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Revision of the Fijian *Chimarra* (Trichoptera, Philopotamidae) with description of 24 new species

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Abstract

The philopotamid genus *Chimarra* (Trichoptera) of Fiji is revised. The previously described species *Chimarra nervosa* (Brauer, 1867) is considered a *nomen dubium*. *Chimarra indigota* Mosely, 1941, is synonymized with *Chimarra manni* Banks, 1924. The following 24 new *Chimarra* species are described: *C. vanuensis*, *C. macuatensis*, *C. schlingeri*, *C. nathani*, *C. braueri*, *C. vitiensis*, *C. karoyanitensis*, *C. tokotaai*, *C. vuda*, *C. naitasirensis*, *C. veisarensis*, *C. fijiana*, *C. abacensis*, *C. cakaudrovensis*, *C. cartwrighti*, *C. kimminsi*, *C. kadavuensis*, *C. lavensis*, *C. devoensis*, *C. helomyzida*, *C. tipulida*, *C. psychodida*, *C. levuensis*, and *C. malickyi*. *Chimarra signata* Banks, 1936, *C. manni* Banks, 1924, and *C. obscurella* Banks, 1924, are re-described based on type material.

Key words: caddisflies, Chimarrinae, re-descriptions, Southwest Pacific

Introduction

The Fiji Islands constitute an archipelago of 332 volcanic Melanesian islands located about 1,800 km NE of New Zealand, 1,800 km SE of Solomon Islands, and 800 km E of Vanuatu. The total land area is about 18,300 km^2, corresponding to the land area of New Caledonia. The area of the 4 islands Viti Levu, Vanua Levu, Taveuni Island and Kadavu Island is equivalent to 92% of Fiji's total land area. Most of the islands are covered by rainforest and have a mean yearly temperature of around 25°C (Neall & Trewick 2008). A high number of permanent streams and rivers drain the interior highlands of the larger islands, forming suitable and diverse habitats for various aquatic insect groups. The caddisfly (Trichoptera) fauna of Fiji is poorly known, comprising 39 described species in 8 families, all of which can be ecologically associated with running water. Permanent freshwater habitats on the islands are possibly of Miocene age, since Strandberg & Johanson (2011) argued from molecular data that a monophyletic group of *Apsilochorema* caddisflies (Hydrobiosidae) from Fiji separated from the Vanuatuan sister species about 16 million years ago (mean age). This time corresponds with the age of the earliest available land dated to Middle Miocene (Neall & Trewick 2008). Espeland & Johanson (2010) found that Fijian hydropsychid caddisflies form a monophyletic sister group to a monophyletic New Caledonian clade that separated during Middle Oligocene, approximately 29.5 million years ago (mean age), well ahead of the supposed existence of terrestrial Fijian land.

The first caddisfly species described from the country were *Abacaria picea* (Brauer, 1867), *Abacaria ruficeps* (Brauer, 1867) (both Hydropsychidae) and *Chimarra nervosa* (Brauer, 1867) (Philopotamidae), the first 2 described originally in the genus *Hydromanicus*, and the latter described originally in the genus *Wormaldia*. Banks (1924, 1936) described 10 more species and added Calamoceratidae, Goeridae, Leptoceridae and Polycentropodidae to the known Fijian fauna. Mosely (1933, 1941) described 6 species from the islands, and recorded the family Hydrobiosidae for the first time. Ross (1951) described 2 species from Fiji in that family. The next work on Fijian Trichoptera, was published 38 years later by Kelley (1989), who described *Oxyethira fijiensis*. This represented the first record of the family Hydroptilidae from the country. The latest additions to the knowledge of the Fijian Trichoptera diversity were those by Oláh *et al.* (2006), Johanson & Oláh (2008), and Oláh & Johanson (2010a, 2010b) who described 17 species in Hydropsychidae, Goeridae, Polycentropodidae, and Calamoceratidae, respectively.

One of the first caddisfly families reported from the islands is Philopotamidae (Brauer 1867). The family is presently divided into 3 subfamilies (Blahnik 1998), with the genus *Chimarra* Stephens, 1829, classified in the Chimarrinae.

Adults of *Chimarra* species are distinguished from species in other philopotamid genera by a set of morphological features (Blahnik 1998), including spur formula 1,4,4 and hind wings with the A2 vein looped to join the A1 vein, forming a closed cell. Of the 4 subgenera of *Chimarra*, subgenus *Chimarra* is distributed worldwide, while the subgenera *Chimarrita*, *Curgia*, and *Otarrha* are restricted to the Neotropical Region, except that a few species of the subgenus *Curgia* also recorded from the Nearctic Region. The species of the Australasian Region all belong to the subgenus *Chimarra*.

With about 660 previously described species globally (Johanson & Espeland 2010, Johanson *et al.* 2011), *Chimarra* constitutes the second largest caddisfly genus in terms of species diversity, surpassed only by *Rhyacophila* Pictet, 1834 (Rhyacophilidae) (718 species, Morse 2010), and is known from all biogeographical regions except Antarctica. Two-thirds of the species in *Chimarra* are restricted to the Neotropical and Oriental biogeographical

regions, and the lowest diversity (less than 3% of the species) is in the Palaearctic biogeographical region. In all, 76 *Chimarra* species have previously been described from the Australasian biogeographical region: 28 from Australia, 27 from New Guinea, 5 from the Fiji Islands, 3 from Vanuatu, 11 from the Solomon Islands and 1 from New Caledonia (Johanson & Espeland 2010, Johanson *et al.* 2011, Malicky 1981).

The Philopotamidae from Fiji are represented by 5 previously described and endemic species: *Chimarra nervosa, C. manni* Banks, 1924, *C. obscurella* Banks, 1924, *C. signata* Banks, 1936, and *C. indigota* Mosely, 1941.

Chimarra nervosa was described from Ovalau Island, immediately east of Viti Levu (no date). The species was originally described in the genus *Wormaldia*, and transferred to *Chimarrha* by Ulmer (1905). The new combination was, however, subsequently overlooked (Banks 1936, Mosely 1941). After 1941 the species was neglected until Neboiss (1986) listed the name. This species was never illustrated, but the original description described the body and wing colour and parts of the wing venation in detail. A characteristic feature with *C. nervosa* was reported to be the presence of black wings having shining surface. This description fits also that of the subsequently described *C. manni* and *C. indigota*.

The type material of *C. nervosa* was originally deposited in Museum Godeffroy und Sohn in Hamburg, but according to information provided by Dr. Ralph Peters (Zoologisches Museum Hamburg, Germany), Dr. Wolfram Mey (Museum für Naturkunde, Leibniz-Institut für Evolutions- und Biodiversitätsforschung an der Humboldt-Universität zu Berlin, Germany) and Mag. Susanne Randolf (Naturhistorisches Museum Wien, Austria) the type was probably destroyed during World War II.

Chimarra manni and *C. obscurella* were both described from Somo-Somo on Taveuni. No illustrations were provided with the descriptions but part of the wing venation and the colour of the species were described in detail. A characteristic feature given for *C. manni* was the black forewings with iridescent blue colour. In addition, in the forewings and hind wings the crossvein r is located beyond the end of the Dc; and Rs is not curved anterad immediately before Dc in the forewings.

A characteristic feature given for *C. obscurella* is the presence of a basally blunt Dc, Rs curved anterad immediately before Dc, and the presence of a pale vein at the arculus and at the end of the median cell. In addition the species has a large bare spot behind the Dc, but the colour of the spot was not stated in the description.

Chimarra signata was also described from Somo Somo and an illustration of the central part of the left forewing was provided. The forewing of the type has a large white spot distributed from immediately anterior to the Dc through all of the Mc. In addition, the Rs immediately basal to the Dc is strongly curved anterad. The genitalic morphology was indicated in illustrations of the genitalia in dorsal and ventral views, but without clear diagnostic details.

Chimarra indigota was described from Taveuni Island (type locality) and Ovalau Island. As for *C. manni*, the species was described as having black wings ("bluish black, iridescent"), and with fork I in the forewings originating slightly beyond crossvein s. In a footnote Mosely (1941: 372) indicated that the species is a possible synonym of *C. manni*.

This work aims at revising previously described species and describing new species in order to present a modern view of the species diversity of *Chimarra* of Fiji.

Material and methods

The study is based on 449 males collected in the Terrestrial Arthropod Survey of Fiji project (Evenhuis & Bickel 2005) funded by the US National Science Foundation and the Schlinger Foundation. In this project Trichoptera were collected in Malaise traps situated at 47 localities (Table 1) on the 4 major islands Viti Levu, Vanua Levu, Taveuni Island and Kadavu Island (Figure 1) between 21 September 2002 and 5 January 2005. Thirty-six of the localities generated *Chimarra* specimens, and the trapping period that generated the material covered 972 days. The traps were emptied every 13.5 days on average. All material is stored in 80% alcohol. Right wings of the holotype of all new species and non-types of previously described species were removed, mounted on slides in glycerol, and photographed using a Lumenera InfinityX digital camera mounted on an Olympus SZX12 stereomicroscope. The Extended Focus Option in the DeltaPix Insight software was used to create high-resolution photos with high depth of focus. The abdomens were cleared in hot 8% KOH for about 1 hour. The abdomens were dehydrated in absolute alcohol and temporarily mounted in Euparal on a microscope slide before examination and drawing. All

TABLE 1. List of localities (Loc) on Fiji Islands from where Trichoptera have been collected in the Terrestrial Arthropod Survey of Fiji Project (Evenhuis & Bickel 2005). The localities, except Loc#19, are plotted on the map in Figure 1.

Loc #	Island	Province	Locality	Latitude, longitude
01	Viti Levu	Vuda	Koroyanitu National Heritage Park, Kokabula Trail, 400 m.	17.667°S, 177.555°E
02	Viti Levu	Vuda	Koroyanitu National Heritage Park, Kokabula Trail, 450 m.	17.667°S, 177.555°E
03	Viti Levu	Vuda	Koroyanitu National Heritage Park, 1 km E Abaca Village, Savuione Trail, 800 m.	17.667°S, 177.555°E
04	Viti Levu	Vuda	Koroyanitu National Heritage Park, Savuione Trail, 450 m.	17.667°S, 177.555°E
05	Viti Levu	Vuda	Koroyanitu National Heritage Park, 1 km E Abaca Village, Kokabula Trail, 800 m.	17.667°S, 177.555°E
06	Viti Levu	Vuda	Koroyanitu National Heritage Park, 0.5 km N Abaca Village, 800 m.	17.667°S, 177.555°E
07	Viti Levu	Naitasiri	Sovi Basin, Wainivalau, 300 m.	17.900°S, 178.233°E
08	Viti Levu	Naitasiri	1.8 km E Navai Village, old trail to Tomaniivi, 700 m.	17.521°S, 177.998°E
09	Viti Levu	Naitasiri	Eteni, Navai, 700 m.	17.617°S, 177.983°E
10	Viti Levu	Naitasiri	Nakobalevu Mt., 340 m.	18.050°S, 178.417°E
11	Viti Levu	Naitasiri	4 km WSW Colo-i-Suva Village, Mt. Nakobalevu, 372 m.	18.055°S, 178.424°E
12	Viti Levu	Naitasiri	4 km WSW Colo-i-Suva Village, Mt. Nakobalevu, 300 m.	18.057°S, 178.420°E
13	Viti Levu		Pabitra Wabu Baseline Survey, 1034 m.	17.583°S, 178.083°E
14	Viti Levu	Naitasiri	4.8 km N Veisari Settlement, Log Road to Waivudawa, 300 m.	18.075°S, 178.362°E
15	Viti Levu	Naitasiri	3.2 km E Navai Village, Veilaselase Track, 1020 m.	17.624°S, 178.009°E
16	Viti Levu	Rewa	3.8 km N Veisari, Waivudava Log Rd., 300 m.	18.079°S, 178.366°E
17	Viti Levu	Vuda	1 km SW Vaturu Dam, 620 m.	17.754°S, 177.665°E
18	Viti Levu	Sigatoka	Sigatoka Sand Dunes National Park, coastal forest, 30 m.	18.167°S, 177.500°E
19	Viti Levu	Naitasiri	Bakobalevu Logging Road.	—
20	Viti Levu	Naitasiri	3.3 km N Veisari, logging road to Waivudava, 300 m.	18.059°S, 178.367°E
21	Viti Levu	Vuda	Koroyanitu Eco Park, Mt. Evan's range, 0.5 km N. Abaca Village, 800 m.	17.867°S, 177.550°E
22	Viti Levu	Vuda	Koroyanitu Eco Park, Mt. Evan's range, 1 km E. Abaca Village, 800 m.	17.667°S, 177.550°E
23	Vanua Levu	Bua	Kilaka, 412 m.	16.811°S, 178.984°E
24	Vanua Levu	Bua	Kilaka, 146 m.	16.813°S, 178.986°E
25	Vanua Levu	Bua	6 km NW Kilaka, 98 m.	16.807°S, 178.991°E
26	Vanua Levu	Macuata	0.6 km S Rokosalase Village, forest, 180 m.	16.533°S, 179.018°E
27	Vanua Levu	Macuata	Rokosalase, forest, 105 m.	16.532°S, 179.019°E
28	Vanua Levu	Macuata	Dogotuki, 2.5 km E Nasavu River, 226 m.	16.252°S, 179.783°E
29	Vanua Levu	Macuata	0.5 km S Rokosalase Village, 97 m.	16.532°S, 179.010°E
30	Vanua Levu	Macuata	0.3 km S Rokosalase Village, 94 m.	16.531°S, 179.019°E
31	Vanua Levu	Macuata	0.4 km S Rokosalase Village, forest, 118 m.	16.532°S, 179.019°E
32	Vanua Levu	Bua	6 km NW Kilaka, Batigere Range, 146 m.	16.815°S, 178.985°E
33	Vanua Levu	Bua	6 km NW Kilaka, Batigere Range, 98 m.	16.807°S, 178.991°E
34	Vanua Levu	Bua	6 km NW Kilaka, 113 m.	16.732°S, 178.999°E
35	Taveuni Island	Cakaudrove	3.2 km NW Lavena Village, Mt. Koronibuabua, 229 m.	16.856°S,179.889°W
36	Taveuni Island	Cakaudrove	Devo Peak Radio Tower, rain forest, 1200 m.	16.850°S, 179.967°E
37	Taveuni Island	Cakaudrove	Devo Forest Reserve, 800 m.	16.833°S, 179.983°E
38	Taveuni Island	Cakaudrove	5.5 km SE Tavuki Village, rainforest, 1188 m.	16.843°S,179.955°W
39	Taveuni Island	Cakaudrove	5.6 km SE Tavuki Village, rainforest, 1187 m.	16.843°S,179.955°W
40	Taveuni Island	Cakaudrove	Lavena, 213 m.	16.855°S,179.889°W
41	Taveuni Island	Cakaudrove	Mt. Koronibuabua, 3.2 km NW Lavena, 234 m.	16.855°S,179.891°W
42	Taveuni Island	Cakaudrove	Koronibuabua, rainforest, 233 m.	16.858°S,179.895°W
43	Taveuni Island	Cakaudrove	Lavena, 212 m.	16.855°S,179.889°W
44	Taveuni Island	Cakaudrove	Soqulu House in Soqulu Estate, 140 m.	16.833°S,180.000°W
45	Taveuni Island	Cakaudrove	5.3 km SE Tavuki, Davo Peak, 1064 m.	16.843°S, 179.958°E
46	Kadavu Island	Kadavu	0.25 km SW Solodamu Village, Moanakaka Bird Sanctuary, 50m.	19.078°S, 178.121°E
47	Kadavu Island	Kadavu	Solodamu, coastal limestone forest, 128 m.	19.067°S, 178.117°E

drawings were produced using a pencil on plain white A4 paper sheets using a drawing tube mounted on a Leitz Ortholux II. After the drawings were completed the abdomens were returned to the alcohol vial with the rest of the animal. Each pencil illustration was digitalized in a scanner at low resolution and thereafter used as a background layer in Adobe© Photoshop© 8.0. The illustrations were completed after being re-drawn on a new layer using a Wacom drawing pad before the background layer was deleted.

