Chamela. Leguminosae (S-359). Gallery as described for genus by Wood (1982).

39. *Pseudothysanoes acares* Wood, 1969\*. (ph,bg,mo?); Jalisco and Oaxaca. Leguminosae (S-836); U.V. light (S-755); host unknown (S-481, S-496).

40. *Pseudothysanoes mandibularis* Wood, 1984. (ph,bg,mo?); known only from Chamela. Host unknown (S-856, S-863). Galleries in phloem of unidentified liana 2-5 cm in diameter; gallery longitudinal, biramous, egg galleries filled with packed frass, eggs not in niches.

41. *Pseudothysanoes mendicus* Wood, 1969\*. (ph,bg,mo?); Jalisco and Colima. Leguminosae (S-841). Recent attacks in small branches (3 cm diam.) of a small leguminous tree growing near beach.

42. *Pseudothysanoes pumilus* Wood, 1969\*. (ph,bg,po); Jalisco and Colima. *Morisonia americana* L. (NEW HOST) (S-476); *Lonchocarpus* sp. (NEW HOST) (S-355); *Caesalpinia eriostachys* Benth. (NEW HOST) (S-402); Leguminosae (S-781). Gallery longitudinal, biramous.

43. *Pseudothysanoes simplex* Wood, 1984. (ph,bg,mo?); known only from Chamela. Host unknown (S-863).

44. *Pseudothysanoes spinatulus* Wood, 1984\*. (ph,bg,mo); Jalisco, Oaxaca. (*Chlorophora tinctoria* (L.) Gaud.) (NEW HOST) (THA-133). Galleries are initiated by males which are later joined by 2 females. Initially each female makes a short longitudinal tunnel leading away from the main gallery entrance. At a distance of approximately 1 cm each then makes a transverse, biramous egg gallery, the branches of which are slightly oblique with respect to the host branch. The overall gallery has an "H" shape, turned sideways with respect to the axis of the host branch. Eggs are placed individually in niches and the egg galleries are kept free of frass. Galleries have been observed in material ranging from 1-5 cm diameter. Old galleries are commonly observed in dead branches, still attached to the tree.

45. *Pseudothysanoes squameus* Wood, 1984. (ph,bg,ol); known only from Chamela. Leguminosae (S-358, S-363, S-766, S-824); *Acacia* sp. (NEW HOST) (S-362); *Lonchocarpus* sp. (S-485); U.V. light (S-755); host unknown (S-476, S-723). The gallery is longitud-

inal, biramous; each branch made by a different female. As the female advances she packs boring frass in the gallery behind her; eggs are packed in the frass in the galleries, not in niches.

45. *Pseudothysanoses thomasi* Wood, 1967\*. (ph,bg,mo); Sinaloa and Jalisco. U.V. light (S-755); *Celaenodendron mexicanum* Standl. (THA-201). The gallery is essentially as described for *P. spinatulus*, however females commonly make one branch of their egg galleries longer than the other, giving the overall gallery a much more irregular shape. Eggs are packed individually in niches and galleries are kept free of frass. Attacks have been observed in material ranging in diameter from 3-30 cm.

46. *Pseudothysanoses truncatus* Wood, 1984. (x,bg,mo); known only from Chamela. *Ziziphus amole* (Sesse & Moc.) M. C. Johnst. (NEW HOST) (S-356, THA-388). The gallery is similar to that described for *P. spinatulus*, but is entirely inside the sapwood of small branches of its host. Wood (1984) in the species description lists *Randia* sp. as host; this is due to an error in identification of the host plant.

47. *Pseudothysanoses vesculus* Wood, 1969\*. (x,bg,mo); Jalisco and Colima. *Ziziphus amole* (Sesse & Moc.) M. C. Johnst. (NEW HOST) (S-356, THA-388). The gallery is similar to that of *P. truncatus* in all respects. Attacks are usually in slightly larger branches.

