

Technical Report No. 5
SEASONAL OCCURRENCE AND HOST-LISTS
OF HAWAIIAN CERAMBYCIDAE

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ISLAND ECOSYSTEMS IRP
U. S. International Biological Program

April 1972

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ABSTRACT

The cerambycid beetle borers play an important role in Hawaiian forests, both in the natural and disturbed environments. Their significance is enhanced by the disharmonic nature of the fauna, such as the lack of leaf beetles and June beetles, in the native fauna. There are about 120 known species of endemic cerambycids, almost entirely restricted to native trees and shrubs, and 17 species of established exotic cerambycids, which with few exceptions bore in exotic trees. The seasonal occurrence, as far as known, of the adult cerambycids is tabulated. Altitudinal range and latest year of collection (native) or earliest year of record (exotic) are also tabulated. In a further tabulation, the species for which host associations are known are presented by host genera under plant families, and by islands. The introduced species are treated in similar manner.

INTRODUCTION

The native fauna of the Hawaiian Chain is highly disharmonic in nature, meaning that because of the extreme isolation, many prominent groups of animals failed to reach the islands before the recent arrival of man. Certain groups, however, reached the island early and speciated extensively. The family Cerambycidae (longhorned beetles - adults; rounded-head wood-borers - larvae) represents one of these groups. About 120 endemic species are known, and probably considerably more exist or formerly existed and became extinct. These beetles bore in the wood of over one-third (38 out of 102) of the native genera of woody plants. It is puzzling, however, that only a minority (23.8%) of the endemic genera of trees and shrubs have confirmed host records for cerambycids. Some of the very common trees have few or questionable records. This situation may be related to chemical or physical properties of the living trees, such as the nature of the sap. An important point is that all of the endemic cerambycids are closely related (except Parandra and Megopis which bore in dead wood). The main group, called the plagithmysines, to a great extent bore in living trees as larvae. They evolved from a single immigrant ancestor. Although several genera have been named, representing considerable divergence in form, we now consider that they constitute a single genus, with five of the former genera to be retained as subgenera. Native Araliaceae, with gummy sap, have no confirmed plagithmysine records, but Parandra bore in rotting-araliads.

In connection with the period of adult occurrence, data are as yet insufficient to express a view on seasonality. For some species, it would appear that adults occur the year around, and that there are completely overlapping generations. On the other hand, pupae and adult emergence seem to be more prevalent between March and July. In captivity, adults live up to 6 or 8 weeks,

but the average span may be less in nature, with birds, rat and mongoose predation.

In the first tabulation, altitude range and latest year of collection are given for endemic species and earliest year of record for exotic species. For both, the numbers of dated specimens examined is also presented. In the second tabulation, host genera are listed under the plant families and are indexed at the end.

Monoinsular endemism is the rule with the plagithmysines--that is, no one kind is known to occur on more than one island. However, there are closely related species on different islands, particularly as between Molokai, Lanai and Maui. Host associations are largely narrow as far as known, and often related species have the same host genera. More species are being discovered by investigating gaps in host/island records.

In this family, the greatest number of known species occur on the island of Hawaii (44) and the next greatest on Maui (30). This is in contrast to the situation in the weevils where Kauai has the greatest number of species and Oahu the next greatest.

A large proportion of the specimens which have been collected have been utilized in constructing the following tables. It is expected that much additional data to be collected will shortly render these tables out of date. We trust that this presentation may prove useful. We also hope that it may encourage other workers to help us to fill the many gaps in our present knowledge. The material here comprises background and comparative data for the "Island Ecosystems" IBP studies on the joint transects, and on the biologies of some of the involved species, as well as of the evolution of the cerambycids and their host relationships in the Hawaiian Chain.

We wish to gratefully acknowledge the assistance and advice of J. W. Beardsley, F. A. Bianchi, E. J. Ford, Jr., Lynnette Fuller, Bruce Furmidge, Wayne Gagne, D. E. Hardy, Carol Higa, F. W. Howarth, James Jacobi, Ronald Lau, Rebecca G. Lau, Steve Montgomery, Barbara Myers, Noah Pekelo, Thane Pratt, G. A. Samuelson, Dr. Harold St. John, Donald Sugawa, Rene Sylva and Ernest Yoshioka.

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Table 1. Seasonal occurrence and altitude range of adult native Hawaiian Cerambycidae

	No. of dated spec.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Alt	Yr. last coll
<i>Parandra puncticeps</i> Sharp	51	-	-	---	---	---	---	---	---	---	---	-	--	300-1280	19
<i>Megopis reflexa</i> (Karsch)	30		x-	-	-	---	-	x---	---	---	-			1100-1250	19
<i>Plagithmysus</i> (Nesi- thmysus) <i>bridwelli</i> (Perk.)	20	-	xxxx-	xxx-	-			-	x	x		-		600-1280	19
<i>forbesii</i> (Perk.)	5		xxx		-		---							950	19
<i>haasi</i> (Perk.)	19	x	xxxx-	x				---						600-1280	19
<i>peleae</i> (G. & D.)	3				x	x								1100	19
<i>P.</i> (<i>Aeschrithmysus</i>) <i>dubautianus</i> (G. & D.)	4			-					-					2500	19
<i>peleanus</i> G. & D.	1					x								1100	19
<i>swezeyanus</i> G. & D. (<i>A. swezeyi</i> Perk.)	2						---		-					2500	19
<i>swezeyellus</i> Gr. (N. <i>swezeyi</i> Perk.)	1			x										1200?	19
<i>terryi</i> (Perk.)	4								-					3040	19
<i>yoshimotoi</i> G. & D.	1						-							2000	19