The records were plotted on a map modified from Wetlands International (http://www.wetlands.org) using the iMap©2 software. The nomenclature applied to the genitalic morphology follows that of Johanson & Espeland (2010) and Oláh & Johanson (2008). Specimens in this study are deposited in the following repositories:

BPBM Bernice P. Bishop Museum, Honolulu, Hawai'i, U.S.A.
FNIC Fiji National Insect Collection, Suva, Fiji (currently held at BPBM)
MCZ Museum of Comparative Zoology, Harvard University, Cambridge, U.S.A.
NHM The Natural History Museum, London, U.K.
NHRS Swedish Museum of Natural History, Stockholm, Sweden

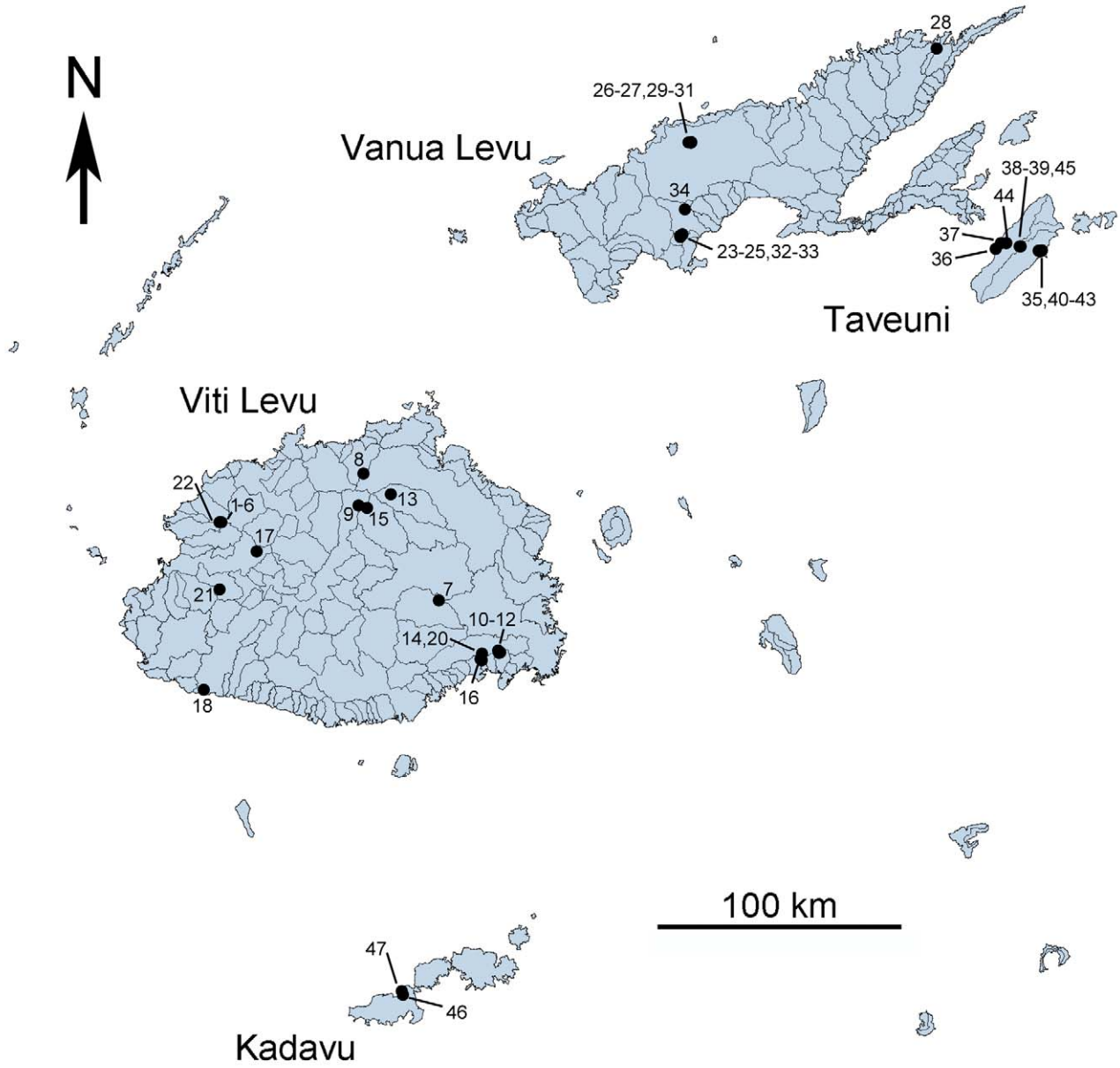


FIGURE 1. Map of main Fijian Islands showing localities where Trichoptera material has been collected in the Terrestrial Arthropod Survey of Fiji project funded by the US National Science Foundation and the Schlinger Foundation. The map is modified from Wetlands International (http://www.wetlands.org). Explanation of locality numbers is given in Table 1.

Systematics

Key to Fijian Trichoptera families (adults) and Philopotamidae species (males)

1 Forewings shorter than 4.0 mm, narrow, pointed apically (figs. 6–10 in Marshall (1979)); antennae shorter than forewings; thorax with mesoscutellum pointed posteriorly (fig. 83 in Marshall (1979)) . . . . . Hydroptilidae (1 species: *Oxyethira fijiensis* Kelley, 1989).

- Forewings longer than 4.0 mm, broad, rounded apically (Fig. 5); antennae as long as forewings or longer; thorax with mesoscutellum rounded or nearly straight posteriorly (figs. 53–54 in Marshall (1979)) 2

2(1') Ocelli present. 3

- Ocelli absent 4

3(2) Maxillary palps each with segment 2 swollen mesally and with apical segment flexible, distinctly longer than previous segment . . . . . Philopotamidae (*Chimarra*, 27 species) ...8

- Maxillary palps each with segment 2 cylindrical and with apical segment not flexible, about as long as previous segment . . . . . Hydrobiosidae (*Apsilochorema*, 3 species).

4(2') Maxillary palps each with apical segment flexible, distinctly longer than previous segment 5

- Maxillary palps each with apical segment not flexible, about as long as previous segment 6

5(4) Forelegs each with 2 spurs (preapical spur absent); thorax without mesonotal setal warts . . . . . Hydropsychidae (*Abacaria*, 9 species).

- Forelegs each with 3 spurs (preapical spur present); thorax with pair of mesonotal setal warts . . . . . Polycentropodidae (*Polyplectropus*, 8 species).

6(4') Antennae each with scape distinctly longer than head; thorax with pair of distinct mesonotal setal warts, setae never in longitudinal rows . . . . . Goeridae (*Goera*, 3 species).

- Antennae each with scape shorter or about as long as head; thorax without mesonotal setal warts, setae always in pair of longitudinal rows 7

7(6') Maxillary palps each 6-segmented; forewings less than 3x longer than broad. . . Calamoceratidae (*Anisocentropus*, 5 species)

- Maxillary palps 5-segmented; forewings more than 3x longer than broad. . . . . Leptoceridae (*Oecetis*, 1 species; *Triaenodes*, 3 species; *Triplectides*, 1 species)

8(3) Hind wings each with centrally located, large, pale hyaline spot (Figs. 10–13) 9

- Hind wings without large pale, hyaline spots (Figs. 6–7) 14

9(8) In genitalia, gonopods short, length about as long as high in lateral view (Fig. 50). . . . . *C. schlingeri*, new species.

- In genitalia, gonopods more elongate, longer than high in lateral view (cf. Figs. 60, 65, 70) 10

10(9') In genitalia, ventral branch of each gonopod more than 2x longer than wide in lateral view (Fig. 60) *C. braueri*, new species.

- In genitalia, ventral branch of each gonopod not as long as wide in lateral view (Figs. 45, 65) 11

11(10') In genitalia, gonopods widest at mid-length in lateral view (Fig. 70) . . . . . *C. karoyanitensis*, new species.

- In genitalia, gonopods widest beyond mid-length in lateral view (Figs. 45, 55, 65) 12

12(11') In genitalia, dorsal branch of each gonopod forming ventrally pointing hook in lateral view (Fig. 45) *C. signata* Banks, 1936.

- In genitalia, dorsal branch of each gonopod forming posteriorly pointing triangle in lateral view (Figs. 55, 65) 13

13(12') In genitalia, dorsal margin of each gonopod nearly straight and as darkly sclerotized as posterior margin (Fig. 55) . . . . . *C. nathani*, new species.

- In genitalia, dorsal margin of each gonopod strongly convex and more darkly sclerotized than posterior margin (Fig. 65). . . . . *C. vitiensis*, new species.

14(8') Forewings each with large, pale hyaline spot 15

- Forewings without large, pale hyaline spots 16

15(14) Forewings each with large, pale hyaline spot located immediately anterior of posterior wing margin (Fig. 6); in genitalia, tergum X with prominent dorsal process on each lateral branch (Fig. 35) . . . . . *C. vanuensis*, new species.

- Forewings each with large, pale hyaline spot located centrally in wings (Fig. 7); in genitalia, tergum X without dorsal processes (Fig. 40) . . . . . *C. macuatensis*, new species.

16(14') In genitalia, phallic apparatus without endothecal processes; phallotremal sclerite more than 2x longer than width of narrowest part of phallotheca (Figs. 79, 84, 89) 17

- In genitalia, phallic apparatus with 1 or 2 pairs of endothecal processes; phallotremal sclerite less than 2x longer than width of narrowest part of phallotheca, or not discernable (Figs. 139, 170). 19

17(16) In genitalia, gonopods acute apically in lateral view (Fig. 75); phallotremal sclerite more than 1/2 as long as phallotheca (Fig. 79) . . . . . *C. tokotaai*, new species.

- In genitalia, gonopods rounded apically in lateral view (Figs. 80, 85); phallotremal sclerite much less than 1/2 as long as phallotheca (Figs. 84, 89). 18

18(17') In genitalia, segment IX rectangular and oblique, with ventral margin much shorter than height in lateral view (Fig. 85); each posterior margin produced into large, triangular plate immediately below its cercus (Fig. 85) . . *C. naitasirensis*, new species.

- In genitalia, segment IX hyperbolic, with ventral margin subequal to height in lateral view (Fig. 80); each posterior margin without triangular plate below its cercus (Fig. 80) . . . . . *C. vuda*, new species.

19(16') In genitalia, phallic apparatus with 2 pairs of endothecal processes (Fig. 138) 20

- In genitalia, phallic apparatus with 1 pair of endothecal processes (Fig. 169) 23

20(19) In genitalia, each lateral branch of tergum X with dorsal, rounded process (Figs. 105, 111) 21

- In genitalia, each lateral branch of tergum X with dorsal, hook-shaped process (Figs. 134, 139) 22

21(20) In genitalia, anteroventral portion of segment IX rectangular in lateral view (Fig. 105); in tergum X, gap between dorsal and ventral branches nearly right-angled (Fig. 105); tergum X with triangular process on lateral margin in lateral view (Fig. 105); gonopods strongly expanded ventrally at base (Fig. 105); in phallus, endothecal processes no longer than as minimum breadth of phallotheca in ventral view (Fig. 110) . . . . . *C. manni* Banks, 1924.

- In genitalia, anteroventral portion of segment IX triangular in lateral view (Fig. 111); in tergum X, gap between dorsal and ventral branches wide-angled, nearly 180 degrees (Fig. 111); tergum X without triangular process on ventral margin in lateral view (Fig. 111); gonopods only slightly expanded ventrally at base (Fig. 111); in phallus, endothecal processes longer than minimum breadth of phallotheca in ventral view (Fig. 116) . . . . . *C. cakaudrovensis*, new species.

22(20') In genitalia, each dorsal branch of tergum X with darkly sclerotized apicodorsal hook (Fig. 134); each ventral branch of tergum X reaching as far posterior as each dorsal branch (Fig. 134); phallic apparatus without spicules (Figs. 137, 138) . . . . . *C. lavensis*, new species.

- In genitalia, each dorsal branch of tergum X with weakly sclerotized subapicodorsal process (Fig. 139); each ventral branch of tergum X exceeding posteriorly each dorsal branch of tergum X (Fig. 139); phallic apparatus with group of spicules in addition to endothecal processes (Figs. 143, 144). . . . . *C. devoensis*, new species.