48. *Thysanoses epicaris* Wood, 1969. (x,bg,po); Jalisco. Leguminosae (S-365, S-472); *Pithecellobium mangense* (Jacq.) MacBride (NEW HOST) (S-418); *Acacia* sp. (FANM-234); Sapindaceae (S-739, S-778).

50. *Thysanoses texanus* Blackman, 1943. (x,bg,po); Southern Texas to Jalisco. Leguminosae (S-746); U.V. light (S-755).

#### Cactopinini

51. *Cactopinus atkinsoni* Wood, 1983. (ph,mg,mo); known only from Chamela. *Stenocereus* cf. *chrysocarpus* Sanchez-Mejorada (NEW HOST) (S-497). Galleries excavated in ribs of fallen or cut stems of its host, an arborescent cactus, which have dried without rotting. Apparently several generations are passed in the same piece of host material. Adult and larval mining was so extensive that the pattern of galleries could not be fully appreciated. Two other species of arborescent cacti common in the area, *Pachycereus pecten-aboriginum* and *Cephalocereus purpusii*, are not attacked.

52. *Cactopinus setosus* Wood, 1983. (ph,mg,ol); known only from Chamela area. *Acanthocereus occidentalis* Britt. & Rose (NEW HOST) (S-498, S-435, S-801); *Stenocereus standleyi* (Gonz. Ort.) Buxbaum (NEW HOST) (S-842); *S. fricii* Sanchez-Mejorada (NEW HOST) (THA-347). This species attacks wounds on living cacti, frequently at the base of spines. The area mined by the insects seems to be relatively limited, usually blackened and dry in appearance. It is unclear whether the insect invades tissues killed by other agents or is capable of invading healthy tissue. It has not been found in dry stems. All three cacti utilized as hosts are sprawling shrubs; *S. standleyi* is particularly common on rocky shores.

#### Xyleborini

53. *Xyleborus affinis* Eichhoff, 1868. (xm,ipg,po). Circumtropical. *Bursera instabilis* McVaugh & Rzed. (FANM-186); host unknown (FANM-176).

54. *Xyleborus ferrugineus* (Fabricius, 1801). (xm,ipg,po); eastern U.S. to Argentina. U.V. light (S-755, S-846); *Heliocarpus pallidus* Rose (S-767); *Ficus* sp. (S-819); *Urera* sp. (FANM-174); *Sciadodendron excelsum* Griseb. (FANM-171); *Thouinidium decandrum* (Humb. & Bonpl.) Radlk. (THA-257); host unknown (S-783).

55. *Xyleborus palatus* Wood, 1974. (xm,ipg,po); Nayarit and Jalisco. *Conocarpus erecta* L. (S-353); *Cordia dentata* Poir. (S-476); *Lonchocarpus guatemalensis* Benth. (S-818); *Pithecellobium* sp. (S-361); *Caesalpinia platyloba* S. Wats. (FANM-220); Leguminosae (S-394, S-870); *Croton pseudoniveus* Lundell (S-817; host unknown (S-810). This species excavates large cave-like brood chambers between adjacent growth rings in a manner similar to *Dryocoetoides capucinus* (Eichhoff) and *Theoborus* spp. (Atkinson and Equihua 1985b).

56. *Xyleborus volvulus* (Fabricius, 1775). (xm,ipg,po); Florida and northern Mexico to Argentina. *Bursera arborea* (Rose) Riley (S-354); *B. instabilis* McVaugh & Rzed. (FANM-186); Leguminosae (S-421); *Heliocarpus pallidus* Rose (S-767); Sterculiaceae (S-769); *Carica papaya* L. (S-827); *Thouinidium decandrum* (Humb. & Bonpl.) Radlk. (THA-257); *Sciadodendron excelsum* Griseb. (FANM-171); *Hura polyandra* Baill. (FANM-212); *Ficus cotinifolia* HBK. (FANM-202); U.V. light (S-755, S-783, S-821, S-846); host unknown (S-770). Common pantropical "weedy" species.