Note: -- = adult collections, x = emergence from pupa

Table 1 continued

	No. of dated spec.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Alt (m)	Yr. of last coll'
<i>P. (Paraclytarlus)</i> <i>annectens</i> (Sh.)	5				--				-					1200	1925
<i>laticollis</i> (Sh.) (<i>fugitivus</i> Perk.)	2	-				-								1300-1500	1926
<i>pipturicola</i> (Perk.)	1						-							?	1926
<i>podagricus</i> Perk.	1										-			1260?	1919
<i>timberlakei</i> (Perk.)	1		-											1000?	1910
<i>P. (Neoclytarlus)</i> <i>abnormis</i> (Sh.)	2		--			--								1500	1891
<i>acaciae</i> G. & D.	82		--			xxx	x					xxxxxxx	xxxxxxx	1060	1961
<i>atricolor</i> (Perk.)	6		xx	-	x-	x								2200-2740	197
<i>bidensae</i> Gr.	3								x--					700	197
<i>chenopodii</i> (Perk.)	167	xxxxxxx	-----	-----	---	----	x						xxx-	460- 900	195
<i>claviger</i> (Sh.)	9			-		--	x				-	-		1580	195
<i>debilis</i> (Sh.)	20								-----	---				1200-1500	193
<i>decurrensae</i> G. & D.	45							xxxxxxx		---		---		1000	195
<i>dodonaeeae</i> (Swezi.)	29	x		xxx	xxxx	xx	xx		xxxxxxx		xxxxxxx			2000	197
<i>dodonaeeavorus</i> Gr.	17								x--	-x--				400- 500	197
<i>dubautiae</i> G. & D.	36					---				xxxxxxx		---		1980	195

Table 1 continued

	No. of dated spec.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Alt (m)	Yr. last coll
<i>d. arborea</i> G.& D.	22										--	-----	xxxxxx	2200	195
<i>euphorbiae</i> (Bridwell)	81	xx		x	--	--	xxxxxxx		x				xxxxxxx	5	195
<i>filipes</i> (Sh.)	61	x	xxx		xxxxxxx	xx		xxx	x-	xxx-		---	xxxxxxx	1200-1800	194
<i>f. sophorae</i> G.&D.	18	xx	x		--	--	xxxxxxx	xx			--	--	x---	1000-2040	197
<i>fragilis</i> (Sh.)	5		--		--		--			--		--	-	760	195
<i>geranii</i> (Perk.)	3						---	--						1800-2400	196
<i>hardyi</i> Gr.	3						---		x	-----	x			900-1000	197
<i>immundus</i> (Sh.)	55											--	---	900	190
<i>indecens</i> (Perk.)	60	x	xxxxxxx					xxxxxxx		--				1219	192
<i>kainaluensis</i> (Perk.)	9			x				-	----					800-1100	197
<i>longipes</i> (Sh.)	50		--			---	xxxxxxx		---					600-1000	197
<i>lookii</i> (Swz.)	215		xxxxxxx	xxxxxxx		-	---	---	xxxxxxx			---	xxxxxxx	1100-2050	197
<i>l. keanakolui</i> G.&D.	5												--	1800	195
<i>l. ukae</i> G. & D.	192	xxxxxx										xxxxxx		1000	196
<i>mediocris</i> (Sh.)	19					--		--						1200-1500	191
<i>metrosideri</i> G.&D.	1								-					1200	194

Table 1 continued

	No. of dated spec.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Alt (m)	Yr. of last coll
mezoneuri (Swez.)	2											x-		600	1949
modestus (Sh.)	22	--	x	---	-----				-					950-1500	1971
montgomeryi G.&D.	25	xxxxxx	x	xxxxxx				x						1830	1970
nodifer (Sh.)	87	xxxx	xxxxxx	--				xxxxxx	----		xx	xx		900-1500	1971
obscurus (Sh.)	31				-----	-----			-					900-1200	1921
pennatus (Sh.)	97	--	-----x	-x--	----	----	--	xx	----		-----	----		900-1500	1971
pulchrior Perk.	1							?						?	?
railliardiae Perk.	15						--		--					3000	1927
rusticus G. & D.	1					---								2000	1952
smilacis Perk.	11	xx	xxx						---					1400	1929
smilacivorus G.	3						x	----	----					200	1971
superstes Zimm.	1												---	2	1938
ultimus (Sh.)	5				--			--				--		580	1952
usingeri G. & D.	1						--							500	1958
wattleae G. & D.	19			xx	xxxxxx	xx	xxx	x			--			1000	1970
P. (Plagithmysus) aequalis (Sh.)	100	-	----		-----	----			--					600-1500	1924
aestivus (Sh.)	20				---		---		---					1200	1907