23(19') In genitalia, tergum X with each lateral branch uniramus (Figs. 90, 124, 155) 24

- In genitalia, tergum X with each lateral branch biramus (Figs. 95, 117, 145) 29

24(23) In genitalia, gonopods clearly reaching beyond tergum X posteriorly (Figs. 100, 155) 25

- In genitalia, gonopods reaching as far out as tergum X or shorter (Figs. 90, 150, 164) 26

25(24) In genitalia, segment IX long, with narrow anteroventral plates and straight posterior margin in lateral view (Fig. 100); each gonopod uniramus (Fig. 100) . . . . . *C. abacensis*, new species.

- In genitalia, segment IX short, with broad anteroventral plates and convex posterior margin in lateral view (Fig. 155); each gonopod with slender dorsal branch and rounded ventral branch (Fig. 155) . . . . . *C. psychodida*, new species.

26(24') In genitalia, gonopods about as long as broad in lateral view (Fig. 90) . . . . . *C. veisarensis*, new species.

- In genitalia, gonopods much shorter than broad in lateral view (Fig. 124, 165, 170) 27

27(26') In genitalia, distal part of each gonopod almost straight (Figs. 124, 170) 33

- In genitalia, distal part of each gonopod curved posterad in lateral view (Figs. 150, 165) 28

28(27') In genitalia, segment IX with slightly concave to straight posterior margin (Fig. 150); tergum X short, not reaching beyond gonopods in lateral view (Fig. 150); each lateral branch of tergum X with lateral subapical process (Fig. 151); gonopods each with rounded ventral branch in lateral view (Fig. 150) . . . . . *C. tipulida*, new species.

- In genitalia, segment IX with slightly convex posterior margin (Fig. 165); tergum X long, reaching well beyond gonopods in lateral view (Fig. 165); tergum X without lateral processes (Fig. 166); gonopods each with nearly rectangular ventral branch in lateral view (Fig. 165) . . . . . *C. malickyi*, new species.

29(23') In genitalia, gonopods broad, nearly triangular in lateral view (Fig. 117) . . . . . *C. cartwrighti*, new species.

- In genitalia, gonopods narrow, each with nearly parallel-sided dorsal branch (Figs. 95, 129, 145, 160) 30

30(29') In genitalia, tergum X with ventral branches produced posterad beyond dorsal branches (Figs. 95, 145) 31

- In genitalia, tergum X with ventral branches not produced posterad beyond dorsal branches (Figs. 129, 160) 32

31(30) In genitalia, apex of each dorsal and ventral branch of each gonopod parallel-sided and bent posterad *C. fijiana*, new species.

- In genitalia, apex of dorsal branch of each gonopod straight; dorsal branch nearly parallel-sided, ventral branch irregular (Fig. 145) . . . . . *C. helomyzida*, new species.

32(30') In genitalia, gonopods longer than segment IX in lateral view, slightly curved posterad along their length (Fig. 129); distal 1/2 of tergum X narrower than distal 3rd of gonopods in lateral view (Fig. 129) . . . . . *C. kadavuensis*, new species.

- In genitalia, gonopods shorter than segment IX in lateral view, strongly curved into 1/2-circle (Fig. 160); tergum X broader than distal 3rd of gonopods in lateral view (Fig. 160) . . . . . *C. levuensis*, new species.

33(27) In genitalia, posterolateral margins of segment IX each with posterior, setose lobe above its gonopod in lateral view (Fig. 124); gonopods each narrowing at 1/2-length into parallel-sided dorsal branch and with rounded ventral branch in lateral view (Fig. 124); tergum X with convex dorsal margin in lateral view (Fig. 124), divided into lateral processes in dorsal view (Fig. 125). . . . . *C. kimminsi*, new species.

- In genitalia, posterolateral margins of segment IX without posterior, setose lobes in lateral view (Fig. 170); gonopods each with dorsal branch narrowing distally along its full length and with ventral branch short, triangular in lateral view (Fig. 170); tergum X with stepped, concave dorsal margin in lateral view (Fig. 170), without lateral processes in dorsal view (Fig. 171) . . . . . *C. obscurella* Banks, 1924.

Philopotamidae Stephens, 1829

Type genus: *Philopotamus* Stephens, 1829: 317.

Chimarra Stephens, 1829

Type species: *Phryganea marginata* Linnaeus, 1767: 910.

With 657 species (Johanson *et al.*, 2011), the genus *Chimarra* is the 2nd largest in the order Trichoptera, surpassed only by *Rhyacophila* Pictet, 1834 (Rhyacophilidae Stephens, 1836). The genus is cosmopolitan in distribution, but, with 230 species, the highest species diversity is in the Neotropical Region. Seventy-five percent of the species of the Australian region are restricted to New Guinea and Australia (Johanson *et al.*, 2011). Eleven species are so far recorded from the Solomon Islands (Johanson & Espeland 2010), and 1 species (*C. hienghene* Malicky, 1981) is known from New Caledonia (Malicky 1981, Johanson & Espeland 2010). Three species are known from Vanuatu (Johanson *et al.*, 2011). The genus has not been recorded from New Zealand.

FIGURE 2. Holotype of *Chimarra fijiana*, **new species**, body, left lateral view.

Chimarra nervosa (Brauer), *nomen dubium*

Wormaldia nervosa Brauer, 1867: 506.
Chimarrha nervosa (Brauer, 1867); Ulmer, 1905: 91.

As explained above, the type material of this species probably has been destroyed. The original description of the species fits several species of *Chimarra* from Fiji. The name is therefore considered a *nomen dubium*.

Chimarra vanuensis, new species
Figs. 6, 35–39

This species can be separated from all other Fijian *Chimarra* by the presence of a large, pale hyaline spot at mid-length in the forewings, located immediately anterior to the posterior wing margin. The genitalia, particularly tergum X, resembles those of *C. devoensis* and *C. lavensis* in the presence of a strongly dorsad-oriented dorsal branch. In *C. vanuensis* the ventral branch of tergum X is much longer than the dorsal branch, while in *C. lavensis* the ventral branch is shorter than the dorsal branch. The gonopods of *C. vanuensis* are shorter than segment IX, while in *C. devoensis* and *C. lavensis* the gonopods are longer than segment IX. The phallic apparatus of *C. vanuensis* has 2 endothecal spines, while those of *C. devoensis* and *C. lavensis* each have 4 endothecal spines.

Male. Head and thorax brown, dorsal part of meso- and metathorax dark brown. Area between ocelli nearly black. Foreleg anterior claw as long as foreleg spur.

FIGURE 3. Holotype of *Chimarra tokotaai*, **new species**, head, dorsal view.

FIGURE 4. Holotype of *Chimarra cartwrighti*, **new species**, right foreleg tarsus, posterior view.

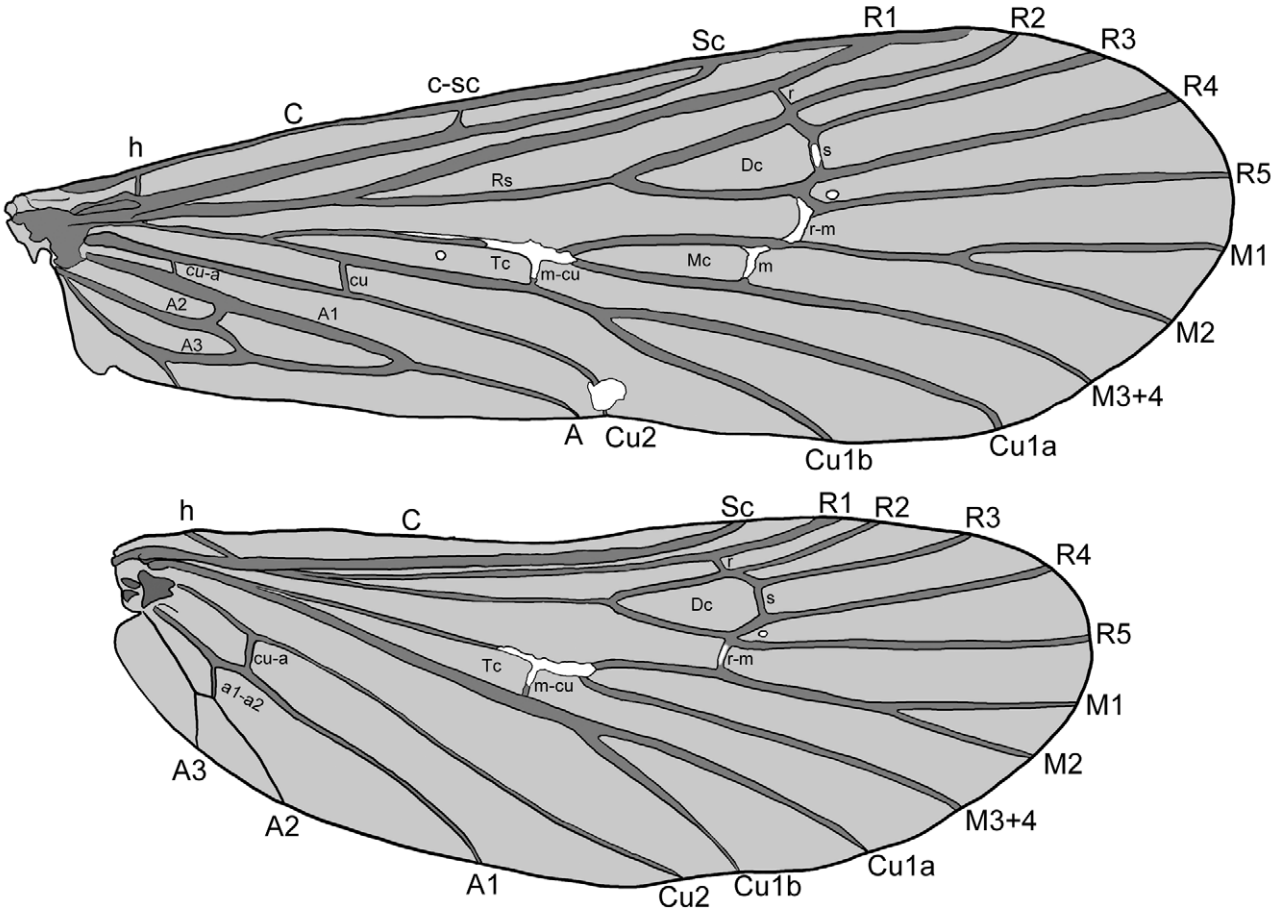
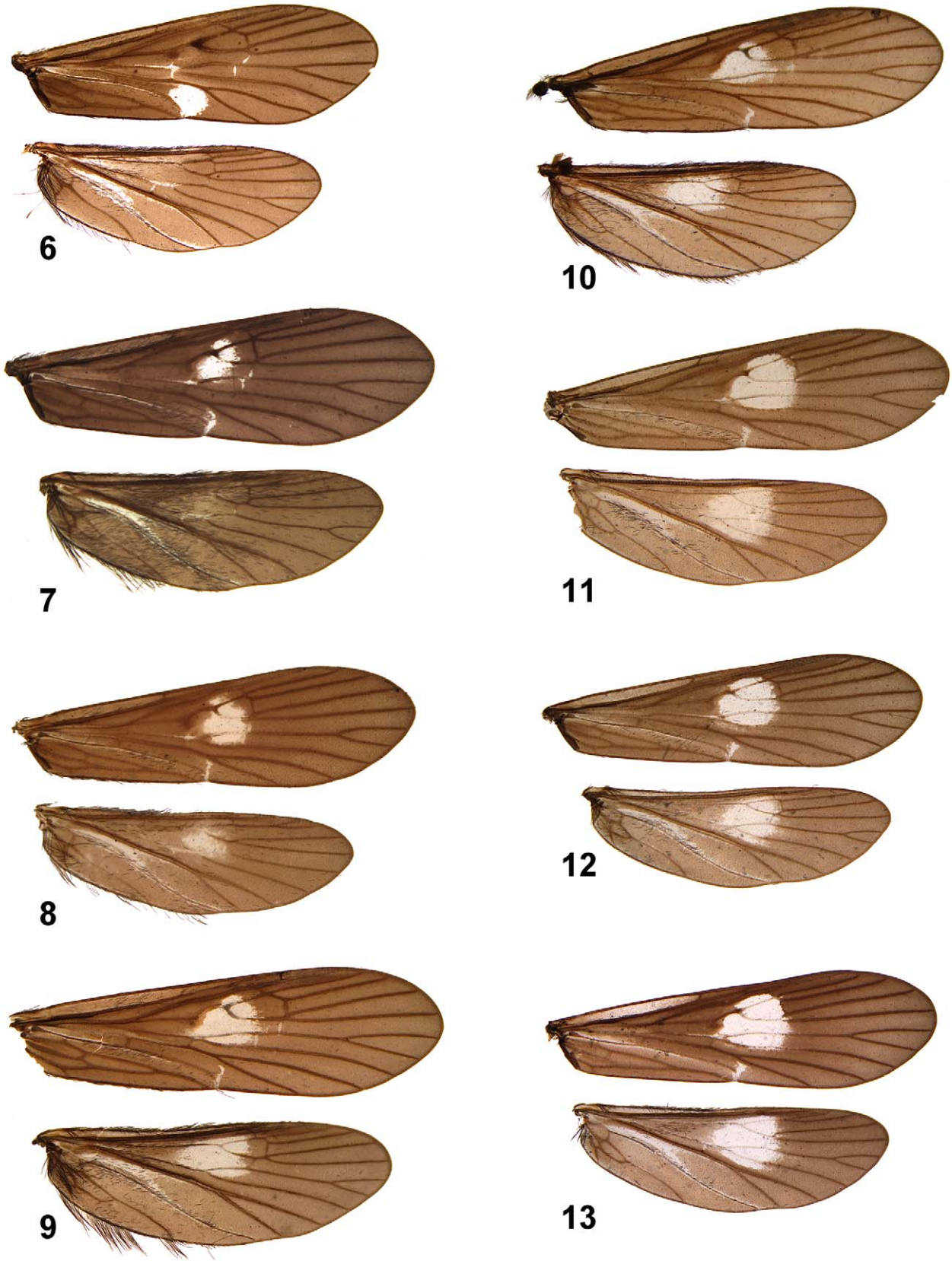