57. *Xylosandrus curtulus* (Eichhoff, 1869)\*. (xm,ipg,po); Nayarit and Veracruz to Brazil. *Ziziphus amole* (Sesse & Moc.) M. C. Johnst. (S-356); Sapindaceae (S-798, S-815); *Serjania* sp. (S-828); *Cupania dentata* DC. (S-872); *Caesalpinia* sp. (FANM-168). Found in small diameter branches (1-3 cm), often in the pith.

#### Cryphalini

58. *Cryptocarenus heveae* (Hagedorn, 1912)\*. (m,ipg,po); southern Florida and Colombia to Brazil. *Annona* sp. (S-370); *Phoradendron* sp. (S-747); Sapindaceae (S-739, S-778, S-798); *Thouinidium decandrum* (Humb. & Bonpl.) Radlk. (S-734); *Paullinia sessiliflora* Radlk. in Rose (S-743); *Spondias purpurea* L. (S-738); *Caesalpinia* sp. (S-823); *C. platyloba* S. Wats. (FANM-236); *Capparis flexuosa* (L.) L. (THA-236); Leguminosae (S-371, S-841, S-836); U.V. light (S-755, S-783); host unknown (S-838, S-846).

59. *Cryptocarenus seriatus* Eggers, 1933\*. (m,ipg,po); southern Texas and Florida to Brazil and Argentina. Leguminosae (S-371); *Caesalpinia* sp. (FANM-168); Sapindaceae (S-739, S-778); Sapotaceae (S-798); U.V. light (S-783); host unknown (S-770).

60. *Hypocryphalus mangiferae* (Stebbing, 1914)\*. (ph,mg,mo); circumtropical, introduced into New World. *Mangifera indica* L. (S-499). The cave-type parental galleries deeply score the sapwood; larvae tunnel individually away from the parental gallery; the oviposition pattern was not observed. This species breeds in broken, cut, or shaded out branches, and appears to be able to kill live branches on occasion. It is potentially a pest of its host tree.

61. *Hypothenemus birmanus* (Eichhoff, 1878). (m,ipg,po); Florida to Panama. Moraceae (S-405, S-429); *Ficus* sp. (S-404); *Trophis racemosa* (L.) Urb. (S-484); Anacardiaceae (S-416); Leguminosae (S-472); *Pithecellobium mangense* (Jacq.) MacBride (S-418); Rubiaceae (S-419); Bignoniaceae (S-474); Sapindaceae (S-701, S-722, S-739); *Celtis iguaneus* (Jacq.) Sarg. (S-799, S-839); *Laguncularia racemosa* (L.) Gaertn. (S-803).

62. *Hypothenemus brunneus* (Hopkins, 1915). (m,ipg,po); Texas and Florida to Panama. *Acacia* sp. (S-363); Leguminosae (S-371, S-421, S-425, S-733, S-740, S-746, S-758, S-766, S-781, S-792, S-822, S-836, S-841); *Caesalpinia eriostachys* Benth. (S-402); *Lysiloma microphylla* Benth. (S-768); *Pithecellobium mangense* (Jacq.) MacBride (S-418); *Schrunkia* sp. (FANM-193); *Ziziphus amole* (Sesse & Moc.) M. C. Johnst. (S-480); Moraceae (S-405); *Ficus* sp. (S-378, S-834, S-774); *F. cotinifolia* HBK (THA-145); *Chlorophora tinctoria* (L.) Gaud. (FANM-185); *Celtis iguaneus* (Jacq.) Sarg. (S-379, S-839, S-862, S-807); *Ceiba pentandra* (L.) Gaertn. (S-403); Anacardiaceae (S-416); *Spondias purpurea* L. (S-825); *Comocladia engleriana* Loes. (THA-155); Convolvulaceae (S-417); *Serjania brachycarpa* Gray (S-487); Sapindaceae (S-739, S-798, S-778);

*Croton pseudoniveus* Lundell (S-488); *Hura polyandra* Baill. (F-212); *Phoradendron* sp. (S-747); *Guazuma ulmifolia* Lam. (S-749); Sterculiaceae (S-769); *Forchhammeria pallida* Liebm. (S-364, S-737); *Poeppigia procera* Presl (S-790); *Cocos nucifera* L. (S-793); *Annona muricata* L. (S-837); *Cordia* sp. (S-476); host unknown (S-351, S-390, S-42, S-496, S-726, S-488, S-782, S-816, S-833, S-867, S-876, S-843, S-810). Wood (1982) suggested that this species may be African in origin.