able 1 continued

	No. of dated spec.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Alt (m)	Yr. last coll
albertisi (Sh.)	30	-----	--	-----		---		--		----			---	300- 760	196
attenuatus Boisd. (cristatus Sh.)	137	---	---	x-x-	-----	-----	-----	xxxx-	x		---	-----	---	500-1000	196
bilineatus (Sh.)	339	-		--	-----	-----	-----	xxxxxxx	x-----	-----		-----		800-1200	195
bishopi (Sh.)	77					--	-xxx	xxxxxxx	-----	x				1200-1350	193
blackburni (Sh.)	188		-----	-----	xx	-----	xxxxxxx	xxxxxxx			-----	x	xxxxx	1200-2300	197
cheirodendri G. & D.)	1								-					2000	195
collaris (Sh.)	20												x--	1500	189
concolor arachnipes Sh.	106			x	xx-	xxx	x-xx	xxxxxxx	-----	-				1200	197
concolor concolor Sh.	24					-----	-----	---	xx-					1000-1220	193
concolor munroi Sh.	97	xxxxxx	xxxxxxx	xxxxxx	xx --	xxxxxxx	-----	x --	xxxxxx	x	x -	x		1000-1500	196
cuneatus Sh.	68	x	xxxxxxx	x-----	xx-	-x-xx	xx-----	--			x	xxx		300- 600	197
darwinianus Sh.	159							-----	xxxxxxx	xxxxxxx				1200	192
davisi Swez.	14		--	---	xxxxxxx	x								600	196
decorus Perk.	6		x---	xx	x	x			--					500-1070	197
diana Sh.	16					x		---				x		1200	197
elegans Sh.														900	

Table 1 continued

	No. of dated spec.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Alt (m)	Yr. last coll
<i>finschi</i> (Harold)	47				---	---			--					1200-1500	193
<i>forbesianus</i> G.	1							-						1200	191
<i>frater</i> Perk.	1													900	190
<i>fractus</i> Perk.	1													500?	190
<i>funebri</i> Sh.	161	----	---		---	xxxxxxx	-----	-----	-----	---	-			1800-2100	196
<i>giffardi</i> Perk.	93						-----	===	xxx					1100-1220	193
<i>gracilis</i> Sh. (<i>bishopi</i> var.)														1100?	190
<i>greenwelli</i> G. & D.	1			x	--									1200	196
<i>hirtipes</i> (Sh.)	1													600	191
<i>ignotus</i> Perk.	18					xxxxxxx	xxxxxxx	x	--	-----				1220	197
<i>ilicis</i> G.	2								-	--	--			1100	197
<i>koae</i> G. & D.	4				---				---					450-1000	196
<i>koaiae</i> G. & D.	34		xxxxxxx	x										1070	196
<i>koebeleri</i> Perk.	23	x-	--		--		-----			--	--		x-	600	193
<i>kohalae</i> Perk.	1									-				1200	191
<i>kraussi</i> G. & D.														500	195
<i>kuhnsi</i> Perk.	13	---	-----	-xxx		x								600	195

Table 1 continued

	No. of dated spec.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Alt (m)	Yr. of last coll.
<i>lamarckianus</i> Sh.	42	x			---	--		----	----		----		--	1100-1220	1929
<i>lanaiensis</i> Sh.	1							--						900	1894
<i>longicollis</i> Perk.	1						-							600	1920
<i>longulus</i> Perk.	15									----			---	450- 600	1920
<i>microgaster</i> (Sh.)	20	xxx	x	----	-xxx--	-x-		-			-	----	----	500-1000	1934
<i>molokaiensis</i> Perk.	25												-----	975	1925
<i>muiiri</i> Perk.	18	---											x--	1200	1934
<i>newelli</i> Sh.	1							--						1200	1913
<i>nicotianae</i> G. & D.	18	xxx		---				xx				xxxxxxx	xxxx--	600	1969
<i>nihoa</i> e Perk.	1						---							100?	1923
<i>paludis</i> Perk.	1						---							1200	1917
<i>perkinsi</i> Sh.	28				xxxxxx		-----	x-----	x----					1200-1800	1971
<i>permundus</i> Sh.	13		--											600	1397
<i>perrottetiae</i> G. & D.	7						xx	x--						1220	1971
<i>pittospori</i> G.	24								x	x-----	-x--x-	---	x-	950	1971
<i>platydesmae</i> Perk.	6			x-					-					920	1919
<i>polystictus</i> Perk.	1							--						?	1932
<i>pulverulentus</i> (Mots.)	81	-----	-----	---xx-	-----	-----	-----	-----	xxxx	-----	-----	---	-----	300- 920	1970

Table 1 continued

	No. of dated spec.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Alt (m)	Yr. c last coll'
pulvillatus Karsch	3										--			1500	1896
rubri Perk.	1		--											1100	1926
sharpianus Perk.	4			--				---	---					1200	1928
simillimus Perk.	10				--		---	---					--	1200	1928
simplicicollis Sh.														900	1900
solitarius Sh.	63	---	---	---	---	xx		---	---	--xx--	---		xxxxx--	600	1934
speculifer Sh.	1						--							800?	1894
sugawai G. & D.	27				x	xxxxxxx	xxxxx--	xx---	xxxxx					1250	1970
sulphurescens Sh.	14							----						1150	1895
swezeyi Perk.	1					---								?	1917
ukulele G.	1									---				1250	1919
varians Sh.	650	---	---	---x	xx--	---	xxxxxxx	xxxxxxx	---	---	---x-	---	---	2040	1971
vicinus Sh.	3								?		---			900	1892
vitticollis Sh.	46						--	----	-xxx		xx		x	1200-1530	1971

Table 2. Seasonal occurrence of adult introduced Cerambycidae with first year collected.*

