

CIIDAE OF GUAM

By ELWOOD C. ZIMMERMAN

ENTOMOLOGIST, BERNICE P. BISHOP MUSEUM

This report, based upon the collections made in Guam by O. H. Swezey and R. G. Oakley, includes the descriptions of three species of *Cis* and one of *Ceracis*.

It is not surprising that all the species are new, for no Ciidae have been recorded heretofore from Micronesia. Although the islands of the Pacific are rich in species of Ciidae, few have as yet been described. Blackburn recorded eight species of Ciidae from Australia (five described in 1888, two in 1891, and one in 1907), but none have been described from that region since. None have been described from the great areas of New Guinea or the Philippines. In fact, only two species have been described from the Indo-Malayan subregion, and none from the Austro-Malayan subregion. Twenty species are recorded from New Zealand and nine from the Loyalty Islands, including seven from New Caledonia. One species has been described from Fiji; Blair has described three from Samoa; Blair and I have described 13 from South-eastern Polynesia; 49 are recorded from Hawaii. No other Ciidae have been described from the Pacific.

LIST OF SPECIES

1. *Cis quadridentatus*, new species.
2. *Cis guamae*, new species.
3. *Cis agariconae*, new species.
4. *Ceracis palaceps*, new species.

KEY TO GENERA

- Antennae 10-segmented; anterior tibiae simple on the outer edge.....*Cis*.
 Antennae 8-segmented; anterior tibiae serrate or spinose on the outer edge.....*Ceracis*.

KEY TO SPECIES OF *Cis*

1. Dorsum very densely and conspicuously hirsute; elytra pale yellow with well-defined dark maculae.....1. *Cis quadridentatus* Zimmerman.
 Dorsum not at all hirsute, the setae minute and inconspicuous.....2
2. Hind angles of the lateral carina of the prothorax obviously obtusely angulate, not rounded off; fore edge of head not distinctly upturned nor toothed; mostly black but with some yellowish clouds on the elytra; 1.75-2.25 mm. long.....2. *Cis guamae* Zimmerman.
 Hind angles of the lateral prothoracic carina obviously broadly rounded and not all angulate; front edge of head upturned and toothed on each side of the clypeus; concolorous, yellowish brown to chestnut brown; 1.25-1.3 mm. long.....3. *Cis agariconae* Zimmerman.

1. *Cis quadridentatus*, new species (figs. 1, c, e, i; pl. 1, A).

Dermal coloration as follows: elytra basically pale yellow with a large black humeral spot, a prominent black spot at base between scutellum and humeral spot, and with a broad, conspicuous, black, zigzag fascia extending from middle at suture to side and there greatly expanded into a low, broad triangle that extends forward to base and posteriorly almost to apex, these black markings conspicuous; prothorax either almost or entirely dark or with a variable amount of yellow, sometimes entirely black, occasionally yellow with a broad, irregular dark vitta on either side; head usually dark, but occasionally with anterior parts yellowish; appendages usually brownish yellow; under surface brownish yellow and infuscated or fuscous; dorsal setae very dense, golden yellow or black, erect, stiff, coarse, spikelike on elytra, swirled on pronotum.