63. *Hypothenemus californicus* Hopkins, 1915\*. (ph,ipg,po); California and Florida to Michoacan and Veracruz. *Amaranthaceae* (S-495). This species is assumed to be polyphagous since it is known from a wide variety of hosts (Wood 1982) and is polyphagous in southern Morelos (Atkinson et al., 1986). Wood (1982) suggested that this species may be African in origin.

64. *Hypothenemus columbi* Hopkins, 1915\*. (ph,ipg,po); Texas and Florida to Colombia and Venezuela. *Annona* sp. (S-730); *Ficus* sp. (S-378, S-774); *Cordia* sp. (S-476); *Croton* sp. (S-727); *C. pseudoniveus* Lundell (THA-151); *Hura polyandra* Baill. (FANM-212); *Matelea* sp. (FANM-204); *Sarcostemma clausum* (Jacq.) Schult. (THA-186); *Ceiba pentandra* (L.) Gaertn. (FANM-173); *Heliocarpus pallidus* Rose (THA-136); *Schrankia* sp. (FANM-193); *Spondias purpurea* L. (S-738); *Acacia* sp. (S-748); *Jatropha standleyi* Steyer. (S-760); U.V. light (S-755); host unknown (S-726, S-741, S-821, S-846, S-805).

65. *Hypothenemus crudiae* (Panzer, 1791). (m,ipg,po); Eastern and southern U.S. to Argentina. circumtropical *Jatropha standleyi* Steyer. (S-352, S-760); *Jatropha* sp. (S-844); *Euphorbia colletioides* Benth. (THA-236); *Forchhammeria pallida* Liebm. (S-364); *Capparis indica* (L.) Fawc. & Rendle (S-392); *Morisonia americana* L. (S-423); *Thouinia paucidentata* Radlk. (S-367); *Paullinia cururu* L. (S-376); *Ficus* sp. (S-378, S-834); *Celtis iguaneus* (Jacq.) Sarg. (S-379); *Anacardiaceae* (S-416); *Spondias purpurea* L. (S-825); *Coccoladia engleriana* Loes. (FANM-231); *Jacquinia pungens* A. Gray (FANM-241); *Ipomoea wolcottiana* Rose (FANM-242); *Ceiba pentandra* (L.) Gaertn. (FANM-169); *Heliocarpus pallidus* Rose (THA-236); *Matelea* sp. (FANM-204); *Sarcostemma clausum* (Jac.) Schult. (THA-186); *Rubiaceae* (S-419); *Manihot chlorosticta* Standl. & Goldman (S-482); *Aristolochia taliscana* Hook. & Arn. (S-745); *Leguminosae* (S-757); *Caesalpinia platyloba* S. Wats. (FANM-210); *Cocos nucifera* L. (S-762); *Apocynaceae* (S-763); *Sterculiaceae* (S-769); *Carica papaya* L. (S-827); *Sideroxylon capiri* DC. (S-776); *Luffa acutangula* Roxb. (S-845); host unknown (S-366, S-741, S-843, S-846).