	No. of dated spec's	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Yr. of first coll'n
<i>Xystrocera globosa</i> (Olivier)	155	-		x-x---	xxxxxxx	--	---	--x--	-x----	--	--	---	--xx	1900
<i>Phoracantha semipunctata</i> (F.)	25			x	xxx		x			xxxxxxx	xx			1965
<i>Curtomerus flavus</i> (F.)	178	x	x--xx	-xxxxxx	x-xxxxx	--	xxx	x-x--	xxxxxxx	-----x	---x-	xxx-x-	-xxx-	1902
<i>Gelonaetha hirta</i> (F.)	65	-xxxx-	--	--	--	-	--	xxxxxxx	--		x--	-x	x	1900
<i>Ceresium unicolor</i> (F.)	82		xx	--xxx	xxx-x	---xxx	----	--xxx	----	-x---	-----x	--xx--	x	1904
<i>Placosternus crinicornis</i> (chevrolet)	248	-	----x-	---x-	--		---	-	---	x-x--	--xx-	x-xx-	-	1904
<i>Chlorophorus annularis</i> (F.)	42	-----		-	-----	-xx-	---	--			-			1905
<i>Plagiohammus spinipennis</i> (thomson)	18									x-	x			1959
<i>Coptops aedificator</i> (F.)	60	---		---	---x	-	---	---	--	-----	-	--	--	1900

* - = Adult collection x = Emergence

All of these species are associated with introduced plants and therefore occur primarily at low altitudes. None of them have been found to our knowledge above the altitude of 900 meters. Additional species with isolated records, which are probably not established in Hawaii, are the following:

Semanotus amethystinus (Lec.) Nov. 1931 (1 specimen); *Clytus pilosus* Forst. subsp. *glabromaculatus*, June 1938 (6); *Xylotrechus colonus* (F.), Apr. 1947 (1); *Monochamus* sp., Oct. 1971 (1); *Batocera davidis* Fairm., July 1969 (1); *Aerenicopsis championi* Bates, Apr. 1960 (1).

Table 2. Continued.

	No. of dated spec's	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Yr. of first coll'n
<i>Lagocheirus undatus</i> undatus (Voet)	219	--x	xxx	----xx	-x-	----x	--x	---	-----	---xx-	--	----	x---x	1892
<i>Archlagocheirus funestus</i> (thomson)	8						xxxxxxx			xx				1964
<i>Prosopius banki</i> (F.)	200	x-xx	-xx-x	xx-x-	-xx	-xx	xxxxxx	-	--x-x	--	-	xxx-x	-----x	1897
<i>Pterolophia bigibbera</i> Newman	97	xx-	-x	xxx---	-xxxx	-	x-	-----	--	--	-x--	xxxxxxx	----	1930
<i>Oopis nutator</i> (F.)	87	----	-----xx	--xxxx	-	x--	-	--	xxxxxx	-	-x-	x	---	1892
<i>Mimectatina meridianus</i> (Matsushita)	5						-		-					1951
<i>Sybra alternans</i> (Wiedeman)	341	x-xxxx	--xxx-	-xx-xx	--xxx-	---xxx-	-----x-	xx--	-----	-xx-	---	x--x	xxx	1917
<i>Apomecyna saltator</i> (F.)	110			---	-	xx----	-	-	xxx---	-xxxx-		x-	-	1906

Table 3. Host genus -- Island records by plant families: Endemic Cerambycidae*

Hosts	KAUAI	OAHU	MOLOKAI	MAUI	HAWAII
LILIACEAE					
Smilax melastomifolia & sandwicensis (ulihihi; uhi)		indecens	kainaluensis	smilacis Waikomoi hardyi (W.)	giffardi Kilauea
URTICACEAE					
Pipturus spp. (mamaki)	sharpianus Kumuwela	kuhnsi Koolau	molokaiensis	smillimus Olinda pipturicola Kailua	lamarckianus Kohala, Kilauea
Urera sandwicensis (opuhe)			X	X	lamarckianus sulphurescens Kilauea
SANTALACEAE					
Santalum sp. (iliahi)					greenwelli Kona

* For members of Plagithmysus only trivial names are presented. For subgenera see Table 1 or island indices. One species is on NIHOA: nihoae from Euphorbia. Species from LANAI are smilacivorus from Smilax, pittospori from Pittosporum and lanaiensis (probably) and Megopis reflexa from Metrosideros.

W. = W. Maui

X = Host genus is not found on islands marked.

+ = Different species of host genus represented.

Table 3. Continued.

Hosts	KAUAI	OAHU	MOLOKAI	MAUI	HAWAII
CHENOPODIACEAE					
Chenopodium oahuense (aweoweo)		chenopodii Waianae			
Chenopodium sp.					looki looki Pohakuloa
					looki ukae Kawaihai Uka
					looki keanakolui Keanakolu
AMARANTHACEAE					
Charpentiera sp. (papala)					immundus Kona
					decorus Puuwaawaa
LAURACEAE					
Cryptocarya mannii (holio)	polystictus Kumuwela	+	X	X	X
PITTOSPORACEAE					
Pittosporum spp.	sugawai Kokee			n. sp. (W.)	
ROSACEAE					
Osteomeles anthyllidifolia (uulei)					davisi Puuwaawaa

Table 3. Continued.

Hosts	KAUAI	OAHU	MOLOKAI	MAUI	HAWAII
ROSACEAE (cont'd)					
Rubus hawaiiensis (akala)		X	X	rubi Olinda	vitticollis Kohala, Kilauea
LEGUMINOSAE					
Acacia koa (koa)	concolor arachnipes	attenuatus	fractus (?this host)	finschi	varians
	c. munroi	pulverulentus		koa	debilis
	aequalis	fragilis (?= ultimus)		laticollis	claviger
	obscurus	Parandra		pennatus	nodifer
	longipes	puncticeps		modestus	Parandra puncticeps
	Parandra puncticeps		Parandra puncticeps.		
Acacia koaia (koaia, koa, oha)	+	+			koaiae Kawaihae Uka
					nodifer
					acaciae Kawaihae Uka
Acacia decurrens (black wattle: exotic)	concolor			wattleae Olinda	nodifer Kamuela
	munroi Kumuwela				claviger Kamuela
					decurrensae Kamuela

Table 3. Continued.

