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Apioninae and Brachyderinae of Fiji
(Coleoptera, Curculionidae)

By ELWOOD C. ZIMMERMAN
ENTOMOLOGIST, BERNICE P. BISHOP MUSEUM

INTRODUCTION

In 1938 the Henry G. Lapham Expedition to Fiji was sent out by Bishop Museum to collect in several islands in the Fijian archipelago. This paper is based upon the collections made during the Lapham expedition and upon other collections of Fijian Curculionidae in Bishop Museum. Only two small groups of Fijian weevils are included in this report, but it is planned that other papers will follow as time and opportunity permit until all of the assembled Fijian material is described and recorded. It will, however, be a long time before the task is completed, because the collections already made by Bishop Museum and other institutions contain many thousands of specimens. The Bishop Museum collection alone contains about 50,000 undetermined Fijian insects.

I must express my appreciation to the Hawaiian Sugar Planters' Association Experiment Station for their cooperation in allowing Mr. W. Twigg-Smith to prepare the photographs for this report.

SUBFAMILY APIONINAE

I have seen only three species belonging to this subfamily from Fiji. It is manifest that the group is weakly developed in those islands. Fiji probably marks the easternmost limit to which the subfamily has naturally extended into Polynesia. Careful collecting has not revealed endemic species from any island east of Fiji.

The three species of Apioninae recorded from Fiji are *Cylas formicarius elegantulus* (Summers) (immigrant), *Cybebus gibbipennis*

Fairmaire (endemic) and *Apion vitiensis* Zimmerman (endemic). Fairmaire's species *gibbipennis* has been incorrectly assigned to the Madagascar genus *Cybebus*, and I have found it necessary to erect a new genus for it.

Key to the Genera of Apioninae found in Fiji

1. Trochanters all so short that bases of femora are within circumference of coxae, the dorsal edges of their bases touching, or almost touching coxae and not held at a distance from coxae by elongated trochanters (tribe Eurhynchini).....2
- Trochanters of at least fore and middle pairs of legs elongated, so that femora are held at a distance from coxae with their bases outside of the circumference of coxae, or at least always well separated from coxae at all points (tribe Apionini).....3
- 2(1). Club of antenna of male greatly elongate, longer than funicle and scape together; funicle eight-segmented; prothorax strongly and conspicuously constricted dorsally and laterally behind middle; scutellum not visible; mesocoxae narrowly separated by a distinct sclerite; tarsal claws not toothed.....**Cylas** Latreille.
- 3(1). Tarsal claws simple; mesocoxal cavities confluent; elytra extraordinarily strongly gibbose, striate only near side margins; scutellum not visible; body glabrous.....**Apotapion** Zimmerman.
- Tarsal claws toothed; mesocoxal cavities separated by a distinct sclerite; elytra not unusually gibbose, completely striate; scutellum visible, conspicuous; body squamose in the Fijian species.....**Apion** Herbst.

Genus **CYLAS** Latreille, 1802

The species of this genus are endemic to the Ethiopian and Indo-Pacific regions.

Cylas formicarius elegantulus (Summers).

Otidoccephalus elegantulus Summers, New Orleans Home Journal and Rural Southland 10(3) : 68, 1875.

This color form with the almost black, steel blue elytra, black head, rostrum, metasternum and abdomen, reddish mesothorax, prothorax and appendages is represented in the Fijian material before me by seven male examples collected by J. M. Valentine at light at Korovou, Tailevū, Viti Levu in August, September, and November 1937. This is the well known, tropicopolitan pest of sweet potatoes, and it also breeds in other morning-glories. In Samoa, I have taken it from the common beach morning-glory (*Ipomoea pes-caprae*),

which is common in Fiji, and the weevil will probably be found on it there.

For further details and illustrations of young and adults, reference may be made to two papers by W. D. Pierce: "Weevils which affect Irish potato, sweet potato and yam" [Jour. Agricultural Research 12(9): 601-612, pls. 28-34, 1918] and "Studies of the sweet potato weevils of the subfamily Cyladinae" [Bull. Southern California Acad. Sci. 39(3): 205-228, pls. 36-38, 1941].

Genus **APOTAPION**, new genus

Body glabrous above, not squamose, sparsely setose beneath. *Head* subconical, produced behind eyes, distance between hind margins of eyes and prothorax greater than length of an eye; eyes lateral, extending from dorsal to ventral cephalic margins, well separated above and below, protruding distinctly beyond longitudinal lateral cephalic outlines, facets individually gently convex and not individually protuberant, dorsal interocular area narrower than breadth of base of rostrum. *Rostrum* slightly longer than head from fore margin of eyes to prothorax, longitudinal dorsal contour gently arcuate, lateral outlines slightly, gradually, almost evenly expanded from base to apex; antennae inserted laterally at slightly behind middle; scrobes slanting down beneath eyes, not contiguous to eyes, confluent below; left mandible bidentate, right mandible unidentate in genotype. *Antennae* with scape somewhat longer than first three funicular segments in genotype, not capable of extending back as far as eyes; first and second funicular segments each nearly twice as long as any one of the others, first stoutest, segments 3-7 moniliform; club ovoid, shorter than funiculus. *Prothorax* subcylindrical, without a post-median, neck-like constriction. *Scutellum* not visible. *Elytra* strikingly gibbose, rising high above pronotum, incompletely striate. *Hind wings* reduced to narrow straplike appendages useless for flight. *Legs* with fore coxae contiguous, bluntly subconical, long, longer than head behind eyes; mesocoxae contiguous, strongly protuberant; metacoxae protuberant only at insertion of trochanters; all trochanters elongate, each longer than breadth of base of its femur, separated from femora by deep, conspicuous constrictions; femora moderately clavate, unarmed, hind pair extending slightly beyond apex of elytra; tibiae straight beyond basal arch, gradually, slightly expanded toward apex, all unarmed at apex, corbels oblique, open; tarsi with first segment longer than broad, second strongly transverse, third deeply bilobed, fourth extending far beyond apex of 3, claws divaricate, unarmed. *Sternum* with prosternum narrow in front of and behind the confluent coxal cavities; mesosternum short, nearly vertical in front, coxal cavities confluent, pleural sclerites obscure, episternum narrow, horizontal; metasternum pointed in front, much shorter between mid and hind coxae than cephalad-caudad chord of a hind coxa, episternum narrow. *Abdomen* with first ventrite about as long as three following ventrites together, intercoxal process broad, subtruncate in front, longer than postcoxal area, coxal cavities extending nearly to elytra; ventrite 2 longer than ventrite 3 plus 4; ventrite 5 normal, about as long as 2.

