Cis of Maui and Lanai (Coleoptera, Ciidae)

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There have been more than 30 species of *Cis* described from the Hawaiian Islands, but no keys to aid in their identification have been prepared. The principal reason for the writing of this paper is partially to alleviate this condition by presenting a synoptic table of the species found on the islands of Maui and Lanai. Unfortunately, it is impossible to formulate a key including all of the Hawaiian species at this time, because the types and a complete collection of the species are not available in Hawaii.

The following key includes 17 species. Ten of these species probably live on all of the other main islands, two have been found only on Maui and Hawaii, one is confined to Lanai and four to Maui. Therefore, the key may be of use in aiding to identify the commoner species of all the islands.

The following species are omitted from the key: *Cis nudipennis* Perkins, *Cis setarius* Sharp and *Cis mimus* Perkins. The reasons for their omissions are discussed under the species headings following the key.

KEY TO THE CIS OF MAUI AND LANAI

1. Elytra finely and distinctly strigose ..... **haleakalae**
   Elytra not strigose 2
2(1). Elytra maculate 3
   Elytra immaculate, concolorous or almost so 10
3(2). Elytral setae very dense and conspicuous, usually giving the dorsum a shaggy appearance; dorsum dull and coarsely sculptured 4
   Elytral setae sparse, often hardly discernible; dorsum most often rather shiny and not coarsely sculptured 5
4(3). Dark markings on the elytra not fused to form irregular transverse fasciae, the elytra pale with dark markings ..... **signatus**
   Elytra appearing dark with pale markings, the dark patches fused and forming irregular fasciae enclosing pale patches .... **roridus**
5(3). Elytra with very fine, scattered, long hair, at least along the lateral margin, some of the hairs almost or quite as long as the breadth of the eyes, long hairs scattered over the dorsum in unabraded specimens; an infuscated, indefinitely maculate, usually shiny, variable species ..... **tabidus**
   Elytral setae all short or very short 6
6(5). Pronotum yellowish ..... **nigrofasciatus**
   Pronotum entirely, or for the most part, black 7
7(6). Elytra densely and usually coarsely punctate throughout; pronotum with a slightly brassy sheen, usually almost straightly expanded on the sides from the base to beyond the middle 8
   Not so; elytra indistinctly, very shallowly and minutely punctate 9

8(7). Elytra very densely and rugosely punctate throughout ....**nesiotes**
Elytra not rugosely punctate, punctures fine and rather distinctly separated on the declivity .....**cognatissimus**
9(8). Pronotum with a broad transverse dark band, the base and apex pale; elytra with a short transverse dark fascia across the suture at about the middle, otherwise pale yellowish with the wings outlined beneath the translucent derm .....**bicolor**
Pronotum almost entirely black, with the apex at most slightly paler; elytra without a transverse fascia across the suture, but with a lateral fascia only; a large dark species .....**bimaculatus**
Pronotum almost entirely pale, with at most a dark spot but without a dark band; a pale yellowish species .....**simulator**
10(2). Elytra with very fine, long hair, at least along the lateral margin, some of the hairs almost or quite as long as the breadth of the eyes, long hairs scattered over the dorsum in unabraded specimens .....**tabidus**
Elytral setae all very short, most often inconspicuous 11
11(10). Derm pale yellowish brown or reddish brown, the elytra somewhat translucent and with the wing veins usually showing through them as distinct lines 12
Derm usually very dark brown or black in mature specimens ... 14
12(11). Lateral prothoracic carina visible and very conspicuous from base to apex and its actual apex and junction with the apical margin distinct when viewed from directly above; prothorax usually darker than the elytra in color .....**immaturus**
Lateral prothoracic carina not or hardly visible beyond the middle, its apical part always hidden by the sides of the pronotum when viewed from directly above 13
13(12). Dorsum coarsely punctate; setae conspicuous, those on the prothorax usually denser, coarser and prostrate, especially toward the sides and there usually tending to be somewhat swirled in arrangement; male with the front of the head produced on either side into a variable tooth .....**insularis**
Dorsum shiny and appearing smooth, but with minute, shallow, hardly discernible punctures; setae very inconspicuous, disk of prothorax appearing almost bare of setae .....**chloroticus**
14(11). Elytra with conspicuous, rather dense white setae that are easily seen under low magnification; prothorax rather dull and coarsely punctate .....**porcatus**
Elytral setae minute and inconspicuous, discernible only under high magnification; prothorax usually finely punctate 15
15(14). Pronotum reticulate but almost impunctate; male without prominent processes on the head; very small, slender species obtained by beating limbs 16
Pronotum distinctly but finely punctate throughout, male with two prominent cephalic teeth; a stout, rather short, medium sized species obtainable from shelf fungi .....**pacificus**
16(15) Lateral margin of the prothorax evenly and continuously rounded from base to apex, the baso-lateral angles conspicuously rounded off .....**evanescens**
Lateral margin of the prothorax not evenly rounded, but straightly expanded from the base to about the middle, thence more rapidly rounded to the apex, baso-lateral angles distinctly angulate (remove an elytron to see this best) .....**laeticulus**

1. **Cis haleakalae** Perkins. Fauna Haw. 2: 262, pl. x, fig. 17, 1900.