Hosts	KAUAI	OAHU	MOLOKAI	MAUI	HAWAII
LEGUMINOSAE (cont'd)					
<i>Mezoneurum kauaiense</i> (uhiuhi)			X		mezoneuri N. Kona
<i>Sophora chrysophylla</i> (mamane)				funebri Olinda; S. Slope, Hal.	blackburni Mauna Kea, Kona, Kilauea
				mediocris Haleakala	darwinianus Kona, Kau, Kilauea
					filipes
					sophorae Pohakuloa, Kilauea
GERANEACEAE					
<i>Geranium cuneatus</i> v. <i>tridens</i> (hinahina)		X	X	geranii N. Slope, Hal.	atricolor Mauna Kea
RUTACEAE					
<i>Fagara dipetalum</i> <i>geminatum</i> (<i>Zanthoxylum</i>) (a'e, hea'e)					bishopi Kilauea
<i>Pelea</i> spp. (alani)	diana	bridwelli ex P. sandwicensis, P. clusiaefolia	peleae peleanus	forbesi Olinda n. sp. (W.)	bishopi ex P. cinerea, P. zahlbruckneri

Table 3. Continued.

Hosts	KAUAI	OAHU	MOLOKAI	MAUI	HAWAII
RUTACEAE (cont'd)					
Pelea spp. (cont'd) (alani)		haasi Koolau		swezeyellus Olinda	vicinus Mauna Loa
				collaris Haleakala	
Platydesma spathulata (campanulata) (pilo kea)					platydesmae Glenwood
EUPHORBIACEAE					
Euphorbia spp. (akoko, koko)		euphorbiae Ewa			montgomeryi Pohakuloa
AQUIFOLIACEAE					
Ilex anomala (kawa'u)			ilicis	n. sp. (W.)	sp. Kohala
CELASTRACEAE					
Perrottetia sandwicensis (olomea)	perrottetiae Kokee	microgaster hirtipes Koolau			vitticollis Kilauea
SAPINDACEAE					
Dodonaea viscosa v. spathulata (aalii)	concolor munroi		dodonaeavorus	n. sp. (W.)	dodonaeae M.L.T. Trail; Kona

Table 3. Continued.

Hosts	KAUAI	OAHU	MOLOKAI	MAUI	HAWAII
SAPINDACEAE (cont'd)					
<i>Sapindus oahuensis</i> (aulu, kaulu, lonomea)	+	<i>cuneatus</i> <i>albertisi</i> Waianae	+	X	? <i>darwinianus</i> ex <i>S. saponaria</i> Kilauea
RHAMNACEAE					
<i>Alphitonia ponderosa</i> (kauwila)	<i>longipes</i> Halemanu <i>concolor</i> <i>munroi</i> Kokee	X	X		
TILIACEAE					
<i>Elaeocarpus bifidus</i> (kalia)	<i>ignotus</i>	<i>solitarius</i> Koolau	X	X	X
MYRTACEAE					
<i>Syzygium sandwicensis</i> (ohia ha)	<i>c. concolor</i> Kokee	<i>solitarius</i> Koolau			
<i>Metrosideros collina</i> <i>polymorpha</i> (ohia)	<i>c. concolor</i> Halemanu <i>c. munroi</i> Kokee <i>metrosieri</i> <i>Megopis reflexa</i>	<i>solitarius</i> " " <i>timberlakei</i> Koolau <i>M. reflexa</i>	<i>aestivus</i> <i>Megopis reflexa</i>	<i>pulvillatus</i> <i>n. sp.</i> (W.) <i>M. reflexa</i>	<i>bilineatus</i> Kohala, Kilauea <i>abnormis</i> Olaa <i>M. reflexa</i>

Table 3. Continued.

Hosts	KAUAI	OAHU	MOLOKAI	MAUI	HAWAII
ARALIACEAE					
Cheirodendron trigynum (gaudichaudii) (olapa)			Parandra puncticeps	cheirodendri (host assoc. uncertain)	
ERICACEAE					
Vaccinium spp.					vitticollis ex V. calycinium Kilauea
					atricolor ex V. peleanum Nauhi, M.L.T. Trail
MYRSINACEAE					
Myrsine (kolea)					giffardi Kilauea
					Megopis reflexa
SAPOTACEAE					
Pouteria (=Planchonella) (=Sideroxylon) sandwicensis (aulu, kaulu ala'a -Oahu)	concolor		muii Waianae		
	munroi Kumuwela				
EBENACEAE					
Diospyros ferrea (lama)					davisi Puuwaawaa

Table 3. Continued.

Hosts	KAUAI	OAHU	MOLOKAI	MAUI	HAWAII
EBENACEAE (cont'd)					
Diospyros ferrea (cont'd) (lama)					filipes Puuwaawaa
MYOPORACEAE					
Myoporum sandwicense (naio)					perkinsi Kilauea area Megopis reflexa
SOLANACEAE					
Nicotiana glauca (tree tobacco - exotic)				newelli nicotianae S. Haleakala	
RUBIACEAE					
Bobea elatior (ahakea)		microgaster Koolau			vitticollis longulus Kilauea
B. mannii (akupa)	permundus				
CAMPANULACEAE					
Trematolobelia sp.				ukulele (host assoc. uncertain)	

Table 3. Continued.