Genotype: *Cybebus gibbipennis* Fairmaire, 1881.

This genus is founded upon a peculiar, smooth, shiny, black, gibbose insect erroneously placed in the Madagascar genus *Cybebus* Schoenherr, 1839, by Fairmaire. This species has no close affinity with *Cybebus*. *Cybebus* has toothed tarsal claws, separated mesocoxae, completely 10-striated elytra, a visible scutellum, completely developed wings, as well as other fundamental characters which are different from those of *Apotapion*. At first sight, *Apotapion gibbipennis* appears to belong to the Australian genus *Myrmacicelus* Chevrolat, 1833, because it closely resembles the genotype of that genus, *M. formicarius* Chevrolat. However, *A. gibbipennis* cannot be placed in *Myrmacicelus* because in that genus the prothorax is strongly constricted behind (but not to such an extreme degree as in *Cylas*), the wings are fully developed for flight (at least they are in specimens of *M. formicarius* which I have examined), the mesocoxae are separated by a distinct intercoxal sclerite, the metasternum is much longer between the mid and hind coxae than the longitudinal chord of a hind coxa, the intercoxal process of the first ventrite is much shorter, the trochanters are greatly elongated (more than one half as long as the femora on *M. formicarius*), and the fourth tarsal segment hardly reaches beyond the apex of the third. Among the characters shared by the genotypes of *Myrmacicelus* and *Apotapion*, the following are of such nature as to lead one to associate the genera before a more careful examination is made: the general body form, shiny, black, bare derm, the invisible scutellum, and the strongly gibbose elytra which have only two incomplete striae near the side margins.

The removal of *gibbipennis* from the list of *Cybebus* eliminates an erroneous example of extreme discontinuity in geographical distribution. The genus *Cybebus* is confined to Madagascar.

Apotapion gibbipennis (Fairmaire), new combination (fig. 1, *h*; fig. 2, *a, b*).

Cybebus gibbipennis Fairmaire, Soc. Ent. France, Ann., p. 289, 1881.

Derm shiny black excepting tarsi and antennae which are diluted with red.

Head conspicuously transversely concave dorsally behind eyes, straightly narrowing on sides from base to eyes; distance across eyes almost or quite as great as basal breadth of head; interocular area shallowly, longitudinally impressed; minutely reticulate, microscopically transversely strigate caudad. *Rostrum* varying to give indexes of 1.2-1.4 when length of head from fore margin of an eye to nearest point on prothorax is divided into length of rostrum; lateral outlines only slightly interrupted at insertion of antennae; longitudinal dorsal contour usually appearing slightly and inconspicuously undulant; min-

utely reticulate, minutely punctate, punctures bearing microscopical setae excepting a few longer ones at apex. *Antennae* with scape as long as first three funicular segments plus one half of 4, as broad at apex as funicular segment 1; funiculus with segment 1 as long as 2 but stouter, about five sixths as broad as long, 2 as long as 3 plus one half of 4, two thirds as broad as long; club nearly twice as long as broad, as long as five preceding segments together. *Prothorax* bare, slightly longer than broad, arcuate on sides, broadest at about middle, base and apex subtruncate, dorsal contour arcuate, highest anterior to middle, with two shallow, vertical impressions on sides behind coxae which slightly interrupt lateral outlines near base when viewed from directly above; impunctate. *Elytra* bare, extraordinarily gibbose, rising abruptly to far above level of pronotum, ovoid in shape when viewed from directly above, breadth divided into length equals about 1.4, height approximately as great as breadth, two and one third or more times as long as prothorax; with two incomplete punctate striae above each lateral margin beginning above mesocoxae, outer one extending to above fifth ventrite or near apex, inner one shorter and not extending beyond third ventrite, usually not extending that far caudad, some impressions dorsad of inner stria on some specimens, elytra otherwise impunctate. *Wings* on specimen dissected, 1.25 mm. long, 0.15 mm. broad, sickle-shaped. *Legs* sparsely setose except

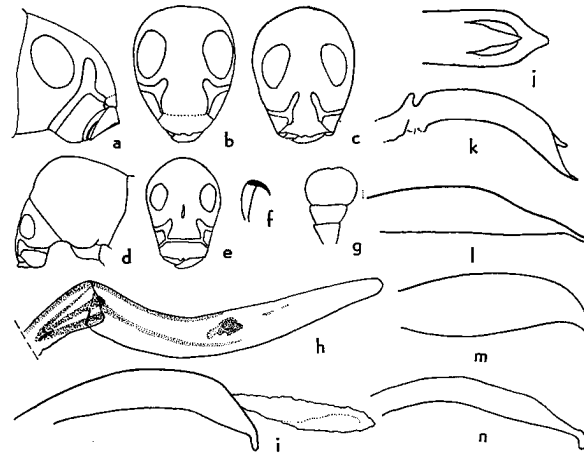


FIGURE 1.—Diagrams of structural details of Fijian Apioninae and Otistitirini: a, side view and b, front view of head and rostrum of *Ottinychus gemmatus gemmatus* Zimmerman; c, front view of head and rostrum of *O. comptus* Zimmerman; d, side view of prothorax, head and rostrum of *Nesogenocis cucullus* Lea; e, front view of head and rostrum and f, fourth tarsal segment bearing the single claw of *Leacis vitiensis* (Lea) Zimmerman; g, tarsus of *Viticis bidentatus* Lea; h, left wing of *Apotapion gibbipennis* (Fairmaire) Zimmerman, folded near base; i, side view of aedeagus of *Nesogenocis maculosus* Zimmerman, protruding from body and with internal sac everted; j, dorsal view of apex and k, side view of aedeagus of *Viticis bidentatus* Lea, from a dissection; l, side view of end of weakly sclerotized aedeagus of *Ottinychus gemmatus gemmatus* Zimmerman, from a dissection; m, side view of end of aedeagus of *Leacis vitiensis* (Lea) Zimmerman, from a dissection; n, side view of aedeagus of *Nesogenocis cucullus* Lea, protruding from body.