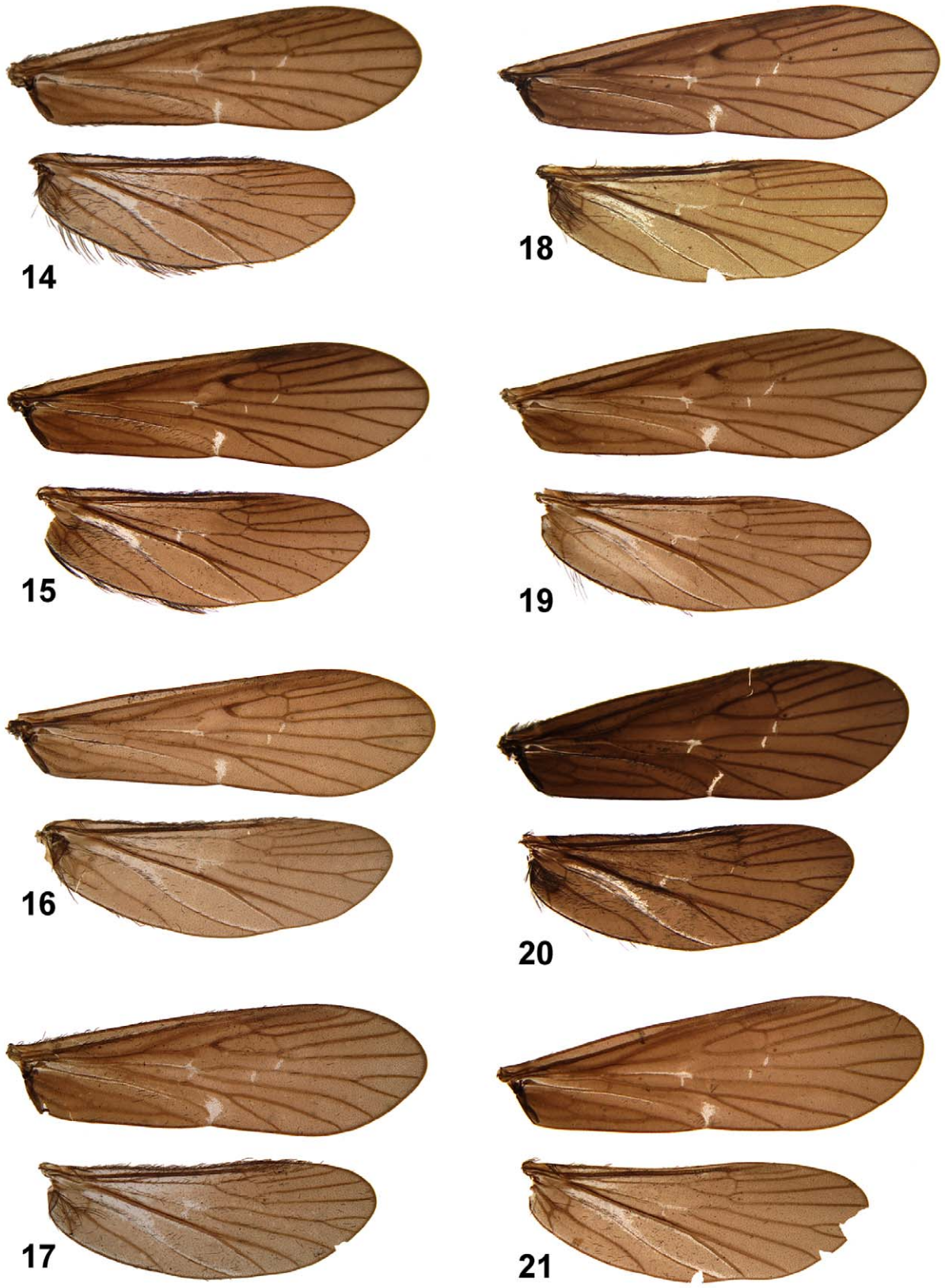
FIGURE 5. Holotype of *Chimarra kimminsi*, **new species**, right wings, dorsal view. Abbreviations mainly following the Comstock-Needham (1898) system: C = costa, Sc = subcosta, h = humeral crossvein, c–sc = costa-subcosta crossvein, R1 = radius 1, R2 = radius 2, R3 = radius 3, R4 = radius 4, R5 = radius 5, r = radial crossvein, Rs = radial sector, Dc = discoidal cell, s = sectoral crossvein, M1 = media 1, M2 = media 2, M3+4 = media 3+4, rm = radial-median crossvein, Mc = median cell, m = median crossvein, Tc = thyridial cell, Cu1a = anterior branch of cubitus 1, Cu1b = posterior branch of cubitus 1, Cu2 = cubitus 2, cu = cubital crossvein, A = anal vein, A1 = anal vein 1, A2 = anal vein 2, A3 = anal vein 3, cu-a = cubital-anal crossvein.

Wings (Fig. 6). Forewings 5.4–5.6 mm (n=2), brown, with large, nearly round, pale hyaline spot between Cu1 and end of Cu2, immediately above posterior wing margin. Forewings broad, ratio of length to breadth 3.0; R1 slightly curved before crossvein r; radial sector slightly produced anterad immediately before discoidal cell; discoidal cell originating at mid-length of wing, about 3x longer than wide; median cell slightly longer than discoidal cell; crossvein r originating from base of fork I; fork I originating before crossvein s at distance equal to length of crossvein s; nygma located near base of fork II; fork III nearly 1/4th as long as wing; fork V slightly shorter than fork II; Cu2 ending in wing margin close to A. Hind wings 4.3–4.5 mm (n=2), brown, without pale, hyaline spot; ratio of length to breadth 2.9; margin weakly incurved at arculus, where Cu1b and Cu2 fused with margin; fork I originating slightly before anterodistal corner of discoidal cell; fork III 1.5x longer than discoidal cell and 1/6th as long as wing; fork V as long as fork I; 1A+2A about 3x as long as 1A.

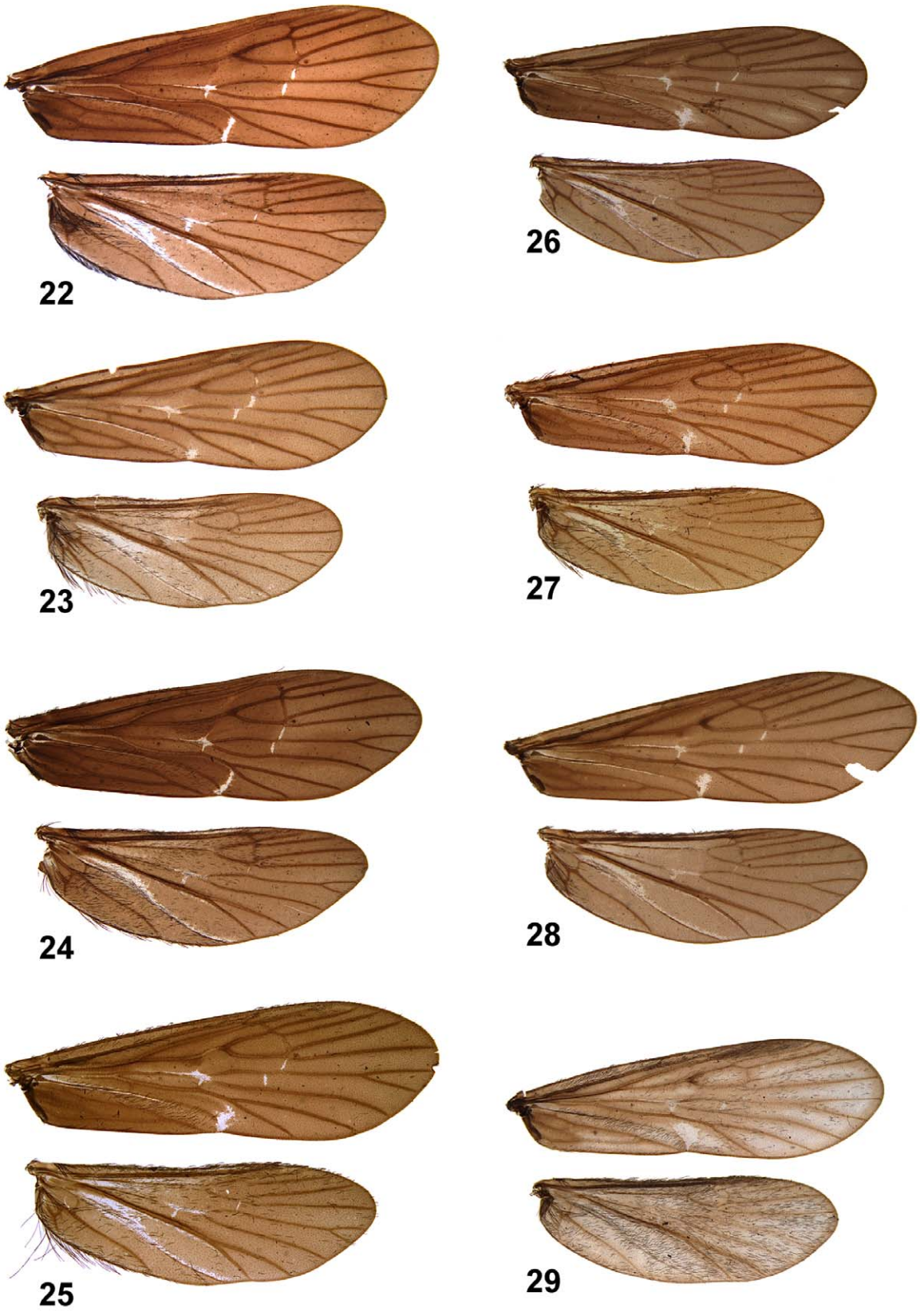
Male genitalia (Figs. 35–39). Segment IX nearly as high as long in lateral view; each side anteroventrally produced into large, hyperbolic, anterad oriented plate; anterodorsal projection small, sharply triangular and projecting anterad in lateral view, rounded triangular in dorsal view; anterodorsal margin narrowly and deeply concave; ventral margin irregularly convex; venter not produced anterad in lateral view; posterolateral margins each produced posterad into, broad, rounded triangular plate; segment IX ventrally with setae restricted to posterior 1/2 (Fig. 37). Dorsal part of segment IX short in lateral view; anterior margin elliptically concave in dorsal view. In ventral view segment IX with almost parallel lateral margins, slightly expanded at mid-length; anterior and posterior margins both shallowly concave; without central projection posteriorly. Tergum X long, divided at base into pair of lateral,



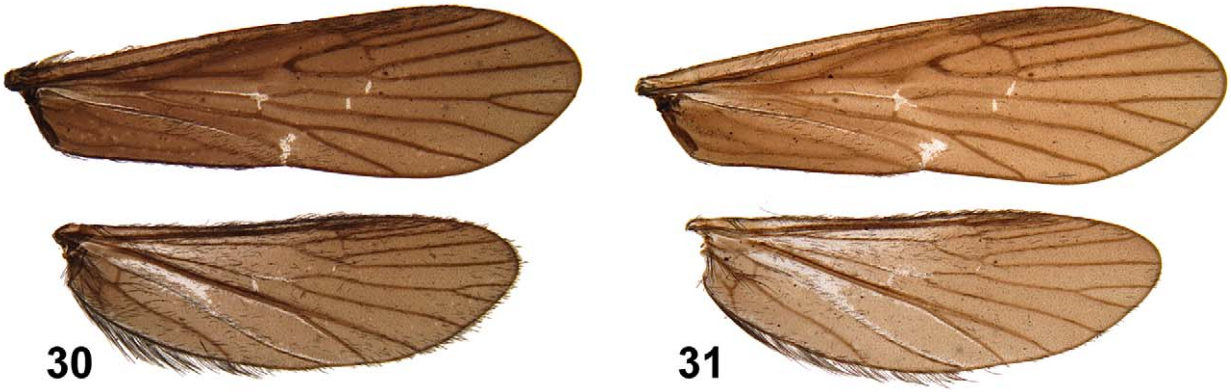
FIGURES 6–13. Right wings, dorsal views. **6**—*C. vanuensis*, **new species**, holotype; **7**—*C. macuatensis*, **new species**, holotype; **8**—*C. signata* Banks, 1936, non-type; **9**—*C. schlingeri*, **new species**, holotype; **10**—*C. nathani*, **new species**, holotype; **11**—*C. braueri*, **new species**, holotype; **12**—*C. vitiensis*, **new species**, holotype; **13**—*C. karoyanitensis*, **new species**, holotype.