Hosts	KAUAI	OAHU	MOLOKAI	MAUI	HAWAII
COMPOSITAE					
Argyroxiphium sandwicense (ahinahina - silversword)	X	X	X	terryi Haleakala	
Dubautia spp. (incl. Railliardia) (naenae)			?n. sp.	swezeyanus Haleakala	d. dubautiae ex D. montana Pohakuloa
				dubautianus Haleakala	d. arborea ex D. arborea Mauna Kea
				railliardiae ex D. ciliolata Haleakala	rusticus Pohakuloa
Bidens sp. (kokoolau)			bidensae		

Table 4. Introduced Cerambycidae and hosts, by host families

Family	Host name	Common name	Cerambycids definitely associated
Gramineae	Saccharum officinarum	Sugar cane	Prosoplus bankii
Bambusaceae	Bambusa	Bamboo	Chlorophorus annularis
Orchidaceae	Cattleya	Cattleya	Sybra alternans
	Dendrobium	Dendrobium	Sybra alternans
Urticaceae	Pipturus	Pipturus	Ceresium unicolor, Oopsis nutator
Moraceae	Artocarpus incisus	Breadfruit	Pterolophia bigibbera, Sybra alternans
Capparidaceae	Capparis	Caper, Pilo	Prosoplus bankii
Rosaceae	Osteomeles anthyllidi- folia	'Ulei	Curtomerus flavus
Leguminosae	Acacia decurrens	Black wattle	Curtomerus flavus, Placosternum crinicornis
	A. farnesiana	Klu	Prosoplus bankii, Sybra alternans
	A. koa	Koa	Xystrocera globosa, Curtomerus flavus, Ceresium unicolor
	Albizia lebeck	Siris tree	Placosternum crinicornis, Coptops aedifica- tor
	Caesalpinia crista	Kakalaioa	Prosoplus bankii
	Cajanus indicus	Pigeon pea	Sybra alternans
	Canavalia cathartica	Mauna Loa	Coptops aedificator

Table 4 continued

Family	Host name	Common name	Cerambycids definitely associated
Leguminosae	<i>Crotalaria</i>	Rattlebox	<i>Prosplus bankii</i> , <i>Sybra alternans</i>
	<i>Delonix regia</i>	Poinciana, flame tree	<i>Placosternum crinicornis</i>
	<i>Erythrina</i>	Coral tree, Wili-wili	<i>Coptops aedificator</i> , <i>Lagocheirus undatus</i> , <i>Prosplus bankii</i> , <i>Sybra alternans</i>
	<i>Haemotoxylon campechianum</i>	Logwood	<i>Placosternus crinicornis</i>
	<i>Leucaena leucocephala</i> (L. glauca)	Koa-haole	<i>Placosternus crinicornis</i>
	<i>Mezoneuron Kauaiense</i>	Uhiuhi	<i>Ceresium unicolor</i>
	<i>Prosopis pallida</i>	Kiawe, Algaroba, Mesquite	<i>Placosternus crinicornis</i> , <i>Prosopius bankii</i>
	<i>Samanea saman</i>	Monkeypod	<i>Xystrocera globosa</i> , <i>Placosternus crinicornis</i> , <i>Coptops aedificator</i>
	<i>Sesbania grandiflora</i>	Sesban, Ohai-ke'oke'o	<i>Prosopius bankii</i>
	<i>Sophora chrysophylla</i>	Mamane	<i>Ceresium unicolor</i>
Rutaceae	<i>Citrus aurantium</i>	Orange	<i>Prosopius bankii</i>
Euphorbiaceae	<i>Aleurites moluccana</i>	Kukui	<i>Lagocheirus undatus</i>
	<i>Euphorbia</i>	Spurge, etc.	<i>Lagocheirus undatus</i> , <i>Prosopius bankii</i>
	<i>Ricinus communis</i>	Castor bean	<i>Prosopius bankii</i> , <i>Sybra alternans</i>

Table 4 continued

Family	Host name	Common name	Cerambycids definitely associated
Anacardiaceae	Mangifera indica	Mango	Pterolophia bigibbera, Sybra alternans
Sapindaceae	Sapindus	Soapberry, etc.	Curtomerus flavus, Placosternum crinicornis
Malvaceae	Gossypium	Cotton	Prosoplus bankii, Sybra alternans
	Hibiscus tiliaceus	Hau	Gelonaetha hirta, Prosoplus bankii, Oopsis nutator, Sybra alternans
	Hibiscus spp.	Hibiscus	Lagocheirus undatus, Prosoplus bankii, Oopsis nutator, Sybra alternans
Guttiferae	Calophyllum inophyllum	Kamani	Oopsis nutator
Cucurbitae	Cucumis sativus	Cucumber	Apomecyna saltator
	Citrullus vulgaris	Watermelon	Apomecyna saltator
Caricaceae	Carica papaya	Papaya	Sybra alternans
Cactaceae	Opuntia	Prickly pear	Archlagocheirus funestus
Myrtaceae	Eucalyptus sideroxylon	Eucalyptus	Phoracantha semipunctata, Curtomerus flavus
	Metrosideros collina polymorpha	Ohia	Ceresium unicolor
	Psidium guajava	Guava	Curtomerus flavus, Sybra alternans
Araliaceae	Panax	Panax	Sybra alternans
	Reynoldsia sandwicensis	Ohe kukuluaeo	Coptops aedificator
Apocynaceae	Plumeria	Frangipani	Ceresium unicolor, Lagocheirus undatus, Sybra alternans