66. *Hypothenemus erectus* Leconte, 1876 (m,ipg,po). Southern Texas to Venezuela, Africa. *Acacia hindsii* Benth. (S-820); *Caesalpinia* sp. (S-823); *Acacia* sp. (S-362); *Cynometra oaxacana* Brandeggee (S-391); *Lonchocarpus* sp. (S-373); *Pithecellobium mangense* (Jacq.) MacBride (S-418); *Leguminosae* (S-371, S-472, S-750, S-836); *Ziziphus amole* (Sesse & Moc.) M. C. Johnst. (S-480); *Bignoniaceae* (S-474); *Capparis flexuosa* (L.) L. (THA-236); *Forchhammeria pallida* Liebm. (S-364); *Thouinia paucidentata* Radlk. (S-367); *Thouinidium decandrum* (Humb. & Bonpl.) Radlk. (S-374, S-734); *Paullinia cururu* L. (S-376); *P. sessiliflora* Radlk. in Rose (S-743); *Serjania brachycarpa* Gray (S-747); *Cocos nucifera* L. (S-793); *Laguncularia racemosa* (L.) Gaertn. (S-803); *Annona muricata* L. (S-837); *Annona* sp. (S-370); *Recchia mexicana* Moc. & Sesse (S-813); *Avicennia germinans* L. (S-477); *Croton pseudoniveus* Lundell (S-488, S-493); *C. sp.* (S-727); *Ficus* sp. (S-378, S-404); *F. cotinifolia* HBK. (THA-151); *Trophis racemosa* (L.) Urb. (S-484); *Moraceae* (S-405, S-429); *Celtis iguaneus* (Jacq.) Sarg. (S-379, S-839); *Spondias purpurea* L. (S-825); *Anacardiaceae* (S-416); *Rubiaceae* (S-419); *Cordia* sp. (S-424); host unknown (S-390, S-430, S-490, S-726, S-816, S-830, S-835, S-860, S-810).

67. *Hypothenemus eruditus* Westwood, 1836. (ph-h,ipg,po); circumtropical. *Jatropha standleyi* Steyererm. (S-759); *Jatropha malacophylla* Standl. (THA-368); *Manihot chlorosticta* Standl. & Goldman (S-482); *Lonchocarpus* sp. (S-373); *Caesalpinia erios-tachys* Benth. (S-402); *Pithecellobium mangense* (Jacq.) MacBride (S-418); *Acacia hindsii* Benth. (S-500, S-809); Leguminosae (S-421, S-489, S-730, S-841); *Lonchocarpus constrictus* Pitt. (THA-362); *Ziziphus amole* (Sesse & Moc.) M. C. Johnst. (S-480); *Capparis indica* (L.) Fawc. & Rendle (S-392); *Ficus* sp. (S-393, S-774); *F. cotinifolia* HBK. (THA-145); *Trophis racemosa* (L.) Urb. (S-484); Moraceae (S-429); *Spondias purpurea* L. (S-415, S-825); Anacardiaceae (S-416); Convolvulaceae (S-417); Rubiaceae (S-419); *Cupania dentata* DC. (S-872); Sapindaceae (S-701, S-815); *Guazuma ulmifolia* Lam. (S-749); *Cocos nucifera* L. (S-762); *Carica papaya* L. (S-827); *Celtis iguaneus* (Jacq.) Sarg. (S-762, S-807); *Cordia* sp. (S-476); *Avicennia germinans* L. (S-477); *Luffa acutangula* Roxb. (S-845); *Ceiba pentandra* (L.) Gaertn. (S-403); Bignoniaceae (S-407, S-474); *Sarcostemma clausum* (Jacq.) Schult. (THA-186); host unknown (S-366, S-470, S-496, S-726, S-833, S-871, S-481, S-843, S-810). This species is found in a wide variety of situations in virtually every plant examined. It has been collected in seeds, fruits, pith, phloem, wood, and herbaceous plants, generally dead and dry.