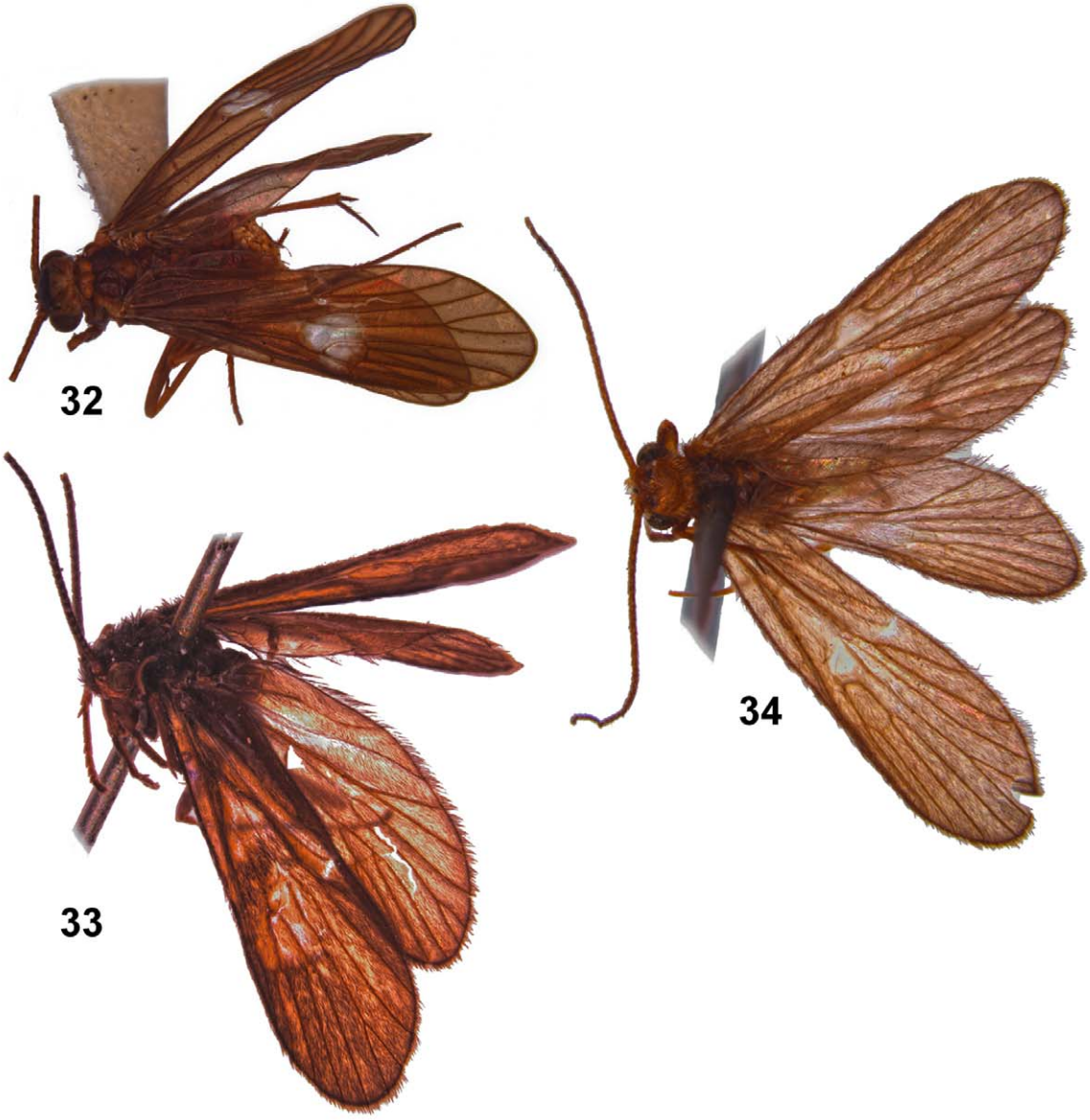
FIGURES 14–21. Right wings, dorsal views. **14**—*C. tokotaai*, **new species**, holotype; **15**—*C. vuda*, **new species**, holotype; **16**—*C. naitasirensis*, **new species**, holotype; **17**—*C. veisarensis*, **new species**, holotype; **18**—*C. fijiana*, **new species**, holotype; **19**—*C. abacensis*, **new species**, holotype; **20**—*C. manni* Banks, non-type; **21**—*C. cakaudrovensis*, **new species**, holotype.



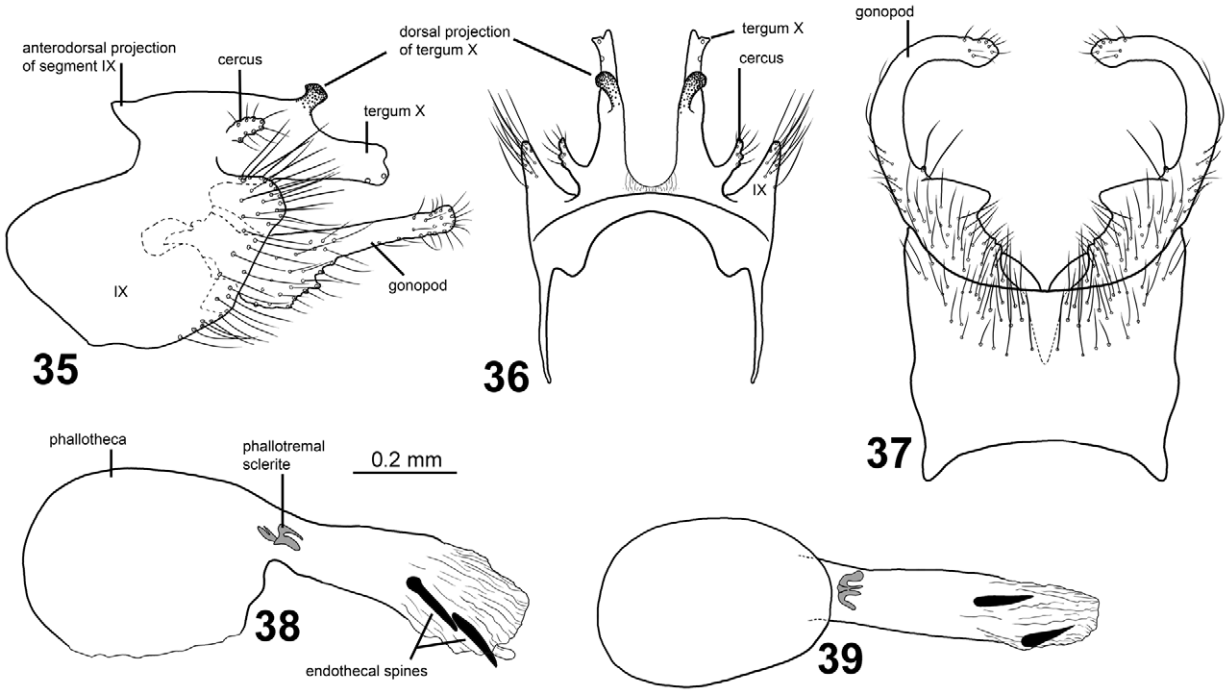
FIGURES 22–29. Right wings, dorsal views. **22**—*C. cartwrighti*, **new species**, holotype; **23**—*C. kimminsi*, **new species**, holotype; **24**—*C. kadavuensis*, **new species**, holotype; **25**—*C. lavensis*, **new species**, holotype; **26**—*C. devoensis*, **new species**, holotype; **27**—*C. helomyzida*, **new species**, holotype; **28**—*C. tipulida*, **new species**, holotype; **29**—*C. psychodida*, **new species**, holotype.



FIGURES 30–31. Right wings, dorsal views. **30**—*C. levuensis*, **new species**, holotype; **31**—*C. malickyi*, **new species**, holotype.



FIGURES 32–34. Type specimens of *Chimarra* described by Banks. **32**—*C. signata* Banks, 1936, holotype; **33**—*C. manni* Banks, 1924, lectotype; **34**—*C. obscurella* Banks, 1924, holotype.



FIGURES 35–39. *Chimarra vanuensis*, **new species**, holotype. **35**—genitalia, left lateral view; **36**—genitalia, dorsal view; **37**—genitalia, ventral view; **38**—phallic apparatus, left lateral view; **39**—phallic apparatus, ventral view.

nearly parallel branches; in lateral view each lateral branch with dorsad and laterad oriented, dark, apically dilated dorsal projection, and very long plate-like, nearly straight ventral branch with 2 apical sensillae. In dorsal and ventral views, dorsal projections curved slightly laterad, ventral processes narrow, each with slightly bifid apex. Cerci large, digitate, located at mid-height basally on tergum X; tube-shaped, oriented posterad; covered by long setae. Gonopods shorter than segment IX; with basal 1/3rd broad and distal 2/3rds narrow in lateral view; distal 2/3rds nearly parallel-sided; without mesal process, but with mesad projected mesal margin in ventral view. Anterodorsal margin of each gonopod straight, smooth; posteroventral margin of basal 1/2 with expanded setal bases, distal 1/2 with normal setal bases; ventral margin convex at basal 1/3rd; apex without megasetae. In ventral view, gonopods slightly broader in basal 1/3rd than distal 2/3rds, without strongly undulating margins; gonopods strongly curved mesad from mid-length. Phallic apparatus about as long as rest of genitalia, straight along its length; phallotheca, in lateral view nearly 3x thicker than posterior part; in ventral view about 2.5x thicker than posterior part; apicoventral spine absent; phallotremal sclerite small, complex in lateral view; in ventral view forming single anterior plate with 4 posterad directed rays; 2, nearly black, short, variously directed endothecal spines present, about as long as diameter of narrowest part of phallotheca; endothecal spicules absent.

Female. Unknown.

Holotype male: VANUA LEVU: Macuata Prov., 0.6 km S Rokosalase Village, Malaise trap in forest, 23.iv–8.v.2004, 16.5333°S, 179.0181°E, 180 m, leg. E. Schlinger & M. Tokota'a [loc#26] [FNIC].

Paratype: VANUA LEVU: 0.5 km S Rokosalase Village, Malaise trap 3, 27.xii.2004–5.i.2005, 16.532°S, 179.010°E, 97 m, leg. I. Sakealevu [loc#29] — 1 male [NHRS].

Distribution: *Vanua Levu.*

Etymology: *Vanuensis*, after Vanua Levu, the type locality of the species.

Chimarra macuatensis, new species

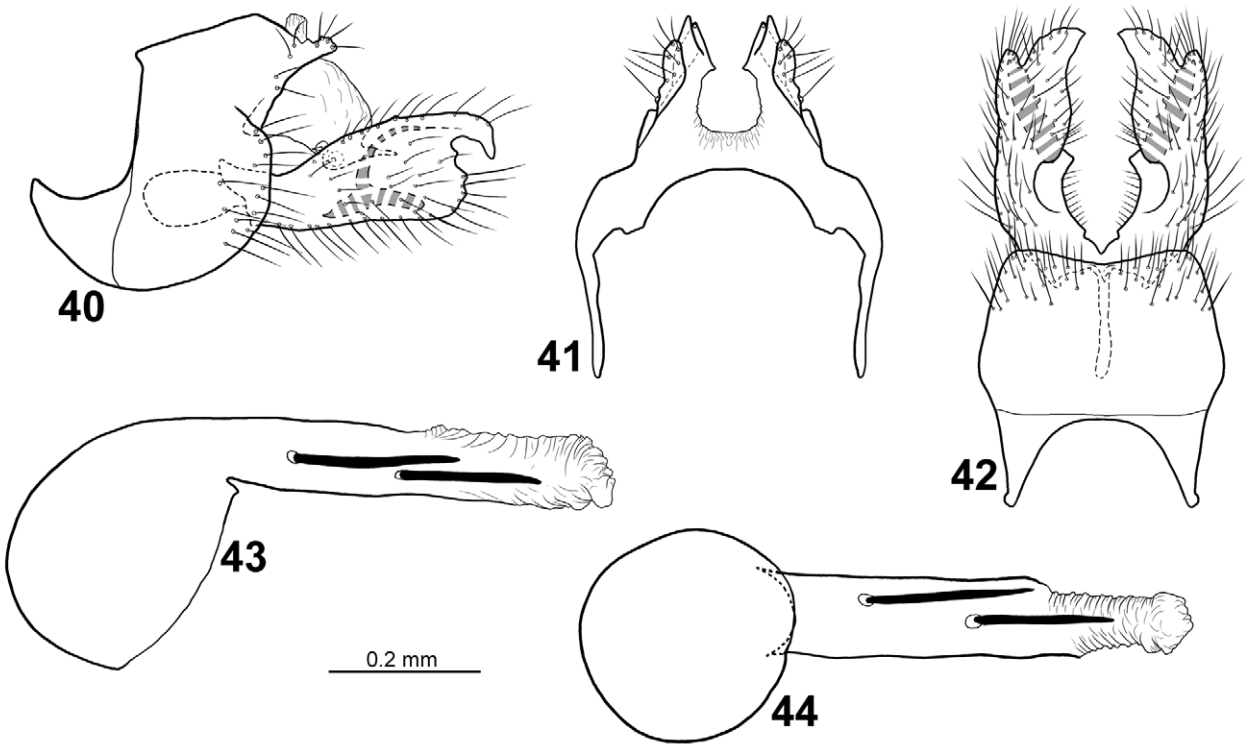
Figs. 7, 40–44

Chimarra macuatensis resembles *C. schlingeri*, *C. karoyanitensis*, and *C. signata* in having gonopods with a long, slender, ventrally hooked dorsal process. It is most similar to *C. karoyanitensis* in the overall shapes of segment IX,

tergum X, the gonopods, and the phallic apparatus. It is distinguished from *C. karoyanitensis* in that the gonopods are broadest well beyond mid-length, as far out as the origin of the dorsal branch; in that the ventral branch of each gonopod does not exceed the dorsal branch; in that the ventral branches of tergum X are shorter; and in that the anterodorsal lobes of segment IX are pointed in lateral view. It is distinguished from *C. schlingeri* by having gonopods that are clearly longer than broad. It is distinguished from *C. signata* in that the ventral branch of each gonopod does not exceed beyond the dorsal branch, and in that the dorsal branch of each gonopod is small relative to the ventral branch.

Male. Body pale brown, dorsal part of meso- and metathorax brown. Large dark area between lateral and anterior ocelli. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 7). Forewings 4.9 mm (n=1), dark brown; large pale membranous area located distantly of crossvein r-m, in basal 1/2 of discoidal cell, and immediately anteriorly of basal part of discoidal cell; forewings relatively narrow, ratio of length to breadth about 3.1; R1 nearly sigmoid before crossvein r; radial sector produced anterad immediately before discoidal cell; discoidal cell originating at mid-length of wing, 2x longer than wide; median cell as long as discoidal cell; crossvein r situated at base of fork I; fork I originating at crossvein s; nygma located slightly distant from base of fork II; fork III 1/5th as long as wing; fork V about as long as fork I, shorter than fork II; Cu2 nearly fusing with A at wing margin. Hind wings 4.0 mm (n=1), dark brown, without pale hyaline spots; broad, ratio of length to breadth 2.9; margin slightly incurved at arculus, where Cu1b and Cu2 fused with margin; fork I with short stalk as long as discoidal cell; fork III as long as discoidal cell and 1/9th as long as wing; fork V slightly longer than fork I; 1A+2A nearly 2x longer than 1A.



FIGURES 40–44. *Chimarra macuatensis*, **new species**, holotype. **40**—genitalia, left, lateral view; **41**—genitalia, dorsal view; **42**—genitalia, ventral view; **43**—phallic apparatus, left lateral view; **44**—phallic apparatus, ventral view.