Head not concealed from above by pronotum, crown almost straight in longitudinal contour in both sexes, but very slightly convex in female and slightly concave in male, densely setose, setae somewhat smaller than, but similar to, those on pronotum, and arising from small, closely placed punctures, surface appearing asperate; anterior margin slightly sinuous in the female but with four well-developed teeth in the male, the emarginations between teeth subequal. *Antenna* with the body of the first segment obliquely truncate at the apex, one fourth longer than broad, twice as long and twice as high as 2, 2 submoniliform, two thirds as long as 3, 3 slender, about three times as long as broad, as long as 4 plus 5, 4 longer than broad, as long as 5 plus half of 6, 5 to 7 successively slightly more transverse; club dark, as long as six preceding segments which are yellow, segments subequal in size and shape but 10 slightly longer and more pointed at apex, 8 and 9 about as broad as long. *Prothorax* slightly broader than long (1.9:1.7), base slightly but distinctly sinuous, sides broadly arcuate, apex broadly rounded and but slightly emarginate at middle in female, but usually upturned and with a moderate or well-developed tooth on either side of middle in male; the lateral carina very narrowly visible from above, its basal angle rounded, thence slightly arcuate to apex and there extending beyond anterior margin, thus making anterior angle roundly acute rather than obtuse and making an emargination between lateral carina and apical margin when viewed from side; densely punctate, punctures small but coarse, distinct, narrowly separated. *Elytra* about five sevenths as broad as long, about twice or somewhat less than twice as long as prothorax, bullet-shaped, subparallel on sides in basal half, thence roundly narrowing to apex; densely and conspicuously punctate as pronotum; lateral carina broadly rounded into basal carina. *Wings* fully developed. *Legs* finely and sparsely setose, femora and tibiae finely alutaceous. *Sternum* finely setose, sculpture similar to but shallower and less distinct than that of dorsum; intercoxal process of the prosternum more than half as long as transverse diameter of a coxa (4:7), mesocoxae hardly half so widely separated as fore coxae, metacoxae separated about as far as mesocoxae. *Venter* finely punctate, the setae conspicuous, moderately long, fine, hairlike; first ventrite simple in female, but with a small, median, setose, crater-like tubercle in male; intercoxal process narrowly triangular. Length, 2.5-2.75 mm.; breadth, 1.0-1.25 mm.

Holotype male, in the U. S. National Museum, allotype female in Bishop Museum, and 20 paratypes taken from fungus at Mata, Aug. 24, 1938, R. G. Oakley.

This species resembles *Cis bisetosus* Blair from the Marquesas, and *Cis rapaae* Zimmerman from Rapa in size and shape, but the color pattern and setae are very different on this species. *Cis quadridentatus* closely resembles *Cis insignis* Scott (1926) from the Seychelles, but it differs in color pattern as well as structure. The conspicuous bicolored dorsum with its distinct design will readily separate this pretty species from the two other Guam *Cis*.

2. *Cis guamae*, new species (fig. 1 d; pl. 1, B).

Dermal coloration in mature specimens as follows: dorsum quite shiny; elytra black, with a variable, oblique yellowish cloud at basal third which is sometimes small and isolated from suture, or large and reaching from suture to side, with a larger, similarly colored macula usually occupying most of caudal third; pronotum black with apex yellowish; head black; antennae yellow, clubs infuscate; legs yellow or brownish yellow; lower surface fuscous to black; dorsal setae pale.

Head not concealed from above by pronotum; distinctly convex dorsally and laterally in both sexes, finely alutaceous, shiny, finely and densely punctate, punctures separated by about breadth of their diameters, each puncture bearing a minute seta that projects but slightly from puncture; fore legs with only slightly developed flanges on either side in both sexes, not at all distinctly toothed. *Antennae* with body of first segment about twice as long as broad, about twice as long as 2, 2 about one fourth longer than broad or as broad as long, two thirds as long as 3, 3 almost three times as long as broad, as long as 4 plus 5, 4 almost as long as 5 plus 6, 5 to 7 successively shorter and more transverse; club with segment 11 about three fourths to fully as long as 9 plus 10, 9 and 10 each broader than long. *Prothorax* distinctly broader than long (3.7:3), base slightly sinuous, appearing distinctly angulate at hind corners above, but slightly arcuate on sides from base to apex, lateral carinae broadly exposed throughout their lengths from above, apex broadly rounded, not upturned, nor toothed, nor otherwise modified in either sex; lateral carina slightly arcuate, hind angles obviously angulate, obtuse, but forming only slightly more than right angles, fore corners visible from above, distinctly angulate, rather similar to hind angles; dorsum shiny, densely, finely, distinctly punctate, punctures separated by interstices equal to or narrower than their diameters and bearing flecklike setae that project but slightly beyond sides of punctures. *Elytra* two thirds as broad as long, twice as long as prothorax, very slightly arcuate on sides, almost parallel in basal two thirds, thence broadly rounded to apex; lateral margin visible throughout its length from above, angulately rounded at base; dorsum shiny, puncturation dense throughout and similar to that of pronotum; setae speck-like, hardly protruding from punctures. *Wings* fully developed. *Legs* with femora and tibiae finely reticulate, finely and sparsely setose. *Sternum* coarsely reticulate, evidently at most obscurely punctate; intercoxal process of prosternum slightly more than one half as broad as transverse chord of a coxa (4:7), broadly convex transversely, not carinate and slightly but conspicuously protruding forward beyond apex of prosternum, thus making anterior margin of prosternum concave on either side of middle; mesocoxae separated by only about half as far as fore coxae; metacoxae somewhat more widely separated than mesocoxae; metasternum as long along median line as ventrite 1 plus half of 2. *Venter* obscurely punctate, reticulate, finely setose; ventrite 1 evidently not modified in male. Length, 1.75-2.3 mm.; breadth, 0.75-0.1 mm.