68. *Hypothenemus interstitialis* (Hopkins, 1915)\*. (m,ipg,po); Kansas and Florida to Costa Rica. Leguminosae (S-750, S-792); *Acacia* sp. (S-362); *Schrankia* sp. (FANM-193); *Pithecellobium mangense* (Jacq.) MacBride (THA-168); *Caesalpinia platyloba* S. Wats. (FANM-210); Moraceae (S-405); *Ficus* sp. (S-834); *Forchhammeria pallida* Liebm. (FANM-187); *Capparis flexuosa* (L.) L. (THA-236); *Ceiba pentandra* (L.) Gaertn. (FANM-169); *Sida* sp. (THA-137); *Spondias purpurea* L. (S-825); *Annona muricata* L. (S-837); *Luffa acutangula* Roxb. (S-845); Bignoniaceae (S-474); Sapindaceae (S-701); *Paullinia sessiliflora* Radlk. in Rose (S-743); *Aristolochia taliscana* Hook. & Arn. (S-745).

69. *Hypothenemus seriatus* Eichhoff, 1878. (m,ipg,po); circumtropical. *Forchhammeria pallida* Liebm. (S-364, S-737); *Thouinia paucidentata* Radlk. (S-367); *Thouinidium decandrum* (Humb. & Bonpl.) Radlk. (S-374); Sapindaceae (S-701, S-739, S-815); *Paullinia sessiliflora* Radlk. in Rose (S-743); *Ficus* sp. (S-369, S-774, S-834); *Trophis racemosa* (L.) Urb. (S-484); Moraceae (S-429); *Ceiba pentandra* (L.) Gaertn. (S-403); *Spondias purpurea* L. (S-415, S-791, S-825); Anacardiaceae (S-416); Convolvulaceae (S-417); *Guazuma ulmifolia* Lam. (S-420); *Henrya insularis* Nees in Benth. (S-473); Bignoniaceae (S-474); *Croton pseudoniveus* Lundell (S-488, S-493); *Jatropha standleyi* Steyererm. (S-760); *Jatropha* sp. (S-844); Leguminosae (S-740, S-750, S-758, S-792, S-836); *Caesalpinia sclerocarpa* Standl. (THA-167); *Lysiloma microphylla* Benth. (S-768); *Matelea* sp. (S-744); *Cocos nucifera* L. (S-762); *Carica papaya* L. (S-827); *Annona muricata* L. (S-837); *Avicennia germinans* L. (S-477); *Celtis iguaneus* (Jacq.) Sarg. (S-807); *Recchia mexicana* Moc. & Sesse (S-813); *Luffa acutangula* Roxb. (S-845); host unknown (S-422, S-496, S-723, S-741, S-770, S-821, S-846).

70. *Hypothenemus solocis* Wood, 1974\*. (m,ipg,po); Sinaloa, Nayarit, Jalisco, Colima. *Forchhammeria pallida* Liebm. (S-364); *Capparis flexuosa* (L.) L. (THA-236); *Thouinia paucidentata* Radlk. (S-367); *Thouinidium decandrum* (Humb. & Bonpl.) Radlk. (S-734); *Serjania brachycarpa* Gray (S-828); Sapindaceae (S-739, S-778); Leguminosae (S-371, S-733, S-750, S-781, S-836); *Lysiloma microphylla* Benth. (S-768); *Caesalpinia* sp. (S-833); *Ziziphus amole* (Sesse & Moc.) M. C. Johnst. (S-480); *Celtis iguaneus* (Jacq.) Sarg. (S-379); *Mangifera indica* L. (S-499); *Astronium graveolens* Jacq. (FANM-184); *Phoradendron* sp. (S-747); *Cocos nucifera* L. (S-793); U.V. light (S-783); host unknown (S-754, S-833, S-838). Like most species of the genus this is principally a pith borer of twigs and small stems.

71. *Hypothenemus squamosus* (Hopkins, 1915)\*. (m, ipg, po); South Florida to Veracruz and Jalisco. Leguminosae (S-733, S-781); *Lysiloma microphylla* Benth. (S-768); *Caesalpinia* sp. (S-823); *Thouinidium decandrum* (Humb. & Bonpl.) Radlk. (S-734); *Serjania brachycarpa* Gray (S-828); Sapindaceae (S-739, S-778); *Sarcostema clausum* (Jacq.) Schult. (THA-327).