Table 4 continued

Family	Host name	Common name	Cerambycids definitely associated
Boraginaceae	<i>Cordia subcordata</i>	Kou	<i>Sybra alternans</i>
Verbenaceae	<i>Lantana camara</i>	Lantana	<i>Plagiohammus spinipennis</i>
Solanaceae	<i>Nicotiana tabacum</i>	Tobacco	<i>Curtomerus flavus</i>
	<i>Solandra guttata</i>	Cup of gold	<i>Pterolophia bigibbera</i>
Bignoniaceae	<i>Tabebuia pentaphylla</i>	Pink tecoma	<i>Pterolophia bigibbera</i>
Myoporaceae	<i>Myoporum sandwicense</i>	Naio	<i>Ceresium unicolor</i> , <i>Sybra alternans</i>
Goodeniaceae	<i>Scaevola</i>	Naupaka	<i>Sybra alternans</i>
	<i>Bidens</i>	Kokoolau	<i>Curtomerus flavus</i>
Compositae	<i>Xanthium</i>	Cocklebur	<i>Prosplus bankii</i>

Table 5. Introduced Cerambycidae, with host genera and Hawaii distribution.

<u>Cerambycinae</u>	<u>Host genera</u>	<u>Hawaii distribution</u>
Xystrocera globosa	Samanea	Kauai, Oahu, Hawaii
Phoracantha semipunctata	Eucalyptus	Kauai, Oahu
Curtomerus flavus	Acacia, Bidens, Eucalyptus, Psidium, Osteomeles, Nicotiana, Sapindus	Oahu, Lanai, Maui, Hawaii
Gelonaetha hirta	Hibiscus	Kauai, Oahu
Ceresium unicolor	Acacia, Metrosideros, Mezoneurum, Myoporum, Pipturus	Kauai, Oahu, Lanai, Maui, Hawaii, Midway, Niihau
Placosternus crnicornis ("Cyllene")	Acacia, Albizia, Haematoxylon, Leucaena, Poinciana, Prosopis, Sapindus	Kauai, Oahu, Molokai, Maui, Kahoolawe, Hawaii
Chlorophorus annularis	Bambusa	Oahu, Hawaii
<u>Lamiinae</u>		
Plagiohammus spinipennis	Lantana	Oahu, Hawaii
Coptops aedificator	Albizia, Canavalia, Erythrina, Reynoldsia, Samanea	Oahu, Maui
Lagocheirus undatus	Aleurites, Erythrina, Euphorbia, Hibiscus, Plumeria	Oahu, Molokai, Maui, Hawaii
Archlagocheirus funestus	Opuntia	Oahu, Hawaii
Prosoplus bankii	Acacia, Caesalpinia, Capparis, Citrus, Crotalaria, Erythrina, Euphorbia, Gossypium, Hibiscus, Prosopis, Ricinus, Saccharum, Sesbania, Xanthium	Kauai, Oahu, Molokai, Hawaii

Table 5. Continued.

Lamiinae	<u>Host genera</u>	<u>Hawaii distribution</u>
Pterolophia bigibbera	Artocarpus, Mangifera, Solandra, Tabebuia	Kauai, Oahu
Oopsis nutator	Artocarpus, Calophyllum, Hibiscus, Pipturus	Oahu
Mimectatina meridiana	Host unknown	Oahu
Sybra alternans	Acacia, Cajanus, Carica, Cattleya, Cordia, Crotalaria, Dendrobium, Erythrina, Gossypium, Hibiscus, Myoporum, Panax, Ricinus, Plumeria, Psidium, Scaevola, and many other genera	Kauai, Oahu, Lanai, Hawaii, Midway
Apomecyna saltator	Citrullus, Cucumis	Kauai, Oahu

Plagithmysine species -- host indices by islands*

NIHOA

nihoae Perk. Plag. Euphorbia

KAUAI

aequalis Sh. Plag. Acacia koa
 annectens (Sh.) ?Para. A. koa
 arachnipes Sh. Plag. A. koa
 concolor Sh. Plag. Syzygium
 diana Sh. Plag. Pelea
 forbesianus Gr. Plag. ?
 (forbesi Perk.)
 ignotus Perk. Plag. Elaeocarpus
 longipes (Sh.) Neo. Acac. koa,
 Alphitonia

metrosideri G. & D. Neo. Metrosideros
 munroi Sh. Plag. Metrosideros
 obscurus (Sh.) Neo. Acac. koa
 paludis Perk. Plag. ?
 permundus Sh. Plag. Bobea
 perrottetiae G. & D. Plag. Perrottetia
 polystictus Perk. Plag. Cryptocarya
 sharpianus Perk. Plag. Pipturus
 sugawai G. & D. Plag. Pittosporum

* Subspecies are here treated as species.

Abbreviations:

Aes. - Aeschrithmysus
 G. & D. - Gressitt & Davis
 Gr. - Gressitt
 Neo. - Neoclytarlus
 Nes. - Nesithmysus
 Para. - Paraclytarus
 Perk. - Perkins

Plag. - Plagithmysus
 Sh. - Sharp
 Swez. - Swezey
 W. - West Maui
 Zimm. - Zimmerman

OAHU

albertisi Sh.	Plag.	Sapindus	koebelei Perk.	Plag.	Pipturus
attenuatus (Boisd.) (cristatus)	Plag.	Acac. koa	kuhnsi Perk.	Plag.	Pipturus
bridwelli Perk.	Nes.	Pelea	microgaster (Sh.)	Plag.	Bobea
chenopodii (Perk.)	Neo.	Chenopodium	muii Perk.	Plag.	Pouteria
cristatus (see attenuatus)			pulverulentus (Mots.)	Plag.	Acac. koa
cuneatus Sh. (sapindi)	Plag.	Sapindus	sapindi (see cuneatus)		
euphorbiae (Bridw.)	Neo.	Euphorbia	solitarius Sh.	Plag.	Metrosideros, Elaeocarpus, Syzygium
fragilis (Sh.)	Neo.	Acac. koa	superstes Zimm.	Plag.	?
haasii Perk.	Nes.	Pelea	timberlakei Perk.	Para.	Metrosideros
hirtipes (Sh.)	Plag.	Perrottetia	ultimus (Sh.)	Neo.	Acac. koa
indecens (Perk.)	Neo.	Smilax	usingeri G. & D.	Plag.	?