on distal part of tibiae; derm duller than on dorsum. *Sternum* coarsely reticulate; intercoxal process of metasternum triangular, acutely pointed, metasternum less than one half as long between mid and hind coxae as cephalad-caudad chord of a metacoxa. *Abdomen* dull, obscurely and indefinitely punctured, sparsely setose; intercoxal process as broad as length of first ventrite behind a coxa, anterior margin arcuate, conspicuously longitudinally concave, the concavity extending laterally around basal margin of first ventrite, entire length of ventrite 1 slightly greater than following three ventrites combined; ventrite 2 longer than 3 plus 4, sloping dorso-caudad, its hind margin nearly vertical; ventrites 3 and 4 convex, sutures between them broad and deep; ventrite 5 as long or somewhat longer than 2, convex, more so in male than female. Length, 1.75-2.6 mm. (excluding head and rostrum); length of head and rostrum, 0.8-1.25 mm.; breadth of body, 0.75-1.4 mm.

The following 41 specimens are from Viti Levu: one example taken by J. M. Valentine at Navai Mill south of Nandarivatu, October 13, 1937; two examples beaten by me from shrubbery at the same locality, one taken September 7, 1938, at 2,700 feet, the other on September 15 at 2,500 feet; 18 specimens beaten by me from shrubbery at Nandarivatu, one of these at 3,000 feet and two at 3,700 feet on September 3, six at 3,600 feet, September 5, four at 3,600 feet, September 6, and six at 3,700 feet, September 10; three specimens beaten by me from shrubs on the ridge west of Vatuthere, near Nandarivatu, on September 8 between 2,600 and 3,000 feet; three specimens beaten by me from shrubbery on the ridge west of Nandarivatu, two on September 9 between 2,600 and 3,000 feet, and one September 11 at 2,800 feet; nine specimens collected on Mt. Victoria, Tholo North, September 10, between 3,000 and 4,000 feet by Y. Kondo, and four specimens beaten by me from shrubs on the west slope of the same mountain, three of these on September 13 between 3,000 and 4,000 feet, the other on September 16 at 3,000 feet.

I have not seen any record of the capture of this species since it was originally described in 1881. The species is easily recognized because of its smooth, shiny, black derm and unusually conspicuous gibbose elytra. It may be found on leaves walking about in association with various species of *Trigonopterus*. I recall taking specimens on the lower surfaces of leaves of *Piper* and *Pandanus* as well as other kinds of shrubs and trees.

Genus **APION** Herbst, 1797

Apion vitiensis Zimmerman, Haw. Ent. Soc., Proc. 10(2) : 319, fig. 1, 1939.

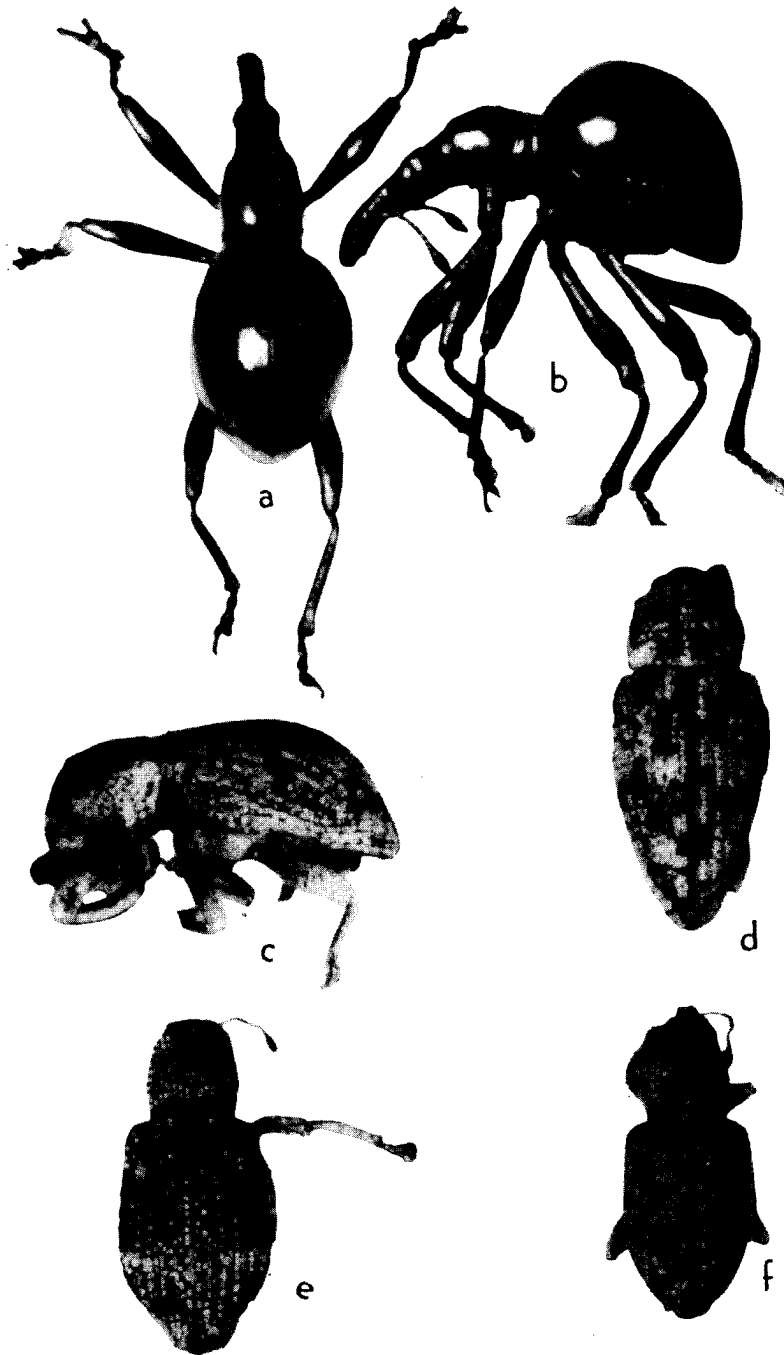


FIGURE 2.—Fijian Apioninae and Ottistirini: a, b, *Apotapion gibbipennis* (Fairmaire) Zimmerman (from two individuals); c, d, *Ottinychus gemmatus gemmatus* Zimmerman; e, *Viticis bidentatus* Lea; f, *Ottinychus comptus* Zimmerman. (Photographs by W. Twigg-Smith.)