72. *Scolytogenes rusticus* (Wood, 1974). (ph,mg,mo); Jalisco to Chiapas. U.V. light (S-755); *Ipomoea wolcottiana* Rose (NEW HOST) (S-765, THA-154). This species breeds in branches and trunks of arborescent species of *Ipomoea*. The "wood" of these trees consists of loosely bound "rings" of loose fibers. The galleries are basically transverse and biramous and may be found between adjacent rings. It is not known whether a single gallery may have branches on different levels, or whether each male-female pair restricts its boring to a given level. It might be classified either as phloeophagous or xylophagous.

73. *Stegomerus pygmaeus* Wood, 1967. (ph,mg,mo?); Nayarit to Costa Rica. Sapindaceae (S-375); host unknown (S-805, s-859). The galleries are transverse and biramous. The species breeds in stems of an unknown woody vine, possibly a species of *Paullinia*. Although Wood (1982) reported several unrelated hosts for this species, in Chamela it seems to be monophagous.

#### Corthylini

74. *Araptus* sp. 1 (ph,pg,ol). *Pithecellobium* sp. (S-361); *Caesalpinia sclerocarpa* Standl. (THA-371). Gallery radial, in phloem.

75. *Araptus* sp. 2 (ph,pg,mo?). host unknown (no number).

76. *Araptus* sp. 3 (m,mg,mo). *Euphorbia colletioides* Benth. (FANM-164, THA-263). Excavates pith of small branches of its host, a woody liana. Unlike most species of the genus, this is monogynous, possibly due to space considerations imposed by its habits.

77. *Araptus* sp. 4 (ph,pg,mo?). U.V. light (S-755, S-846).

78. *Araptus consobrinus* Wood, 1975. (ph,pg,mo); Nayarit and Jalisco. *Ficus* sp. (S-369, S-774); *F. insipida* Willd. (THA-249, THA-349); host unknown (S-407). Gallery radial and in phloem.

79. *Araptus delicatus* Wood, 1974. (m,mg,mo). Nayarit, Jalisco. *Sarcostemma clausum* (Jacq.) Schult. (NEW HOST) (THA-186, THA-327). Makes axial galleries in the pith of small diameter stems of its host, a woody liana of the Asclepiadaceae. The habits appear similar to those of *Araptus* sp. 3. Individual galleries up to 20 cm long have been observed with large larvae present. The larvae apparently extend the parental gallery.

80. *Araptus fossifrons* Wood, 1975. (s,pg,ol.); Nayarit to Guatemala. Asclepiadaceae (S-491); *Matelea* sp. (NEW HOST) (S-744); *Marsdenia* sp. (FANM-238); *Gonolobus* sp. (THA-242). This species breeds in dry fruits of several genera of Asclepiadaceae (vines). The galleries appear to be radial.

81. *Araptus leptus* (Bright, 1972)\*. (ph,pg,mo?); Jalisco and Veracruz. Malpighiaceae (S-486).

82. *Araptus tabogae* (Blackman, 1942)\*. (ph,pg,m?); Jalisco and Veracruz to Panama. *Paullinia cururu* L. (NEW HOST) (S-376). This is the first known host for this species.

83. *Corthylyus spinifer* Schwarz, 1891. (xm,mg,po). widely distributed in tropical America. *Astronium graveolens* Jacq. (FANM-184). Restricted to shaded, moist arroyos.

84. *Dendroterus fossifrons* Wood, 1984. (ph,pg,mo?); known only from Chamela. Host unknown (S-351). The condition of the host plant, a tree with exfoliating bark, did

not permit identification but it was either a species of *Bursera* or *Jatropha*, both of which host species of this genus.

85. *Dendroterus luteolus* (Schedl, 1951)\*. (ph,pg,ol); Nayarit to Chiapas. U.V. light (S-755, S-783, S-821); *Spondias purpurea* L. (NEW HOST) (S-879); *Bursera instabilis* McVaugh & Rzed. (THA-346); host unknown (S-421). This species has mostly been collected in *Bursera* spp. (Wood 1982, Atkinson et al. 1986). Successful attacks with large larvae and pupae were observed.