Male genitalia (Figs. 40–44). Segment IX slightly taller than long, nearly J-shaped in lateral view; anterior plates large, thorn-shaped, curved dorsad at apex; posterior 1/2 of segment expanded dorsally; each anterodorsal margin deeply concave in lateral view; each ventral margin strongly convex, without incision at vertical apodeme; each posterior margin strongly convex, smooth. In dorsal view segment IX with long, slender anterior lobes; anterodorsal margin forming wide, U-shaped incision; each side with short, rectangular, anterad-orienting process on posteromesal margin. In ventral view segment IX nearly diamond-shaped, narrow before anterior 1/3rd; anterior

margin widely and deeply concave; posterior margin shallowly concave, without central projection. Tergum X divided into dorsal and ventral branches, surrounding phallic apparatus. Tergum X with slightly convex, membranous dorsal margin in lateral view; dorsal branches short, rounded; in dorsal view each lateral branch separate at base. Pair of ventral branches of tergum X smooth, except pair of sensillae on each side, near ventral margin; narrowing apically in lateral view and oriented posterad; in dorsal view oriented slightly laterad, broad. Cerci located at dorsal margin of segment IX; straight, oriented posterodorsad in lateral view; covered by long setae. Gonopods slightly widening distally, about as long as segment IX; dorsal margin slightly convex, ventral margin nearly straight; 2-branched; clearly exceeding tergum X by length equal to breadth of gonopod. Each dorsal branch slender, longer than individual cercus, strongly curved ventrad, forming downcurved apicodorsal hook longer than apex of ventral branch; broad in ventral view, slightly curved mesad into pointed apex, lacking mesal megasetae. Ventral branch of each gonopod nearly hyperbolic in lateral view, with undulating posterior and smooth ventral margins; with irregular mesal margin in ventral view. Mesal branches absent. Phallic apparatus slightly longer than rest of genitalia, nearly straight; phallotheca, in lateral view, with anterior part nearly 4x thicker than posterior part; in ventral view anterior part nearly 3x wider than posterior part; apicoventral spine absent on phallotheca; phallotremal sclerite not observed; 2 very long, slender, nearly black endothecal spines present.

Female. Unknown.

Holotype male: VANUA LEVU: Macuata Prov., Rokosalase, Malaise trap in forest, 8–21.vi.2004, 16°31.891’S, 179°01.147’E [16.5315°S, 179.0191°E], 105 m, leg. M. Irwin, E. Schlinger & M. Tokota’a [loc#27] [FNIC].

Distribution: Vanua Levu.

Etymology: *Macuatensis*, named after the Macuata Province, the type locality of the species.

Chimarra signata Banks

Figs. 8, 32, 45–49

Chimarrha signata Banks, 1936: 35.

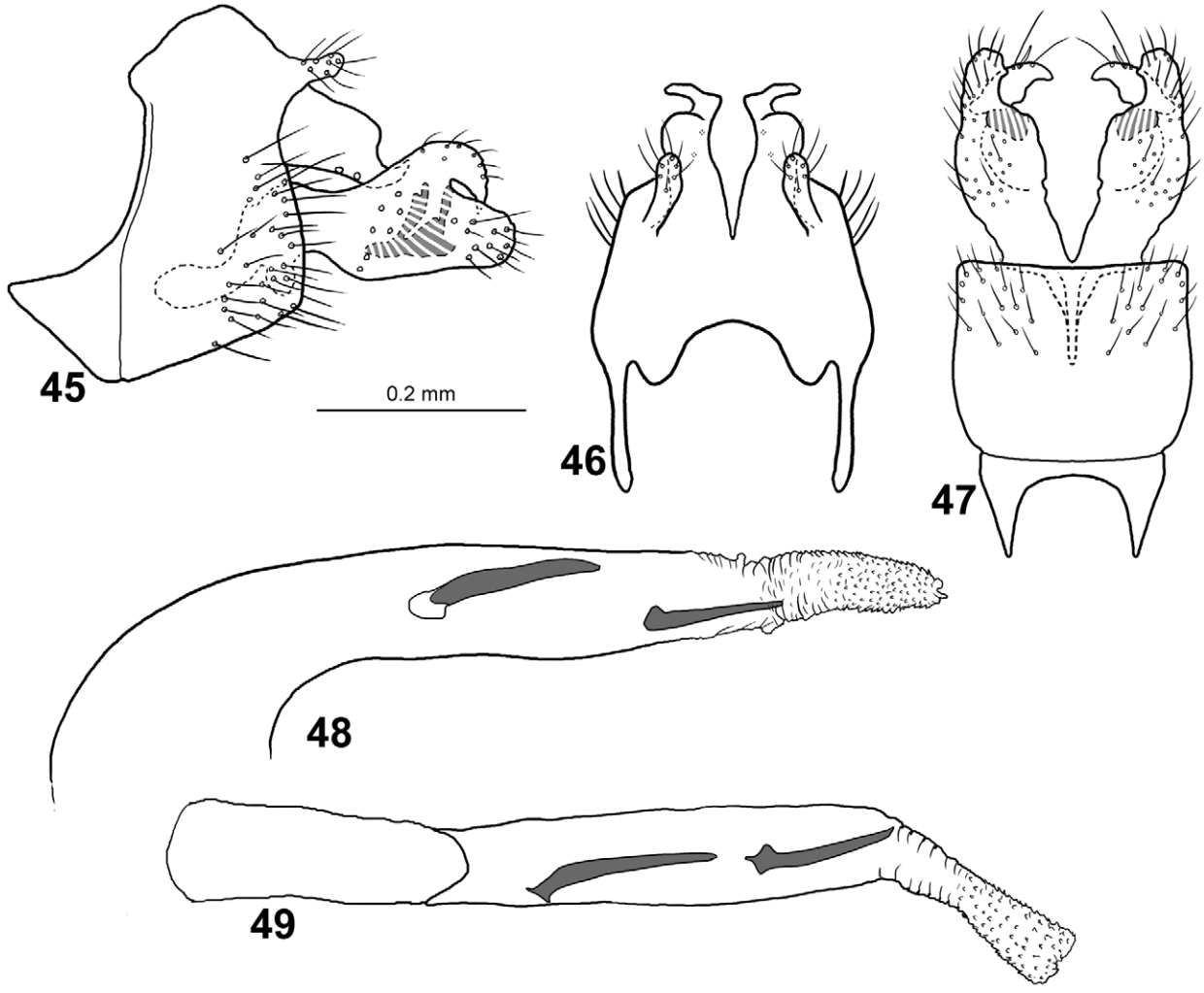
Chimarra signata resembles *C. macuatensis*, *C. schlingeri*, and *C. karoyanitensis* in having gonopods each with a long, slender, ventrally hooked dorsal process. It is most similar to *C. macuatensis* in the overall shapes of segment IX, tergum X, the gonopods, and the phallic apparatus. It is distinguished from *C. macuatensis* in that the gonopods each have a ventral branch that extends beyond the dorsal branch; and in that the gonopods are shorter than segment IX in lateral view.

Male. Body brown, dorsal part of meso and metathorax brown. Large dark area between lateral and anterior ocelli. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 8). Forewings 4.1 mm (holotype), brown; large pale membranous area located centrally in wing, basally crossvein r-m, in basal 1/2 of discoidal cell, immediately anteriorly of basal part of discoidal cell, and in median cell; forewings relatively narrow, ratio of length to breadth 3.3; R1 undulating before crossvein r; radial sector produced anterad immediately before discoidal cell; discoidal cell originating immediately after mid-length of wing, 2x longer than wide; median cell slightly longer than discoidal cell; crossvein r situated at base of R2; fork I originating at shortly before crossvein s at a distance equal to 1/2 length of s; nygma located basally in fork II; fork III 1/6th as long as wing; fork V slightly shorter than fork I, shorter than fork II; Cu2 situated distantly from A at wing margin. Hind wings 3.1 mm (holotype), brown, with large pale hyaline spot located between R and M and basally of crossvein r-m; wings broad, ratio of length to breadth 3.1; margin slightly incurved at arculus, where Cu1 and Cu2 fused with margin; fork I with stalk about as long as R3; fork III absent; fork V 1.4x longer than fork I; 1A+2A nearly 4x longer than 1A.

Male genitalia (Figs. 45–49). Segment IX clearly taller than long, nearly J-shaped in lateral view; anterior plates large, triangular, pointing anteriad at apex; dorsal part of segment slightly expanded anteriorly; each anterodorsal margin concave in lateral view, with nearly straight innermost margin (Fig. 45); each ventral margin straight after anterior lobe, with weak incision at vertical apodeme; each posterior margin slightly convex, smooth. In dorsal view segment IX with long, slender anterior lobes; anterodorsal margin forming wide, U-shaped incision; each side with short, rounded, anterad-orienting process (Fig. 46). In ventral view segment IX divided into broad poste-

rior part with parallel lateral sides; and narrower anterior part with posteriorly diverging lateral sides; anterior margin widely and deeply concave; posterior margin nearly straight, without central projection. Tergum X divided into small dorsal and large ventral branches, almost completely fused, surrounding phallic apparatus; dorsal margin of dorsal branch nearly straight in lateral view; in dorsal view each lateral branch separate at base. Pair of ventral branches of tergum X smooth, except pair of sensillae on each side near ventral margin; in lateral view narrowing apically into dorsal hook; in dorsal view each dorsal branch forming rounded, posterolaterad oriented lobe; in dorsal view, each ventral branch bent laterad before apex. Cerci located at posterodorsal margin of segment IX; straight, oriented posterad in lateral and dorsal view; covered by long setae. Gonopods widening distally from narrow basis, shorter than segment IX; dorsal margin sigmoid, concave basally, convex distally; ventral margin nearly straight. Each gonopod 2-branched; clearly exceeding tergum X by length equal to breadth of gonopod. Each dorsal branch slender, as long as individual cercus, strongly curved ventrad along its length, forming ventral hook; apex not reaching as far out as apex of ventral branch; in ventral view curved mesad into pointed apex; posterior margin with long, slender and short, stout setae; megasetae absent. Ventral branch of each gonopod oval in lateral view, with smooth posterior and ventral margins; each branch with irregular mesal margin in ventral view. Mesal branches absent. Phallic apparatus about 2x longer than rest of genitalia (with endotheca extruded), nearly straight; phallotheca, in lateral view, with anterior part thicker than posterior part; in ventral view anterior part about as wide as posterior part (probably collapsed); apicoventral spine absent on phallotheca; phallotremal sclerite not observed; 2 very long, slender, nearly black endothecal spines present.



FIGURES 45–49. *Chimarra signata* Banks, 1936, holotype. **45**—genitalia, left lateral view; **46**—genitalia, dorsal view; **47**—genitalia, ventral view; **48**—phallic apparatus, left lateral view; **49**—phallic apparatus, ventral view.

Female. Unknown.

Holotype male: "Fijis: Taviuni, Somo Somo. W. M. Mann"; "M.C.Z. Type 22047"; "Chimarrha signata type Bks". Abdomen macerated, in glycerol in micro vial on same pin as rest of animal [MCZ].

Additional material examined: TAVEUNI: Cakaudrove Prov., Lavena, Malaise trap, 4.i–11.iii.2004, 16°51.315'S, 179°53.323'W, 213 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#40] — 1 male [FNIC]. **VANUA LEVU:** Macuata Prov., Dogotuki, 2.5 km E Nasavu River, Malaise trap, 7.vii.2003, 16.2519°S, 179.7833°E, 226 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#28] — 1 male [BPBM]. Macuata Prov., Rokosalase, Malaise trap in forest, 26.iii–9.iv.2004, 16°31.891'S, 179°01.147'E [16.5315°S, 179.0192°E], 105 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#27] — 1 male [NHRS, DNA voucher IK7]. Bua Prov., 6 km NW Kilaka, Malaise trap, 15–24.vi.2004, 16.8067°S, 178.9914°E, 98 m, leg. E. Schlinger & M. Tokota'a [loc#25] — 1 male [BPBM].

Distribution: Taveuni.

Chimarra schlingeri, new species

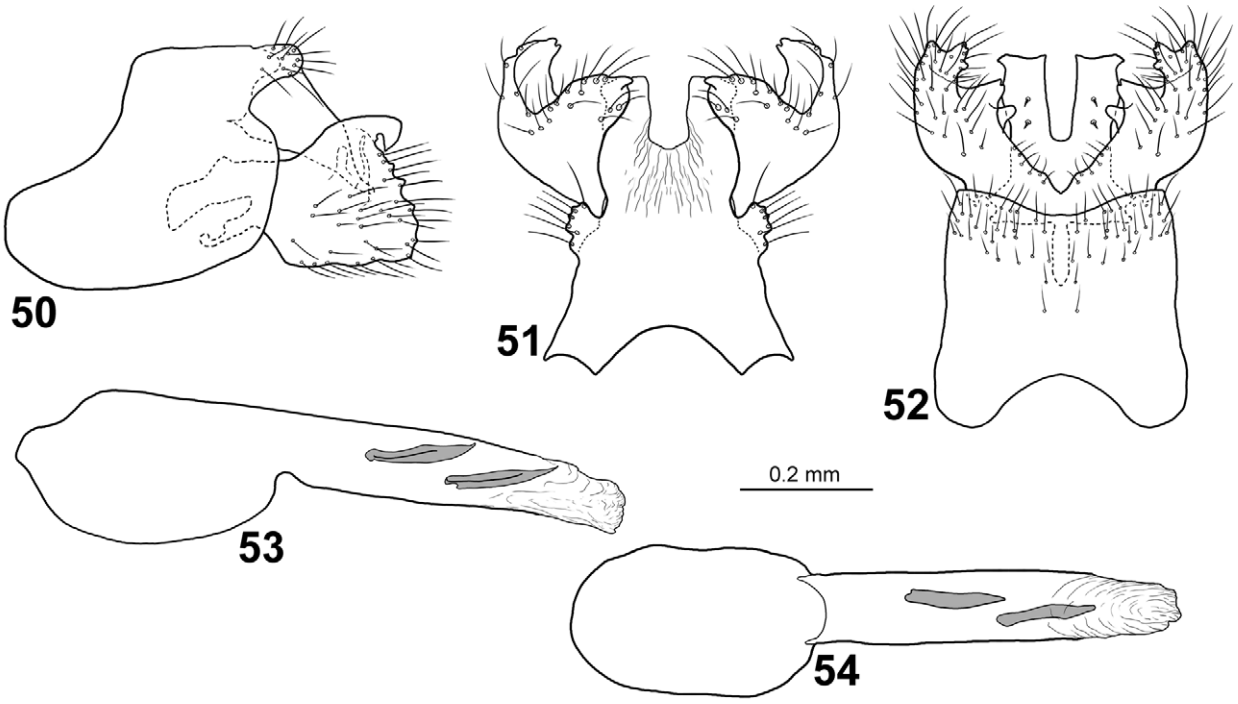
Figs. 9, 50–54

Chimarra schlingeri has gonopods each with a small but distinct dorsal branch, as in *C. signata*, *C. karoyanitensis*, *C. macuatensis*, *C. veisarensis*, *C. nathani*, *C. levuensis*, and *C. braueri*. Among these, a large transparent spot located centrally in the forewings, as in *C. schlingeri*, is also present in *C. macuatensis*, *C. signata*, *C. nathani*, *C. braueri*, and *C. vitiensis*. It is easily distinguished from all those species by having a segment IX that is longer than high in lateral view; from *C. veisarensis* and *C. levuensis* by the presence of a large transparent spot centrally in the forewings; from *C. levuensis*, *C. nathani*, and *C. veisarensis* by the presence of a strongly hooked dorsal branch of each gonopod; and from *C. braueri* by the absence of a long, tongue-shaped process immediately below the dorsal branches of the gonopods.