I have only one note to add to my original description and discussion of this species. Since my paper was published, another specimen has been found in my 1938 collection from another locality. This additional specimen was beaten by me from shrubbery on the belt road between 42 and 44 miles west of Suva at 300 feet on July 28.

SUBFAMILY BRACHYDERINAE

As far as I know, the only genera representing the subfamily Brachyderinae in Fiji belong to the tribe Ottistirini. The literature pertaining to new Fijian genera and species consists of the following two papers: Lea, A. M., Descriptions of New Species of Australian Coleoptera XXI, Linnean Soc. New South Wales, Proc. **55**: 450-467, 1930 (pp. 461-464 include descriptions of new Fijian genera and species), and Zimmerman, E. C., Revision of the Fijian Ottistirini, B. P. Bishop Mus., Occ. Papers **14**(15): 301-312, fig. 1, 1939. Fritz van Emden in his "Die Anordnung der Brachyderinae-Gattungen im Coleopterorum Catalogus", Stett. Ent. Zeitung **97**: 211-239, 1936, gives a key to the genera of Ottistirini (pp. 233-235) which contains the genera described by Lea.

When I wrote my "Revision of the Fijian Ottistirini", I had the good fortune to have before me all of Lea's holotypes and most of his paratype material. In addition to Lea's collection, I had a few specimens from collections of the British Museum and Bishop Museum. Altogether, the number of specimens upon which the two papers were based numbered less than 20. During my research in the field in Fiji, I was fortunate in being able to assemble a collection of almost 100 specimens, including series of all of the previously described species. This additional material adds to our knowledge of the geographical distribution of the species, and shows that a considerable amount of variation occurs within the specific limits of the various forms.

LIST OF FIJIAN OTTISTIRINI

1. **Nesogenocis cucullus** Lea.
Viti Levu; Ovalau.
2. **Nesogenocis maculosus** Zimmerman, new species.
Viti Levu; Ovalau.
3. **Leacis vitiensis** (Lea) Zimmerman.
Viti Levu; Ovalau; Taveuni.

4. **Ottinychus comptus** Zimmerman.
Viti Levu.
5. **Ottinychus gemmatus gemmatus** Zimmerman.
Viti Levu; Ovalau.
6. **Ottinychus gemmatus griseus** Zimmerman.
Ovalau.
7. **Viticis bidentatus** Lea.
Viti Levu.

It is noteworthy that all of the Brachyderinae thus far recorded from Fiji have been found only on Viti Levu, Ovalau, and Taveuni. A careful search failed to lead to the discovery of any specimens in Lau Province or Moala where I collected. I believe that representatives will surely be found on the other main islands of Fiji, such as Kandavu and Vanua Levu, but there has been little collecting done on those islands.

I have studied the balsam mounted wings of *Leacis vitiensis*, *Ottinychus gemmatus gemmatus*, and *Viticis bidentatus*. They are all surprisingly similar and differ only in a few minor details which might be useful as specific differences.

A revised copy of my key to the genera follows:

Key to the genera of Fijian Ottistirini

1. Epistome delimited posteriorly by a deep, distinct, transverse sulcus2
Epistome not delimited posteriorly by a deep, transverse sulcus.....3
- 2(1). Tarsi with two claws, connate at base but distinctly divergent distad; prothorax with apical part bent downward.....**Nesogenocis** Lea.
Tarsi with single claws; prothorax normal.....**Leacis** Zimmerman.
- 3(1). Tarsi 4-segmented, the claw segment distinct, bearing a single claw; femora edentate; funiculi of antennae 7-segmented.....
.....**Ottinychus** Marshall.
Tarsi 3-segmented, claw segment absent, third segment broad, truncate at apex; femora toothed; funiculi of antennae 6-segmented....
.....**Viticis** Lea.

Genus **NESOGENOCIS** Lea, 1930

This genus has not been represented in any of the extra-Fijian collections that I have seen thus far, and in so far as my knowledge goes, the genus remains restricted to Fiji. However, I believe that it may eventually be found in neighboring island groups.

Nesogenocis cucullus Lea, Linn. Soc. New South Wales, Proc. 55: 464, 1930. Zimmerman, B. P. Bishop Mus., Occ. Papers 14(15): 305, fig. 1, *d*, 1939 (fig. 1, *d, n*; 3, *a, b*).

This species was described from two male specimens collected by Lea and labeled simply "Viti Levu, Fiji" without further details regarding locality.

There is much more individual variation displayed in the series now before me than I was able to indicate when I redescribed Lea's two type specimens. The following observations may be appended to my 1939 description: the derm varies from pale reddish brown to black; the dorsal scaling is basically dark brown variegated with patches of pale yellowish white scales or black variegated with patches of green scales (there are 17 specimens with the black and green scale pattern and six with brown and yellowish scales); on some specimens the yellowish white scales are more numerous and give the appearance of brown spots on a pale background; the dark scales on the head usually extend down between the eyes in an attenuated, roughly V-shaped mark which occasionally continues on to the rostrum; the pale area mentioned in my previous description as situated on the prothorax above the coxa may or may not be present; the color pattern of the pronotum varies considerably, it may vary from being almost immaculate to having a complete median vitta with a large pale patch on either side in the anterior half, two similar patches at the hind angles and with a pale basal band; the basal patch on each elytron is usually on the bases of intervals four and five, rather than three, four and five; the transverse pale fascia at the top of the declivity may vary from conspicuous to absent; the scaling on the legs is normally predominantly that of the paler dorsal scales and usually more brilliantly iridescent. The distance between the eyes and prothorax may be twice as great as the distance between the eyes and the scrobes; the interocular area may be slightly broader than the interscrobial area. The prothorax is subject to considerable variation in shape and proportion, it may be as long as broad or slightly broader than long, although in some individuals, especially the larger ones, it may appear to be strongly transverse; the longitudinal dorsal contour varies much, and the measurement I used to indicate the comparative lengths between the summit and apex and the distance between the base of the head and the scrobe is too variable for use; the illustration I gave of a side view of the prothorax indicates nearly an average individual; in some individuals the extreme breadth of the prothorax is only slightly