Holotype female, in Bishop Museum, and six paratypes taken from a dead branch of breadfruit at Piti, Oct. 5, 1936, and two paratypes "ex dead small leaf ficus" at Yigo, Oct. 18, 1936. All the specimens were collected by Mr. Swezey.

I could find no external differences on a specimen I assume to be a male to separate it from the females other than the fact that the first ventrite seemed to have some longer setae toward the middle. None of the specimens have a trace of a median tubercle on the first ventrite.

To the unaided eyes, most of the specimens appear quite black, but some of them are obscurely or distinctly bicolored.

This species somewhat resembles *Cis collenettei* Blair from southeastern Polynesia. It differs from that species in that it is smaller, narrower, more

parallel-sided, has the sides of the prothorax straighter and the side margins more strongly developed, has more definite puncturation, and has the elytra clouded with yellow instead of being concolorous.

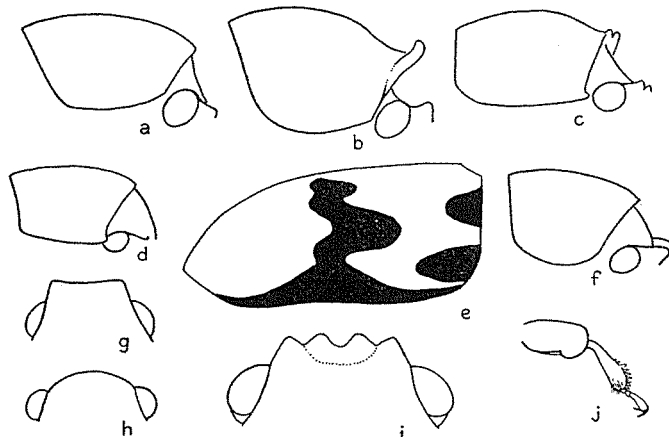


FIGURE 1.—Details of Ciidae. a, outline of head and pronotum of *Ceracis palaceps*, female; b, the same of the male; c, the same of *Cis quadridentatus*; d, the same of *Cis guamae*; e, diagram of elytral markings of *Cis quadridentatus*; f, outline of head and pronotum of *Cis agariconae*; g and h, dorsal outlines of the front margins of the heads of the male and female of *Ceracis palaceps*; i, the same of *Cis quadridentatus*; j, fore leg of male of *Ceracis palaceps*.

3. *Cis agariconae*, new species (fig. 1, f; pl. 1, C).

Derm shiny, rather pale to dark chestnut brown in mature specimens, concolorous above and below, appendages yellowish brown; dorsal setae minute, pale.