86. *Dendroterus mexicanus* Blandford, 1904. (ph,pg,mo); Nayarit to Oaxaca. *Bursera* sp. (THA-382).

87. *Dendroterus sallaei* Blandford, 1904. (ph,pg,mo); Tres Marias Islands, Jalisco and Tamaulipas to Costa Rica. U.V. light (S-755); *Bursera arborea* (Rose) Riley (S-354). Gallery radial and in phloem.

88. *Phloeoterus burserae* Wood, 1984. (ph,pg,mo); known only from Chamela. *Bursera instabilis* McVaugh & Rzed. (S-794, S-865). Collected on both occasions from recently killed branches (2-4 cm diam.) on live trees. Gallery radial and in phloem.

89. *Microcorthylus minimus* Schedl, 1950\*. (xm,mg,po); Jalisco and Veracruz to Brazil. *Forchhammeria pallida* Liebm. (NEW HOST) (S-772); *Struthanthus interruptus* (HBK.) Blume (NEW HOST) (S-804); *Cupania dentata* DC. (NEW HOST) (S-872); *Ziziphus amole* (Sesse & Moc.) M. C. Johnst. (NEW HOST) (S-356); host unknown (S-770). The gallery is circular, extended on both side of the entrance, between adjacent growth rings of its hosts. It is normally found in small stems and branches (1-3 cm diam.).

90. *Pityophthorus costabilis* Wood, 1976. (ph,pg,mo); Jalisco, Morelos, Guerrero. *Thevetia ovata* (Cav.) DC. (FANM-181). Gallery radial, in phloem.

91. *Pityophthorus costatulus* Wood, 1976. (ph,pg,mo); Jalisco, Morelos, Guerrero. *Thevetia ovata* (Cav.) DC. (FANM-181). Gallery radial, in phloem. The egg galleries of this species are packed with frass.

92. *Pityophthorus diminutivus* Bright, 1985. (ph,pg,mo?); known only from Chamela. *Lonchocarpus guatemalensis* Benth. (S-761); host unknown (S-771, S-725). Radial gallery, in phloem.

93. *Pityophthorus equihuai* Bright, 1985. (ph,pg,mo); known only from Chamela. U.V. light (S-755); host unknown (S-832); composite shrub (THA-167). Gallery radial, in phloem of woody vine.

94. *Pityophthorus indefessus* Bright, 1985. (ph,pg,mo); known only from Chamela. *Astronium graveolens* Jacq. (S-416, THA-363, THA-364); host unknown (S-390, S-732). Radial galleries, in phloem.

95. *Pityophthorus indigenus* Wood, 1976. (ph,pg,mo?); Jalisco. *Amphipterygium adstringens* (Schlecht.) Schiede (FANM-227). Galleries radial, in phloem.

96. *Pityophthorus nanus* Wood, 1964. (ph,pg,mo); Jalisco to Chiapas. *Spondias purpurea* (NEW HOST) (S-738, S-791); *Bursera fagaroides* (HBK.) Engl. (THA-366). This species has been previously reported only from *Bursera* spp. (Wood 1982, Atkinson et al. 1986). Attacks occur in branches and trunks with diameters ranging from 3-30 cm.

97. *Pityophthorus trunculus* Bright, 1985. (ph,pg,mo?); known only from Chamela. Host unknown (S-831). Gallery radial, in phloem of woody vine.

98. *Styphlosoma granulatum* Blandford 1904\*\*. (ph,pg,?). Jalisco, Costa Rica, Panama. Host unknown (S-351). This is the first report of this genus from Mexico.

99. *Tricolus difodinus* Bright, 1972\*. (xm,mg,po); Nayarit to Guatemala. Sapindaceae (S-778). This species is known to be polyphagous in Campeche (Estrada and Atkinson, unpublished) and is assumed to be so here as well. The gallery is similar to that of *Corthylus spinifer* and *Microcorthylus minimus*.



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