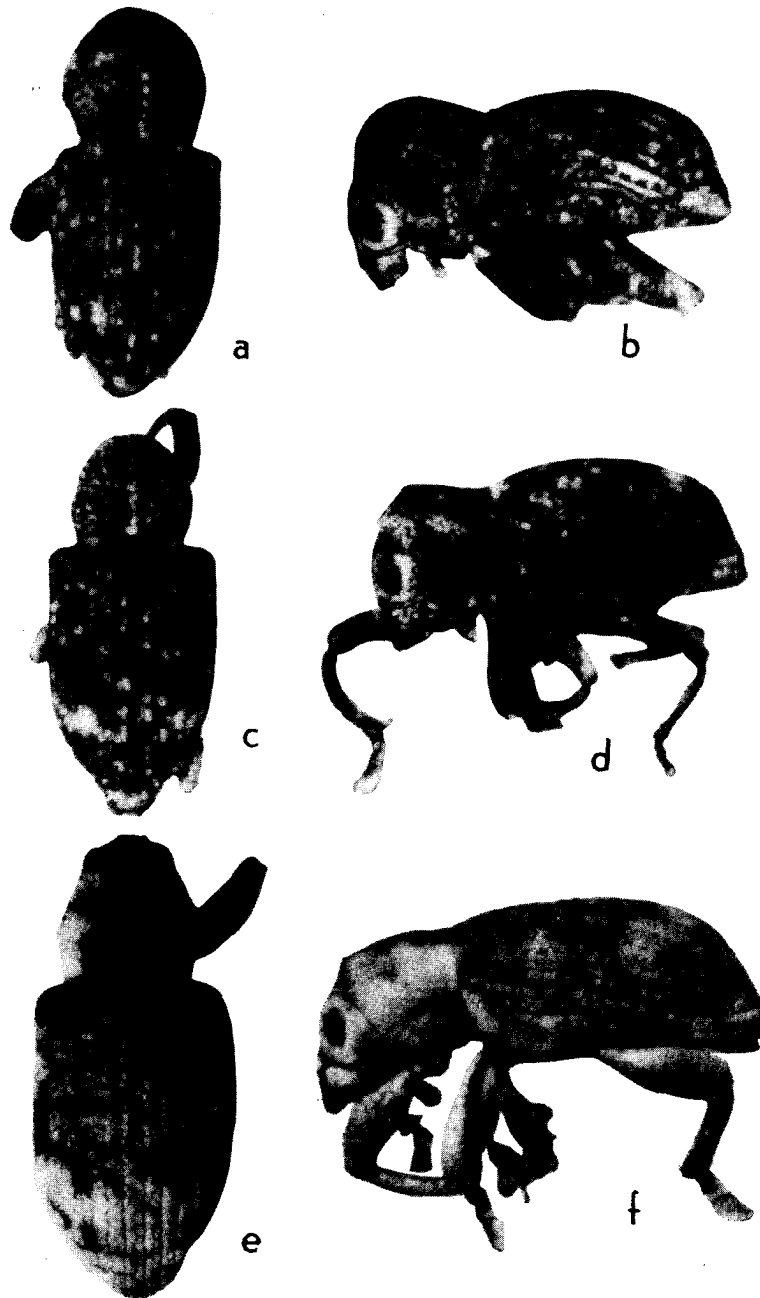


FIGURE 3.—Fijian Ottistirini: a, b, *Nesogenocis cucullus* Lea (photograph a taken with camera slightly to left side, making prothorax appear narrower than it would from directly above); c, d, *Nesogenocis maculosus* Zimmerman; e, f, *Leacis vitiensis* (Lea) Zimmerman. (Photographs by W. Twigg-Smith.)

narrower than the elytra at the humeri, and on others it is distinctly narrower.

It ranges in size from 1.75 to 2.25 mm. in length (excluding head and rostrum), and 0.75 to 1.0 mm. in breadth in the series before me.

The figure of the male genitalia has been drawn from a specimen beaten by me from shrubbery on the ridge west of Nandarivatu, Viti Levu, September 9, 1938, altitude between 2,600 and 3,000 feet. The specimen has the scaling basically dark brown with pale yellowish white patches.

The following 23 specimens were collected by me in 1938 by beating shrubbery and the lower branches of various forest trees:

Viti Levu: Tholo-i-suva (Colo-i-suva), one specimen taken July 27; Nandarivatu, one specimen taken September 3 between 3,000 and 3,700 feet, and four specimens taken September 10 at 3,700 feet; ridge west of Vatuthere, south of Nandarivatu, two specimens collected September 8 between 2,600 and 3,000 feet; ridge west of Nandarivatu, two specimens taken September 9 from 2,600 to 3,000 feet, and eight specimens taken on September 11 at 2,800 feet; Mt. Victoria, Tholo North, one example taken between 3,000 and 4,000 feet on the west slope, September 13; Navai Mill (south of Nandarivatu at the foot of Mt. Victoria), one example collected September 17 at 2,500 feet.

Ovalau: Andubangda Mountain, one example taken July 15 between 1,800 and 2,000 feet and two taken between 1,000 and 1,500 feet on July 18.

In my 1939 report [B. P. Bishop Mus., Occ. Papers 14(15): 306], I mentioned a specimen which appeared to be a distinct species. I now consider that it is an aberrant specimen of *Nesogenocis cucullus* with an extreme variation in the shape of the prothorax. The example was collected by F. Muir in January 1906 and the only locality label it bears is "Fiji Is."