Male. Body dark pale yellowish-brown, dorsal part of meso and metathorax only slightly darker than rest of body. Large dark area mainly between lateral ocelli. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 9). Forewings 6.2 mm (n=1), brown; large pale, hyaline, nearly circular spot occupying central part of wing, including median cell and basal third of discoidal cell. Forewings broad, ratio of length to breadth 3.3; R1 nearly straight before crossvein r; radial sector strongly produced anterad immediately before discoidal cell; discoidal cell originating at mid-length of wing, about 2x longer than wide; median cell as long as discoidal cell; crossvein r originating from R2+3, immediately before fork I; fork I originating before crossvein s at distance equal to length of crossvein s; nygma located near base of fork II; fork III 1/5th as long as wing; fork V about as long as fork II; Cu2 ending in wing margin close to A. Hind wings 5.2 mm (n=1), brown, with large, nearly circular pale hyaline spot centrally on anterior 1/2 of wings, occupying basal 1/2 of discoidal cell; broad, ratio of length to breadth 2.9; margin slightly incurved at arculus, where Cu1 and Cu2 fused with margin; fork III as long as discoidal cell and 1/8th as long as wing; fork V about as long as fork I; 1A+2A as long as 1A.

Male genitalia (Figs. 50–54). Segment IX slightly longer than high; anterodorsal margins strongly concave in lateral view; ventral margins slightly convex; each posterior margin produced posterad into large, rounded lobe below each cercus; ventral side of posterior 1/2 of segment IX covered by setae (Fig. 52). In dorsal view with pointed anterior lobes; anterodorsal margin with wide, shallow incision in dorsal view. In ventral view segment IX with shallowly concave anterior and posterior margins; posterior margin without central projection. Tergum X simple; tapering apically in lateral view (Fig. 50); distal 1/2 divided into 2 parallel branches in dorsal and ventral view (Fig. 52); each distal branch nearly parallel-sided in dorsal and ventral view, apically nearly truncate with slightly posterad producing apicomesal corner and laterad producing apicolateral corner; pair of sensillae located at basal 1/2 of ventral face of each branch. Cerci large, located dorsally on segment IX and oriented slightly dorsad in lateral view and slightly laterad in dorsal view; covered by long setae. Gonopods shorter than segment IX, nearly quadrangular in lateral view; anterodorsal margin concave; ventral margin nearly straight, undulating; dorsal branch forming slender, ventral hook in lateral view, and broad plate with small, thorn-shaped apex in dorsal view; ventral branch in ventral view fused medially outside of segment IX; each mesal margin with 3 conical processes orienting mesad, the apical process with irregular margin. Phallic apparatus about 1.5x longer than rest of genitalia; phallotheca, in lateral and ventral view, with anterior part about twice as thick as posterior part; apicoventral spine absent; phallotremal sclerite not observed; pair of brown, posterad directed, nearly equal endothecal spines present, about as long as diameter of narrow part of phallotheca.



FIGURES 50–54. *Chimarra schlingeri*, **new species**, holotype. **50**—genitalia, left lateral view; **51**—genitalia, dorsal view; **52**—genitalia, ventral view; **53**—phallic apparatus, left lateral view; **54**—phallic apparatus, ventral view.

Female. Unknown.

Holotype male: VITI LEVU: Vuda Prov., Koroyanitu N.N.P. Kokabula Trail, Malaise trap, 26.x–5.xi.2002, 17°40'S, 177°33'E [17.3333°S, 177.55°E], 400 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#01] [FNIC].

Paratypes: Same data, except 12–19.x.2002, 450 m [loc#02] — 4 males [NHRS]. Same data, except 17.667°S, 177.55°E, 26.xi–3.xii.2002, leg. E. Schlinger & M. Tokota'a [loc#02] — 2 males [BPBM]. Same data, except 2–10.vi.2003, leg. M. Tokota'a [loc#02] — 1 male [BPBM]. Vuda Prov., Koroyanitu Pk., 1 km E Abaca Vlg., Malaise trap 1, 22.iv–5.v.2003, 17.667°S, 177.55°E, 800 m, leg. E. Schlinger & M. Tokota'a [loc#03] — 3 males [BPBM]. Same data, except 19–26.xi.2002 [loc#03] — 1 male [FNIC]. Same data, except Savuione Trail, 17°40'S, 177°33'E [17.3333°S, 177.55°E], 26.x–5.xi.2002 [loc#03] — 1 male [FNIC]. **TAVEUNI:** Cakaudrove Prov., 3.2 km NW Lavena Vlg., Mt. Koronibuabua, Malaise trap 5, 21.iv–6.v.2004, 16.856°S, 179.889°W, 229 m, E. Schlinger & M. Tokota'a [loc#35] — 1 male [NHRS].

Etymology: *Schlingeri*, named after Dr. E. Schlinger, one of the collectors of the holotype.

Distribution: Viti Levu and Taveuni.

Chimarra nathani, new species

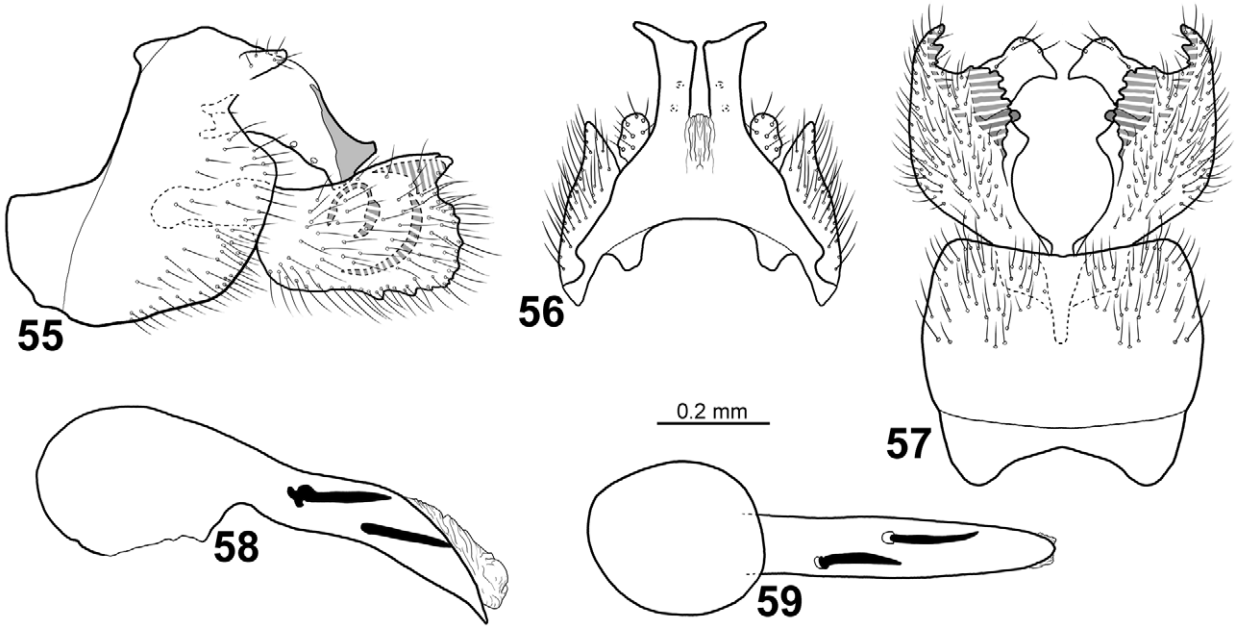
Figs. 10, 55–59

Chimarra nathani has a large pale, hyaline spot on both wing pairs, like *C. signata*, *C. schlingeri*, *C. braueri* and *C. vitiensis*. It is easily distinguished from those species by the genitalia of the male. The gonopods each have a dorsal branch that appears as a small but distinct, triangular projection in lateral view, but in dorsal and ventral views this branch is seen to form a large, rectangular plate below the phallus.

Male. Head and thorax pale yellowish-brown. Area between ocelli yellowish-brown. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 10). Forewings 6.9 mm (n=1), brown; large pale, hyaline, nearly circular spot occupying central part of wing, including median cell and basal third of discoidal cell. Forewings broad, ratio of length to breadth 3.3; R1 nearly straight before crossvein r; radial sector strongly produced anterad immediately before discoidal cell;

discoidal cell originating at mid-length of wing, nearly 3x longer than wide; median cell as long as discoidal cell; crossvein r fusing with basis of fork I; fork I originating before crossvein s at distance nearly equal to length of crossvein s; nygma located near base of fork II; fork III 1/6th as long as wing; fork V about as long as fork II; Cu2 ending in wing margin close to A. Hind wings 5.6 mm (n=1), brown, with large, oval, pale hyaline spot centrally on anterior 1/2 of wings, occupying basal 1/2 of discoidal cell; broad, ratio of length to breadth 3.2; margin slightly incurved at arculus, where Cu1 and Cu2 fused with margin; fork III as long as discoidal cell and 1/9 as long as wing; fork V about as long as fork I; 1A+2A nearly as long as 1A.



FIGURES 55–59. *Chimarra nathani*, **new species**, holotype. **55**—genitalia, left lateral view; **56**—genitalia, dorsal view; **57**—genitalia, ventral view; **58**—phallic apparatus, left lateral view; **59**—phallic apparatus, ventral view.

Male genitalia (Figs. 55–59). Segment IX slightly longer than high; anterodorsal margins strongly concave in lateral view; ventral margins uniformly convex; each posterior margin produced posterad into narrow plate well below each cercus; ventral side of posterior 1/2 of segment IX densely covered by setae (Fig. 57). In dorsal view with pointed anterior lobes; anterodorsal margin with wide, shallow incision in dorsal view. In ventral view segment IX with concave anterior margin and very slightly concave posterior margin; posterior margin without central projection. Tergum X simple; slightly tapering till distal 3/4 in lateral view (Fig. 55); distal1/4 expanded dorsad into nearly triangular process; in dorsal view divided at mid-length into 2 parallel lateral branches (Fig. 56); each lateral branch nearly parallel-sided in dorsal and ventral view, apically nearly truncate, with strongly laterad-producing apicolateral corner; pair of sensillae located at mid-length of each lateral branch. Cerci slender in lateral view, located dorsally on segment IX and oriented slightly dorsad in lateral view and oriented posterad in dorsal view; covered by long setae. Gonopods shorter than segment IX, nearly quadrangular in lateral view; anterodorsal margin slightly concave; ventral margin nearly straight, undulating; dorsal branch forming strong, triangular process in lateral view, in dorsal and ventral view forming long, broad, nearly horizontal plates oriented postero mesad; ventral branch broad, posteriorly rounded in lateral view; in ventral view produced into nearly rectangular, darkly pigmented mesal plates; each mesal plate margin undulating. Mesal process situated centrally on gonopods, strongly sclerotized, slightly curved mesad. Phallic apparatus about as long as rest of genitalia; phallotheca, in lateral and ventral view, with anterior part 2x thicker than posterior part; apicoventral spine absent; phallotremal sclerite not observed; pair of nearly black, posterad directed, sub-equally large endothecal spines present, slightly longer than diameter of narrowest part of phallotheca.

Female. Unknown.

Holotype male: VITI LEVU: Naitasiri Prov., 3.3 km N Veisari, logging rd. to Waivudava, Malaise trap, 8–31.iii.2003, 18.0592°S, 178.367°E, 300 m, leg. M. Tokota'a [loc#20] [FNIC].

Paratype: VITI LEVU: Naitasiri Prov., 4 km WSW Colo-i-Suva Vlg., Mt. Nakobalevu, Malaise trap, 24.iv–12.v.2004, 18.055°S, 178.424°E, 372 m, leg E. Schlinger & M. Tokota'a [loc#11] — 1 male [NHRS, DNA voucher IL9].

Etymology: *Nathani*, named after Nathan Banks who described several *Chimarra* from Fiji.

Distribution: Viti Levu.

Chimarra braueri, new species

Figs. 11, 60–64

Chimarra braueri resembles *C. signata*, *C. schlingeri*, *C. nathani*, and *C. vitiensis* in the presence of a large pale, hyaline spot on both the forewings and hind wings. The genitalia of *C. braueri* are unique in the shape of the gonopods, particularly the long, posterad oriented, tongue-shaped process.