Head exposed from above, crown convex, somewhat less convex on male than on female, shiny, finely alutaceous, microscopically punctate, setae minute, hardly discernible; anterior margin developed into a rounded, slightly upturned tooth on either side of clypeus in female and into a very prominent, upturned triangular tooth in male. *Antennae* with body of first segment ovate, about two thirds as broad as long, almost as long as 2 plus 3, 2 slightly longer than 3, submoniliform, broader at base, 3 and 4 elongate, subequal, together as long as 5 to 7 which are very small and successively more transverse; club slightly longer than five preceding segments, 9 and 10 subequal in size and shape. *Prothorax* broader than long (2.2:1.7), base subtruncate, broadly arcuate on sides, broadly convex apically, fore margin simple and unmodified in either sex; lateral carina and its fore and hind angles visible throughout its length from above, hind corners strongly and conspicuously rounded, not at all angulate, thence continued in a broad curve and rounded into apical margin; dorsum shiny, densely, microscopically, evenly punctate throughout, punctures separated by interstices equal to or somewhat broader than their diameters; the setae not or hardly discernible even under high magnification. *Elytra* shiny, two thirds as broad as long, about two and one third times as long as prothorax, slightly arcuate in basal two thirds, thence convexly narrowed to the apex; the lateral carina broadly rounded into basal carina; sculpture consisting of dense, irregular, shallow, variable punctures distinctly larger than those on pronotum, evidently appearing to be somewhat confluent in some places, interspersed with minute punctures similar to those on pronotum; setae microscopic. *Wings* fully developed. *Legs* with femora and tibiae finely and sparsely setose. *Sternum* rather coarsely reticulate, at most shallowly and indistinctly

punctate; intercoxal process of prosternum about half as broad as transverse chord of a coxa, V-shaped in cross section in front of coxae and only slightly interrupting apical margin of prosternum; mesocoxae about half as widely separated as fore coxae; metacoxae about as broadly separated as mesocoxae; metasternum as long along median line as ventrite 1 plus half of 2. *Venter* reticulate, apparently impunctate, sparsely setose; ventrite 1 simple in female, with a small pit behind the middle in the male. Length 1.25-1.3 mm.; breadth 0.5-0.6 mm.

Holotype male, in the U. S. National Museum, allotype female in Bishop Museum, one male and two female paratypes taken from tree fungus July 25, 1937, Oakley, no. 90.

This species resembles *Cis cheesmanae* Blair from the Marquesas, but it is smaller, less robust, and distinctly less coarsely and conspicuously punctured.

In Scott's key (1926) to the *Cis* of the Seychelles, this species runs to his *Cis cacuminum*, and it is evidently closely allied to that species. However, *C. cacuminum* is shiny black, it evidently lacks the median pit on the first ventrite of the male, the metasternum and venter are evidently definitely punctate, and from the nature of its habitat there are good reasons for believing that it is an endemic product of the highlands of the Seychelles.

Genus **CERACIS** Mellié, 1848

4. *Ceracis palaceps*, new species (fig. 1, *a, b, g, h, j*; pl. 1, *D*).

Derm moderately shiny, rather uniform chestnut brown above and below, concolorous, appendages yellowish brown; dorsal setae microscopic.

Head almost or entirely concealed from above by prothorax, crown and front but very shallowly concave in female, almost flat, very deeply and conspicuously excavated in male from side to side and top to clypeus, with a very slightly elevated median area between eyes, closely, microscopically punctate, setae microscopic; female with fore margin evenly convex in outline and not or but inconspicuously elevated; male with fore margin produced into a conspicuous, slightly upturned, transversely concave, apically truncate flange that projects almost as far beyond fronts of eyes as length of an eye, side margins slanting obliquely backward in a continuous line with inner margins of eyes. *Antennae* yellow with club fuscous, body of segment 1 slightly longer than broad, subovate, longer on outer side, not quite as long as 2 plus 3, 3 as long as 4 plus 5, twice as long as broad, 4 slightly longer than 5, 4 and 5 transverse; club longer than four preceding segments, segments 6 and 7 subcircular in outline and subequal in size and shape, 8 slightly longer than 7. *Prothorax* as broad as long in female, slightly longer, including apical projection, than broad in male; base slightly convex, slightly arcuately narrowing from base to fore margin on sides, fore margin produced over head, simply rounded in female, but with a broad, conspicuous strongly developed, dorsally emarginate, upturned process in male; longitudinal dorsal contour evenly convex from base to apex in female, evenly convex from base to about apical fourth in male, outline thence more steeply declivitous and interrupted by a slight depression before apical process and slightly more impressed on either side than at middle; lateral carina and fore and hind corners entirely concealed from above, the carina fine, similar to basal carina, hind corner broadly rounded off, thence continued in a curve, which is more convex basally than distally, to fore margin, and forming an obtuse angle of about 135 degrees with fore margin; reticulate, microscopically punctate, punctures separated by interstices as broad or broader than their diameters; setae microscopic, hardly discernible even under high magnification. *Elytra* almost two thirds as broad as long and