***Nesogenocis maculosus*, new species (fig. 1, *i*; fig. 3, *c, d*).**

Derm reddish brown to black, appendages palest; densely clothed above with small, rounded, imbricated scales that normally conceal the derm of the dorsum excepting in some of the pronotal punctures; scaling basically dark brown or black variegated with spots and patches of pale brownish yellow or green scales; scales with an iridescent cast which is stronger on paler scales, crown of head with dark scales that usually form a vague V-shaped extension down between the eyes, the remainder of the head and rostrum with pale scales; prothorax in normal, fresh, unabraded specimens with the disk dark from base to apical fifth,

with a pale, narrow median vitta in the basal one half and with pale scaling extending forward on sides from about middle and across the front to occupy apical fifth, pale scaling may or may not extend downward to near coxae, and on some examples it extends backward on sides to near base; elytra with variable spots and bands of pale scales, most individuals with a distinct patch of pale scales on bases of intervals 3 to 5 or 4 and 5; legs with dark scaling, with pale scaling on dorsal and ventral edges of femora and dorsal distal edge of tibiae; scaling on ventral surfaces pale.

Head with a row of erect, curved setae along inner margins of eyes; longitudinal dorsal outline of head and rostrum slightly but obviously discontinuous; interocular area slightly broader than narrowest part of interscrobular area. *Rostrum* with dorsal scaling extending to epistomal suture, epistome free from scales but with scattered, conspicuous setae. *Antennae* with scape about as long as funicle excluding club; first funicular segment as long as 2 plus 3, as broad as length of 2, second segment about twice as long as broad and about as long as 3 plus 4, segments 3 to 7 moniliform and each successively slightly broader; club ovoid, two thirds as broad as long, about as long as the six preceding segments. *Prothorax* slightly broader than long; base truncate, but usually appearing broadly and flatly V-shaped because of basal emargination of elytra, as much as one fifth broader than apex; broadest usually at or slightly anterior to middle, but the point of greatest breadth variable, on some examples broadest before middle or at middle; sides expanding comparatively evenly from base and apex to broadest point so as to give a roughly hexagonal appearance; longitudinal dorsal outline rising in a slightly concave or almost straight line from base to reach a summit just anterior to middle to form a pseudocrest, then falling off in a shorter, more abrupt, steeper, concave line to apex, highest point only slightly if at all higher than summit of elytra; punctures large, dense and coarse, the interstices of those on disk much narrower than their diameters, punctures appearing as cells in honeycomb on disk, smaller on median line and more nearly covered by scaling in paler areas, each puncture bearing a fine, inconspicuous seta; anterior marginal zone with easily discernible, slender, erect, curved setae. *Scutellum* clothed with dark scales, conical, conspicuously protuberant, especially when viewed from side. *Elytra* much broader across humeri than broadest part of prothorax (3.5 : 2.5, for example), hind angles of prothorax opposite fifth striae, about one and six tenths longer than broad, somewhat more than twice as long as prothorax when measured from side; base broadly and shallowly emarginate behind prothorax; humeri obtuse, rectangular; subparallel-sided to behind middle, thence arcuately narrowing to declivity; longitudinal dorsal outline rather evenly arcuate from base to about caudal sixth and thence abruptly (in some examples at about 75°) slanting down to apex to form the precipitous declivity; basal margin bare and shiny across first two or three intervals; intervals convex, several times broader than striae, first interval narrower at base than at top of declivity, each interval bearing a row of inconspicuous recumbent setae. *Legs* with the longer hairs on fore tibiae not much more conspicuous than those on other tibiae, not erect and not shaggy. *Sternum* with the prosternum bare between coxae, but with a band of scales behind them; mesosternum with a small patch of scales between coxae, punctures inconspicuous, pleurae squamose; metasternum densely squamose on sides and along the coarsely punctured fore margin, elsewhere shiny, free from scales and with fine, scattered setae arising from inconspicuous punctures; pit near hind margin large and deep. *Abdomen* with intercoxal piece of first ventrite, broadly triangular;

first ventrite squamose on sides and along basal margin, elsewhere free from scales and with fine setae arising from large, conspicuous punctures; ventrite 2 squamose at sides, punctures and setae similar to those on ventrite 1; ventrites 3 and 4 appearing impunctate, each with widely spaced, long conspicuous, hair-like setae; ventrite 5 with shallow, setiferous punctures. Length (excluding head and rostrum), 1.5 to 2.0 mm.; breadth, 0.75 to 0.90 mm.

Viti Levu and Ovalau, Fiji. Holotype male and allotype female in Bishop Museum and 17 paratypes collected by me in 1938 by beating shrubs and the lower branches of various kinds of forest trees as follows:

Viti Levu: holotype from the west slope of Mt. Victoria, Tholo North, September 13, between 3,000 and 4,000 feet altitude; allotype and four paratypes from Nandarivatu, September 10, 3,700 feet; one from the belt road, 16 to 18 miles west of Suva; one along the same road, 45 to 50 miles west of Suva, July 26; one from Tholo-i-suva, July 27; one from Nandarivatu, September 3, at 3,000 feet; two from the ridge west of Vatuthere, near Nandarivatu, September 8, 2,600 to 3,000 feet; one from the ridge west of Nandarivatu, September 9, 2,600 to 3,000 feet; two from the same place, September 11, 2,800 feet; three from the summit of the Navai-Nasonga Trail, Tholo North, September 12, 3,400 feet.

Ovalau: one paratype from Andubangda Mountain, July 15, 1,500 to 1,800 feet.

This species may most easily be distinguished from *Nesogenocis cucullus* by the shape of the prothorax. On this species the prothorax is not bulbous as on *N. cucullus*, and dorsal and lateral outlines are much different. On this species the hairs on the inner sides of the fore tibiae are not long, projecting and shaggy, as they are on *N. cucullus*. The coloring and scale pattern in the two species are not conspicuously different. The series of both species show the two color forms, one with the pale scales yellowish, the other with them green. Further study may show that the two color forms might be called varieties, but I do not now consider the naming of them a necessity. The holotype and allotype are chosen from the forms with the pale spots formed by the yellowish scales. There are about three examples of the form with yellowish scales to each specimen with the green scales. The sexual differences are slight, and it is difficult to separate the sexes by external characters.