Maui and Hawaii.

I have not seen a specimen of this species. The type from Mt. Haleakala, Maui, and one specimen from Kilauea, Hawaii are evidently the only examples known. I have included it in the key on the supposition that Perkins' remark "The sculpture of the elytra is very remarkable, being of a finely strigose character" is unique among the species included here.

2. **Cis signatus** Sharp. Trans. Ent. Soc. Lond., p. 92, 1879.

Cis attenuatus Sharp, Trans. Dublin Soc., p. 165, 1885. Synonymy by Perkins, Fauna Haw. 2: 261, pl. x, figs. 20, 20a, 20b, 20c, 1900.

All islands.

This is a common, widespread and variable species. I have seen specimens from *Metrosideros, Pteralyxia* and other trees.

2a. **Cis mimus** Perkins. Fauna Haw. 2: 263, 1900.

Maui.

I have not included this species in the key because I am inclined to believe that it is a synonym of *Cis signatus.* The main reason why Perkins separated *mimus* from *signatus* was evidently because of the reduction of the size of the wings. I believe, however, that they may be subject to variation. I can find no reliable characters on the two specimens from the type series at Bishop Museum to separate the species from *signatus.* A large series of specimens must be dissected to see if the wings do vary in size among members of a colony, and the types should be examined before *mimus* is actually reduced to synonymy, however.

3. **Cis roridus** Sharp. Trans. Dublin Soc., p. 165, 1885. Perkins, Fauna Haw. 2: 261, 1900.

All the islands.

Like *Cis signatus,* this species is quite variable and widespread.

4. **Cis tabidus** Sharp. Trans. Ent. Soc. Lond., p. 93, 1879. Perkins, Fauna Haw. 2: 259, 1900.

All the islands.

This is a rather common, widespread, greatly variable species. It may be maculate or immaculate, pale or dark, and I have, therefore, included it in two sections of the key. The long hairs on the elytra are diagnostic. I have seen specimens from *Acacia koa* and *Hibiscadelphus.*

4a. **Cis setarius** Sharp. Trans. Dublin Soc., p. 162, 1885.

Cis apicalis Sharp, same reference.

Cis concolor Sharp, same reference, p. 163; both species synonymized by Perkins, Fauna Haw. 2: 260, 1900.

I have not included this species in the key because I believe that it is most probably a synonym of *Cis tabidus.* In the large series of

both of these species in the Fauna Hawaiiensis collection at Bishop Museum are specimens that might be placed under either name equally well. I can find no characters to separate them. Because I have not seen the type and because Perkins has more recently described new species related to these two "species," I do not now wish to assume the responsibility of reducing *setarius* to a synonym of *tabidus*. From the tone of Perkins' description in Fauna Hawaiiensis I believe that even he was not very sure that *setarius* was a good species.

5. **Cis nigrofasciatus** Blackburn. Trans. Dublin Soc., p. 162, 1885. Perkins, Fauna Haw. 2: 257, pl. x, fig. 18, 1900.

   Lanai.

6. **Cis nesiotes** Perkins. Fauna Haw. 2: 256, 1900.

   Maui.

7. **Cis cognatissimus** Perkins. Fauna Haw. 2: 256, 1900.

   All the islands.

   This is a common, widespread, variable species. It is extremely closely allied to *nesiotes,* and I am not sure that it is a distinct species. I am of the opinion that *nesiotes* is a local race or variation of *cognatissimus,* but because *nesiotes* was described before *cognatissimus,* we must, if any synonymy is to take place, maintain the name *nesiotes.* I believe that a large series of specimens might show an intergradation of the puncturation of the elytra, and that Perkins' use of this character to separate the species is untenable.

   Specimens have been seen from *Acacia koa, Pipturus* and under *Coprosma* bark.

8. **Cis bicolor** Sharp. Trans. Ent. Soc. Lond., p. 93, 1879. Blackburn, Trans. Dublin Soc., p. 163, pl. 4, fig. 22, 1885. Perkins, Fauna Haw. 2: 256, 1900.

   All the islands.

   A specimen from *Hibiscadelphus* has been seen.

9. **Cis bimaculatus** Sharp. Trans. Dublin Soc., p. 161, 1885. Perkins, Fauna Haw. 2: 257, 1900.

   Not uncommon on Maui and Hawaii. We may expect to find it on some of the other islands.

10. **Cis simulator** Perkins. Fauna Haw. 2: 259, 1900.

    Maui; evidently uncommon.

11. **Cis immaturus,** new species.

Derm reddish brown with the elytra stramineous and somewhat infuscated along the suture, on the declivity and along the lateral margins; pronotum reddish brown and contrasting with the paler elytra.