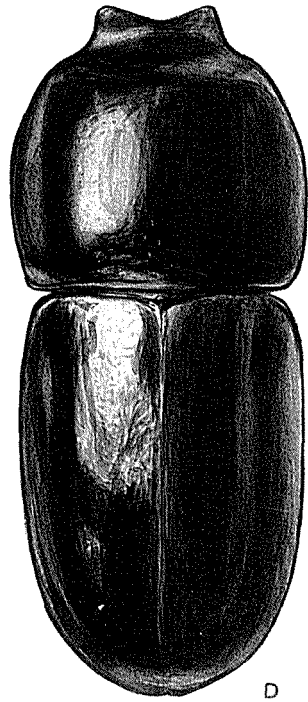
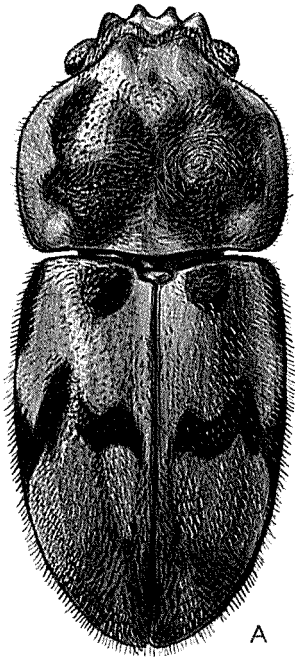
about one third longer than prothorax, bluntly bullet-shaped, subparallel-sided in basal two thirds, thence rounded to apex, base subtruncate; reticulate, punctures microscopic, dense, evidently rather shallow and not very distinct individually, appearing about as large as those on pronotum, but denser and evidently obscured by reticulations; setae microscopic, hardly discernible even under high magnification. *Wings* fully developed. *Legs* with femora stout, grooved for reception of tibiae, fore pair with a well-developed flange on the lower anterior edge in apical fourth; fore tibia compressed, expanded apically, armed with a few slender teeth on outer edge of about distal fourth in female, armed half way up side on male, mid tibiae armed with slender spine-like teeth in apical fourth in both sexes, hind tibiae with a row of slender spines or stiff setae in apical fourth in both sexes, mid and hind tibiae not so greatly expanded distally as fore tibiae, which, in males, may be only slightly less than half as broad as long. *Sternum* reticulate, with at most only microscopic, inconspicuous puncturation, setae hardly discernible; intercoxal process of prosternum reduced to an almost paper-thin lamella, not elevated and not continued forward to the evenly and continuously concave anterior margin, fore margin of a coxa only half as far from anterior margin as transverse chord of a coxa; mesocoxae almost contiguous, only very slightly separated; metacoxae very slightly separated, metasternum about as long along median line as first two ventrites plus half of third. *Venter* coarsely reticulate, not obviously punctate, setae minute; first ventrite about as long behind a coxa as 2 plus 3, simple in female, with a round, margined, setiferous, crater-like pit in male. Length, 1.25-1.5 mm.; breadth, 0.5-0.6 mm.

Holotype male, in the U. S. National Museum, allotype female in Bishop Museum, and 44 paratypes collected from a tree fungus, Aug. 25, 1937, Oakley (no. 90).

The eight segmented antennae together with the serrate tibiae and the very narrowly separated fore coxae will readily separate this species from the other Guam Ciidae.

With the exception of one species described by Pic from Sumatra, there are no other *Ceracis* recorded from the Pacific. Most of the species are American. Champion has described one species from India (*Ceracis fasciculosus*, 1922). The Fijian *Cis compressicornis* (Fairmaire) Lesne was described as a *Ceracis*, but Lesne (1917) has shown that it belongs to *Cis*.

The first and second tarsal segments are fused in this species; there is only a slight constriction and no distinct suture between the segments.



A. *CIS QUADRIDENTATUS*, MALE; B. *C. GUAMAE*, FEMALE; C. *C. AGARICONAE*, MALE; D. *CERACIS PALACEPS*, MALE. (WASH DRAWINGS BY M. E. POOR.)