Genus **LEACIS** Zimmerman, 1939

I have not seen any species except *L. vitiensis* from Fiji or other locality which belongs to this genus, whose genotype is the following species.

Leacis vitiensis (Lea) Zimmerman, B. P. Bishop Mus., Occ. Papers 14(15) : 303, fig. 1, *e, f*, 1939 (fig. 1, *e, f, m*; fig. 3, *e, f*).

Eutinophaea vitiensis Lea, Linn. Soc. New South Wales, Proc. 55 : 461, 1930.

Nineteen specimens of this species, the largest of the Fijian *Ottistirini*, have come to hand since my previous report was published. This new series shows that the amount of variation in color and color pattern is less in this species than in the species of *Nesogenocis*. In some specimens the paler scales, which are usually brownish yellow, appear faded and almost white. Most of the specimens have the typical markings on the pronotum distinct; the background scales yellow with a broad, irregular vitta of dark brown scales extending from base to apex on each side of the median line, the median line usually complete and distinct. An occasional specimen may have the dark vittae fused so that there is no pale median vitta, and one specimen before me had no vittae. The scaling on the cheeks, sides of the prothorax and the pleurae of the meso and metathorax are normally white or pearly white, and some of these scales usually have a greenish luster. There is usually a broad, irregular vitta of dark scales above the fore coxae.

The elongate median pit or groove that usually runs from a point near a line drawn between the middles of the eyes to or slightly beyond a line drawn between the upper margins of the scrobes varies in length, and on some examples it is obscured by the scaling.

The sexual differences are marked in this species. The males have the first ventrite as long as the second and third, or the second, third and fourth, the second is flattened and the fifth convex. The females are smaller, usually have the scales rubbed from the outer two intervals from above the metasternum to the apex of the second ventrite (as if by action of the hind femora); the second ventrite is as long or longer than the first, obviously tumid, and the fifth ventrite is concave.

In the series before me, the size ranges from 2.25 to 2.75 mm. in length, excluding the head and rostrum, and from 1.0 to 1.25 mm. in breadth.

Lea recorded this species from Viti Levu and Taveuni and mentioned specimens from Ovalau. The material I had from Lea's type

lot consisted of specimens labeled Viti Levu only. In my revision, I recorded the specific localities of Lami, and Tholo-i-suva, Viti Levu. I know that Lea collected at Tholo-i-suva, and his holotype probably came from that locality. The following specimens, all from Viti Levu, are now before me: six specimens beaten by me from shrubs and the lower branches of trees at Tholo-i-suva, three July 21, one July 25, and two July 27. One specimen beaten by me from shrubbery at Nandarivatu, September 7, 2,700 feet; two specimens beaten by me from shrubbery on the ridge west of Vatuthere (near Nandarivatu), September 8, 2,600 to 3,000 feet; one example beaten by me from shrubbery on the ridge west of Nandarivatu, September 9, 2,600 to 3,000 feet, and another from the same ridge taken at 2,800 feet on September 11. Two specimens beaten by me from shrubbery at Navai Mill, south of Nandarivatu, September 15 at 2,500 feet, and three specimens with the same data but collected on September 17; two specimens collected by me at light at Nandarivatu, September 15 at 2,700 feet. One badly abraded specimen collected by J. M. Valentine at Nandarivatu, October 18, 1937.

I have no records of *Ottisirini* being attracted to light other than those from the two specimens collected at Nandarivatu.

Genus **OTTINYCHUS** Marshall, 1931

This genus was described from Samoa for the reception of two new species. In 1939, I described two new species and a subspecies from Fiji. I have no records of the occurrence of the genus outside of Samoa or Fiji. On page 308 of my revision there is a key to distinguish the three forms found in Fiji.

Ottinychus comptus Zimmerman, B. P. Bishop Mus., Occ. Papers 14 (15): 309, fig. 1, *c*, 1939 (fig. 1, *c*; fig. 2, *f*).

This species was described from two specimens collected by Lea on Viti Levu. Nine specimens were collected in 1938, and from them I am able to record the following observations:

The dark scaling is uniform chocolate brown; the paler scales are usually iridescent yellow, golden or brassy, but they may be green or white. The dark scaling on the head is variable and may consist of only a band around the extreme base of the crown, or the dark scales may extend down the head almost to the base of the rostrum. The pronotal scaling does not exhibit much variation; the dark sub-

Λ-shaped or sub-Ω-shaped discal area extends from base to apex, is flanked on either side with the pale scales; the pale median vitta that runs down the middle of the dark area is usually broken in one or more places; when viewed from the side the pale scales on the sides of the pronotal disk are seen to be flanked by dark brown scales.

On all of the specimens the scales are rubbed from most of the lengths of the two outer elytral intervals (as far up as the third striae from the margins) and are also wanting from the prothorax above the fore coxae. This abrasion causes the shiny derm to be exposed and conspicuous in its nakedness.

The specimens before me show a size range of 1.4 to 2.0 mm. in length (excluding the head and rostrum) and 0.65 to 0.95 mm. in breadth.

The following nine specimens were beaten from shrubbery in 1938.

Four specimens collected by me at Tholo-i-suva, July 21, 500 to 600 feet altitude; one example taken by me on the ridge west of Vatu-thera, near Nandarivatu, September 8, 2,600 to 3,000 feet; two examples taken by me on the west slope of Mt. Victoria, September 13, 3,000 to 4,000 feet and one taken by Y. Kondo on September 10 at the same place; one specimen collected by me at Navai Mill, south of Nandarivatu, September 17, 2,500 feet.

Ottinychus gemmatus gemmatus Zimmerman, B. P. Bishop Mus., Occ. Papers 14(15): 310, fig. 1, *a-b*, 1939 (fig. 1, *a, e*; fig. 2, *c, d*).