MOLOKAI

aestivus Sh.	Plag.	Metrosideros	kainaluensis (Perk.)	Neo.	Smilax
bidensae Gr.	Neo.	Bidens	molokaiensis Perk.	Plag.	Pipturus
dodonaeavorus Gr.	Neo.	Dodonaea	peleae G. & D.	Nes.	Pelea
fractus Perk.	Plag.	?Acac. koa	peleanus G. & D.	Aes.	Pelea
ilicis Gr.	Plag.	Ilex			

LANAI

lanaiensis Sh.	Plag.	?Metrosideros	smilacivorus Gr.	Neo.	Smilax
pittospori Gr.	Plag.	Pittosporum			

MAUI

cheirodendri G. & D.	Plag.	?Cheirodendron	nicotiani G. & D.	Plag.	Nicotiana
collaris Sh.	Plag.	Pelea	pennatus (Sh.)	Neo.	Acac. koa
dubautianus (G. & D.)	Aes.	Dubautia	pipturicola (Perk.)	Para.	Pipturus
finschi (Harold)	Plag.	Acac. koa	pulvillatus Karsch	Plag.	Metrosideros
forbesi Perk.	Nes.	Pelea	railliardiae (Perk.)	Neo.	Dubautia
fugitivus (Perk.)	Neo.	?	rubi Perk.	Plag.	Rubus
funebri Sh.	Plag.	Sophora	simillimus Perk.	Plag.	Pipturus
geranii (Perk.)	Neo.	Geranium	smilacis Perk.	Neo.	Smilax
hardyi Gr.	Neo.	Smilax (W.)	speculifer Sh.	Plag.	? (W.)
koa G. & D.	Plag.	Acac. koa	swezeyanus G. & D.	Aes.	Dubautia
laticollis (Sh.)	Para.	Acac. koa	swezeyellus Gr.	Aes.	Pelea
longicollis Perk.	Plag.	?	terryi Perk.	Aes.	Argyroxiphium
mediocris (Sh.)	Neo.	Sophora	ukulele Gr.	Plag.	?Trematolobelia
modestus (Sh.)	Neo.	Acac. koa	wattleae G. & D.	Neo.	Acac. decurrens
newelli Sh.	Plag.	Nicotiana	yoshimotoi G. & D.	Aes.	?

HAWAII

abnormis (Sh.)	Neo.	Metrosideros	frater Perk. (= vicinus)	Plag.	?Pelea
acaciae G. & D.	Neo.	Acac. koaia			
arboreae G. & D.	Neo.	Dubautia	giffardi Perk.	Plag.	Smilax, ?Myrsine
atricolor (Perk.)	Plag.	Vaccinium	gracilis Sh.	Plag.	?Osmanthus
bilineatus Sh.	Plag.	Metrosideros	greenwelli G. & D.	Plag.	Santalum
bishopi Sh.	Plag.	Pelea, Fagara	immundus (Sh.)	Neo.	Charpentiera
blackburni (Sh.)	Plag.	Sophora	keanakolui G. & D.	Neo.	Chenopodium
claviger (Sh.)	Neo.	Acac. koa	koaiae G. & D.	Plag.	Acac. koaia
darwinianus Sh.	Plag.	Sophora, ?Sapindus	kohalae Perk.	Plag.	?
davisi Swez.	Plag.	Diospyros, Osteomeles	kraussi G. & D.	Plag.	?
debilis (Sh.)	Neo.	Acac. koa	lamarckianus Sh.	Plag.	Pipturus
decorus Perk.	Plag.	Charpentiera	longulus Perk.	Plag.	Bobea
decurrensae G. & D.	Neo.	Acac. decurrens	looki (Swez.)	Neo.	Chenopodium
dodonaee (Swez.)	Neo.	Dodonaea	mezoneuri (Swez.)	Neo.	Mezoneurum
dubautiae G. & D.	Neo.	Dubautia	montgomeryi G. & D.	Neo.	Euphorbia
elegans Sh.	Plag.	?	nodifer (Sh.)	Neo.	Acac. koa
filipes (Sh.)	Neo.	Diospyros	perkinsi Sh.	Plag.	Myoporum
			platydesmae Perk.	Plag.	Platydesma

HAWAII (cont'd)

podagricus (Perk.)	Para.	?	ukae G. & D.	Neo.	Chenopodium
rusticus G. & D.	Neo.	Dubautia	varians Sh.	Plag.	Acac. koa
simplicicollis Sh.	Plag.	?	vicinus Sh.	Plag.	Pelea
sophorae G. & D.	Neo.	Sophora	vitticollis Sh.	Plag.	Perrottetia, Rubus, Vaccinium
sulphurescens Sh.	Plag.	Urera			
swezeyi Perk.	Plag.	?			

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