Head with the fore margin of the front expanded between the eye and clypeus into a convex flange in both sexes, not developed into a distinct tooth in the male; crown conspicuously, densely and rather coarsely punctate, the punctures not separated by interstices greater than their diameters and bearing minute setae; clypeus more finely punctured, the punctures bearing fine hair. *Antennae* with the first segment, excluding the segment-like basal stalk, one third longer than broad, one third longer and about one fourth broader than two, two slightly longer than broad, three and four filiform, three one third longer than two, almost as long as four to six inclusive, four not quite as long as five plus six, five to seven successively shorter and more transverse, five longer than broad, seven broader than long; club almost as long as the preceding six segments together, the first two segments subequal, about as long as broad, regular in outline, terminal segment not quite as long as the two preceding together. *Prothorax* transverse (1.8:1.4), base subtruncate, distinctly margined, lateral margin evenly arcuate from base to apical margin, lateral carinae visible throughout their lengths from directly above, apical margin strongly and evenly convex; junction of the lateral and basal carinae forming a distinct, obtuse angle, the junction between the lateral carinae and the apical margin forming a distinct angle of about 130° and not rounded off; puncturation even, very dense, comparatively coarse, the punctures individually distinct, their interstices smooth and shiny, not broader than their diameters, punctures bearing minute, hardly discernible setae. *Elytra* four sevenths as broad as long, two and one third times as long as the prothorax, parallel-sided in the basal two thirds, semi-translucent, the wing veins not often showing through the derm; dorsal sculpture consisting of dense, fine, shallow, rather poorly defined punctures that bear minute setae; the ventral sculpture occasionally showing through the derm as lineal series of dark spots representing the strial punctures. *Sternum* with the prosternum slightly longer before the fore coxae than a fore coxa, coarsely reticulate, minutely punctate, the intercoxal process almost as broad at its apex as the length of a coxa; metasternum coarsely reticulate, finely punctate and setose, as long between the mid and hind coxae as ventrites two plus three. *Venter* coarsely reticulate, finely punctate and setose; the first ventrite simple in the female but with a conspicuous, oval median setose area in the male. Length: 2.2–2.4 mm.; breadth: 0.9–1.0 mm.

Maui, Hawaiian Islands. Holotype male, allotype female (Bernice P. Bishop Museum type numbers 1151 and 1151a) and 11 paratypes collected by C. N. Forbes from dead "kukui" (*Aleurites moluccana*), at Olowalu, West Maui, May, 1920.[1]

This is one of the larger Hawaiian *Cis* and is quite a distinct species. It might be confused with *Cis insularis* Sharp, but the shape of the prothorax is quite different. On *Cis insularis* the prothorax is expanded distally and broadest beyond the middle and the lateral carinae are almost entirely concealed from above, whereas on this species the prothorax is broader, broadest behind the middle and the lateral carinae are plainly visible throughout their lengths when viewed from directly above.

12. **Cis insularis** Sharp. Trans. Dublin Soc., p. 164, 1885. Perkins, Fauna Haw. 2: 258, pl. x, fig. 19, 1900.

All the islands.

From *Metrosideros*.

[1] Since this paper was written the author has seen a typical specimen of this species taken at Punaluu, Oahu, May 1932.

13. **Cis chloroticus** Sharp. Trans. Dublin Soc., p. 164, 1885. Perkins, Fauna Haw. 2: 259, 1900.

Maui.

14. **Cis porcatus** Sharp. Trans. Ent. Soc. Lond., p. 92, 1879. Perkins, Fauna Haw. 2: 258, 1900.

All the islands.

A very common, widespread species. From *Sophora, Broussaisia, Myoporum, Acacia koa, Pipturus, Coprosma* and *Metrosideros.*

15. **Cis pacificus** Sharp. Trans. Ent. Soc. Lond., p. 91, 1879. Perkins, Fauna Haw. 2: 255, 1900.

All the islands.

A common species found in shelf fungi.

16. **Cis evanescens** Sharp. Trans. Ent. Soc. Lond., p. 95, 1879. Perkins, Fauna Haw. 2: 264, 1900.

All the islands.

From *Pipturus* and *Coprosma.* Perkins said that "the entire insect is without clothing," but short setae are discernible under magnification.

17. **Cis laeticulus** Sharp. Trans. Ent. Soc. Lond., p. 94, 1879. Perkins, Fauna Haw. 2: 264, 1900.

Probably on all the islands.

A locally common species, but not often collected. From *Freycinetia.*

18. **Cis nudipennis** Perkins. Proc. Haw. Ent. Soc. 7: 513, 1931.

Hawaii, Maui, Lanai and probably other islands.

I have not included this species in the key because I have seen no specimens. Perkins says that it is allied to *Cis tabidus* and was "probably mixed with *setarius* and *tabidus*" in his original Fauna Hawaiiensis collection.