This form was originally described from two specimens, one from Rewa, the other from near Lautoka, Viti Levu. Sixteen specimens were collected in 1938 from other localities on Viti Levu, and two examples were found on the island of Ovalau. The following notes will supplement my original description:

The black scaling is constant on the crown of the head, but there is usually an invasion of this black area by a few green scales along the median line so as to divide the black scaling into two areas, one on either side of a green median line which is one or two scales broad. The pattern of the green and black scaling on the pronotum is subject to considerable variation. The green median vitta may be entire, incomplete or absent. The black scaling on the disk may form a rough cross, as on the holotype, or most of the disk may be black; or, as in most examples, the longitudinal black area runs from the base almost to the apex where it sends out a lateral branch that runs toward each

side to form a subapical band, and the main transverse band, which forms the lateral arms of the cross, extends to each side of the disk and then each arm turns abruptly backward toward the hind angles of the prothorax.

The scape of the antenna and the first funicular segment is yellowish or reddish brown, the remainder of the antenna darker, fuscous to nearly black. The first funicular segment has a number of almost prostrate, white setae on its distal one half.

The prothorax varies in shape. On one example it is subcylindrical, and there are intergrades between this example and the usual form of broad prothorax in which the sides are almost straightly expanded from base to beyond the middle, thence arcuate to the fore margin.

The shape of the elytra is subject to sexual dimorphism. The females have the elytra more attenuate caudad and drawn into a sharper point than the males. Before dissection of the male and female genitalia, the males appeared to me to be females, and the females, males. I now believe that the holotype is a male rather than a female, but I cannot be certain because I do not now have access to the holotype, which I sent to the British Museum. There is a confusing misprint in the original description concerning the proportions of the elytra as can be seen easily by a glance at the description. The elytra are not five eighths as long as the prothorax, but more than twice as long, as I indicated by numerals. In ten examples measured, the length of the pronotum (measured on the side) divided into the length of the elytra (measured on the side from the fore edge of the scutellar area to the lower edge of the apical margin) showed a range of 2.5 to 2.8. Three males gave an index of 2.5, two an index of 2.6. Three females showed an index of 2.8, two an index of 2.7. The index of the breadth of the elytra across the humeri divided into the length was about 1.7 on four examples measured.

In fresh specimens there is a band of scales along the posterior margin of the prosternum, and a wider band along the fore margin of the metasternum which resembles that along the fore edge of the first ventrite. I have been unable to find any obvious and reliable differences between the ventral abdominal segments of the sexes useful for segregating them. On some specimens the third and fourth ventrites appear impunctate, but on others distinct punctures are visible. The first ventrite is about as long as the following three together.

The aedeagus of each of two males dissected was weakly sclero-

tized and in a collapsed condition. This unusual weak sclerotization appears to be normal and not the result of the dissection of immature specimens.

The extremes in size in the series before me range from 1.75 to 2.25 mm. in length (excluding the head and rostrum) and from 0.76 to 0.95 mm. in breadth.

I collected the following 16 specimens in 1938 by beating shrubbery and foliage:

Viti Levu: three at Tholo-i-suva, July 21, 500 to 600 feet altitude; one from the ridge west of Vatuthere, near Nandarivatu, September 8, 2,600 to 3,000 feet; three from the ridge west of Nandarivatu, September 9, 2,600 to 3,000 feet, and three September 11, at 2,800 feet; four September 10 at Nandarivatu, 3,700 feet.

Ovalau: two taken on Andubangda Mountain, July 15, 1,500 to 1,800 feet.

Ottinychus gemmatus griseus Zimmerman, B. P. Bishop Mus., Occ. Papers 14(15): 311, 1939.

A pair of this form were beaten by me from shrubbery at Thawathi, Ovalau, July 12, altitude 600 to 900 feet.

On the unique type, the paler scales were white or grayish. On the newly captured pair, the paler scales are pearly white with coppery reflections. This may be a color form rather than a good subspecies, but it has not been found outside of the island of Ovalau.

On the typical *Ottinychus gemmatus gemmatus* from both Viti Levu and Ovalau, the paler scales are green on all the specimens in the series before me, and there does not seem to be the color dimorphism that is displayed in the series of the two species of *Nesogenocis*.

Genus **VITICIS** Lea, 1930

Recently, this genus has been found to have an unusually wide distribution instead of being restricted to Fiji. I have described a new species from Guam (B. P. Bishop Mus., Bull. 172: 80, 1942), and one from Amboina [Haw. Ent. Soc., Proc. 10(3): 477, 1940] and I have now a new species before me from New Caledonia and another from the Marquesas. I shall describe the new species in forthcoming papers.

This genus is unusually distinct because it has a six segmented antennal funiculus and has only three segments in the tarsi; the claw bearing fourth segment is lacking.

Viticis bidentatus Lea, Linn. Soc. New South Wales, Proc. **55**: 463, 1930, Zimmerman, B. P. Bishop Mus., Occ. Papers **14**(15): 307, fig. 1, *g*, 1939 (fig. 1, *g, j, k*; fig. 2, *e*).

In my redescription of this peculiar species, I noted that on the two type specimens the scales were yellowish with an iridescent luster. In the series now before me there are two such examples, but the remaining eight specimens have the scales predominantly green. The sutural elytral interval is narrow, not more than one half as broad as the second, and the variable cluster of scales which may or may not be present on what appears to be on about the basal quarter of interval four is really on interval five.

The following specimens, all from Viti Levu, are before me: one example collected by N. L. H. Krauss at Vunindawa, May 2, 1941; one example taken by J. M. Valentine on Mt. Victoria at Navai Mill, 2,500 to 3,500 feet altitude, October 13, 1937; three specimens beaten by me from shrubs at Tholo-i-suva, July 27, 1938; three beaten by me from shrubbery at Nandarivatu, September 6, 1938, at 3,600 feet; one example beaten by me from shrubs on the ridge west of Nandarivatu, September 11, 1938, at 2,800 feet and one beaten by me from a shrub on the ridge west of Vatuthere, near Nandarivatu, September 8, 1938, at 2,600 to 3,000 feet.