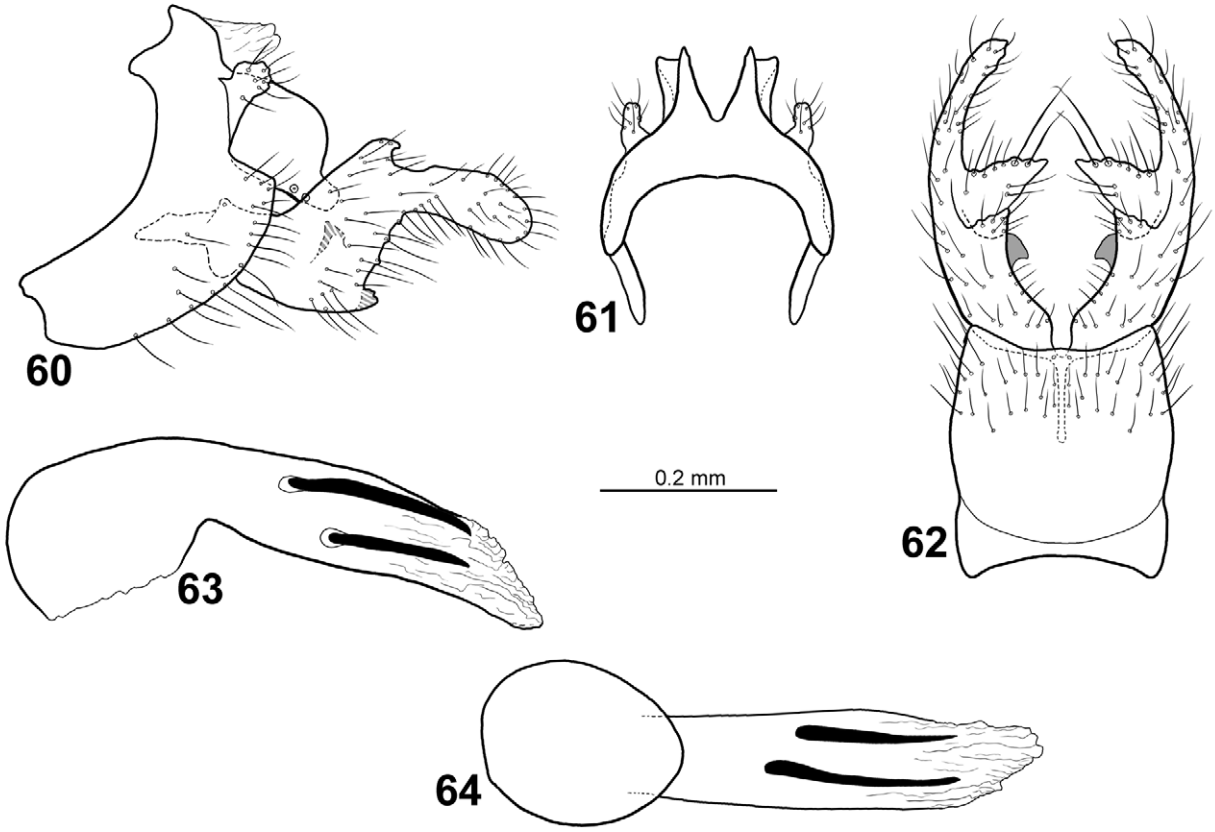
Male. Body pale brown, dorsal part of meso and metathorax brown. Large dark area between lateral and anterior ocelli. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 11). Forewings 4.6 mm (n=1), brown, with large, circular, pale hyaline spot centrally in wing, covering more than discoidal cell and median cell; relatively broad, ratio of length to breadth 3.4; R1 almost straight before crossvein r; radial sector produced anterad immediately before discoidal cell; discoidal cell originating at mid-length of wing, 2x longer than wide; median cell as long as discoidal cell; crossvein r situated at base of fork I; fork I originating before crossvein s at distance equal to 1/2 length of crossvein s; nygma located near base of fork II; fork III 1/6th as long as wing; fork V as long as fork I, shorter than fork II; Cu2 well-separated from A at wing margin. Hind wings 3.7 mm (n=1), brown, with large, nearly circular pale hyaline spot covering more than discoidal cell and median cell; wings broad, ratio of length to breadth 3.2; fork I with footstalk about as long as crossvein s; wing margin slightly incurved at arculus, where Cu1 and Cu2 fused with margin; fork III slightly shorter than discoidal cell, and1/10th as long as wing; fork V as long as fork I; 1A+2A nearly 2x longer than 1A.

Male genitalia (Figs. 60–64). Segment IX clearly shorter than high; anterodorsal and anteroventral apex of segment IX similarly 2-lobed in lateral view; anterior plate rectangular, oriented anteroventrad; posterior 1/2 of segment expanded dorsad and anterad; each anterodorsal margin deeply concave in lateral view; each ventral margin uniformly convex, without incision at vertical apodeme; each posterior margin expanded into sharply triangular plate at mid-height of segment, well below cercus. In dorsal view segment IX with long, slender anterior lobes; in dorsal view anterodorsal margin forming deep, narrow, U-shaped incision without anterad-orienting processes on posteromesal margins. In ventral view segment IX nearly quadrangular, except incised at transverse apodeme; anterior margin shallowly concave; posterior margin shallowly concave, with minute central projection. Tergum X divided into small dorsal and ventral branches, surrounding phallic apparatus. In lateral view dorsal and ventral margins of basal 3/4 parallel-sided, strongly narrowing into short, parallel-sided distal ventral branch. Pair of ventral branches of tergum X smooth, except pair of lateral sensillae on each side, near ventral margin. Cerci located well below dorsal margin of segment IX and tergum X; orienting dorsad in lateral view; sightly club-shaped and oriented posterad in dorsal view; covered by long setae. Gonopods rather slender along their length, slightly longer than segment IX, 4-branched. Each dorsal branch short, hook-shaped in lateral view, large and sharply triangular in dorsal view; long, tongue-shaped, posterad oriented lobe present immediately ventrally of dorsal branch, slightly curved mesad along its length; ventral brach minute, located at posteroventral edge of each gonopod, nearly triangular in lateral view, large and sharply triangular in ventral view; mesal branch hook-shaped, curved anteromesad in dorsal and ventral view. All gonopod branches clearly exceeding tergum X in lateral view. Phallic apparatus slightly longer than rest of genitalia, slightly curved ventrad along its length; phallotheca, in lateral and ventral view, with anterior part 1.5x thicker than posterior part; apicoventral spine absent on phallotheca; phallotremal sclerite not observed; 2 very long, slender, nearly black endothecal spines present, right spine slightly longer than left spine.

Female. Unknown.

Holotype male: VITI LEVU: Naitasiri Prov., Nakobalevu Mt., 24–29.x.2002, 18°03'S, 178°25'E [18.0500°S, 178.4167°E], 340 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#10] [FNIC].



FIGURES 60–64. *Chimarra braueri*, **new species**, holotype. **60**—genitalia, left lateral view; **61**—genitalia, dorsal view; **62**—genitalia, ventral view; **63**—phallic apparatus, left lateral view; **64**—phallic apparatus, ventral view.

Paratypes: Same data as holotype, except 22.ix–9.x.2002 [loc#10] — 1 male [NHRS, DNA voucher IL6]. Naitasisri Prov., 4.8 km N Veisari Stlmt., Log Road to Waivudawa, Malaise trap 1, 12.xii.2002–3.i.2003, 18.075°S, 178.362°E, 300 m, leg. E. Schlinger & M. Tokota'a [loc#14] — 1 male [BPBM]. Naitasiri Prov., 3.3 km N Veisari, logging rd. to Waivudava, Malaise trap, 8–31.iii.2003, 18.0592°S, 178.367°E, 300 m, leg. M. Tokota'a [loc#20] [NHRS].

Etymology: *Braueri*, named after Friedrich Brauer, who described the first Trichoptera from Fiji.

Distribution: Viti Levu.

Chimarra vitiensis, new species

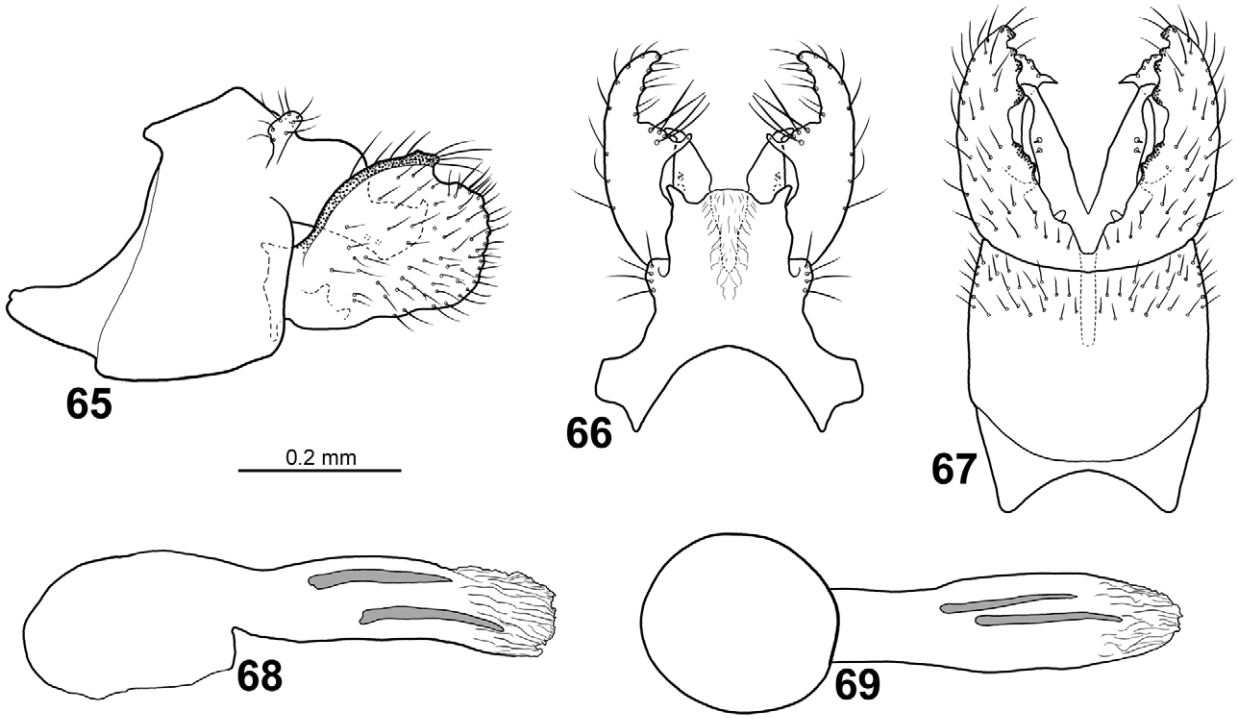
Figs. 12, 65–69

Chimarra vitiensis resembles *C. braueri*, *C. nathani*, *C. schlingeri*, and *C. signata* in having wings with a large, pale, hyaline area located centrally. *Chimarra vitiensis* is distinguished from the other species by the genitalia of the male, particularly in that the broad gonopods are strongly and darkly sclerotized along their dorsal margin; and also in having a dorsal branch of each gonopod that appears short in lateral view, but is seen to be produced into a short, slender, finger-like process in dorsal view.

Male. Body yellowish-brown, dorsal part of meso- and metathorax brown. Large dark area between lateral and anterior ocelli. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 12). Forewings 4.6 mm (n=1), brown; relatively broad, ratio of length to breadth 3.4; R1 slightly undulating before crossvein r; radial sector slightly produced anterad immediately before discoidal cell; discoidal cell originating at mid-length of wing, 3x longer than wide; median cell nearly as long as discoidal cell; crossvein r situated at base of fork I; fork I originating before crossvein s at distance equal to 1/2 length of crossvein s; nygma

located near base of fork II; fork III 1/6th as long as wing; fork V as long as fork I, shorter than fork II; Cu2 nearly touching from A at wing margin. Hind wings 3.8 mm (n=1), brown; broad, ratio of length to breadth 3.1; margin slightly incurved at arculus, where Cu1 and Cu2 fused with margin; fork III as long as discoidal cell and 1/9 as long as wing; fork I weakly developed, originate from anterodistal corner of discoidal cell, about as long as fork V; 1A+2A 3x longer than 1A.



FIGURES 65–69. *Chimarra vitiensis*, **new species**, holotype. **65**—genitalia, left lateral view; **66**—genitalia, dorsal view; **67**—genitalia, ventral view; **68**—phallic apparatus, left lateral view; **69**—phallic apparatus, ventral view.

Male genitalia (Figs. 56–59). Segment IX as long as high; anterior plates narrowing anteriorly, rounded apically; posterior 1/2 of segment broad, expanded dorsally, parallelogram shaped, slightly produced anterad and laterad (Fig. 66); each anterodorsal margin widely and deeply concave in lateral view; each ventral margin stepwise convex, with incision at vertical apodeme; posterior margins nearly straight, curved anterad well below cercus. In dorsal view segment IX with short, wide anterior lobes; in dorsal view anterodorsal margin forming deep, narrow, hyperbolic incision without anterad-orienting processes on posteromesal margins. In ventral view segment IX nearly rectangular, except slightly convex lateral margins and slightly incised at transverse apodeme; anterior margin deeply concave; posterior margin slightly concave; posterior margin without central projection. Tergum X undivided in lateral view; with weakly concave ventral margin; dorsal margin with large, rounded lobe near basis; apex slightly produced dorsad into short finger-like processes. In dorsal view tergum X divided into 2 laterally diverging branches, apically curved laterad. Sensillae on tergum X located ventrolaterally at 3/4 its length. Cerci located near dorsal margin of segment IX and tergum X; directed dorsad in lateral view, club-shaped; forming setose wart-like structures in dorsal view; covered by long setae. Gonopods broad, nearly quadrate, except narrow at basis, slightly shorter than segment IX, 2-branched. Each dorsal branch reaching as far posteriorly as tergum X in lateral view; weakly produced dorsad; bending mesad into short, rounded plate with finger-like mesal process; megasetae absent. Ventral branch of each gonopod rectangular in lateral view, with small undulations along posterior margin and undulating ventral margin; each ventral branch with mesal margin strongly irregular in ventral view, with strongly sclerotized wide, short teeth. Mesal branches absent. Phallic apparatus slightly longer than rest of genitalia, nearly straight; phallotheca, in lateral view, with anterior part 1.5x thicker than posterior part; in ventral view anterior part nearly 2x wider than posterior part; apicoventral spine absent on phallotheca; phallotremal sclerite not observed; 2 very long, brownish endothecal spines present.

Female. Unknown.

Holotype male: VITI LEVU: Vuda Prov., Koroyanitu N.M.P., Savuione Trail, Malaise trap, 12–19.x.2002, 17°40'S, 177°33'E, 450 m, M. Irwin, E. Schlinger & M. Tokota'a [loc#02] [FNIC].

Paratypes: Same data as holotype [loc#02] — 3 males [NHRS]. Vuda Prov., Koroyanitu Pk., 1 km E Abaca Vlg., Savuione Trail, Malaise trap, 11–19.iii.2003, 17.667°S, 177.55°E, 800 m, M. Irwin, E. Schlinger & M. Tokota'a [loc#03] — 1 male [BPBM]. Same data, except: 7–12.x.2002 [loc#03] — 1 male [BPBM]. Same data, except: 19–26.x.2002 [loc#03] — 2 males [BPBM]. Naitasiri Prov., Nakobalevu Mt., 22.ix–9.x.2002, 18°03'S, 178°25'E [18.0500°S, 178.4167°E], 340 m, M. Irwin, E. Schlinger & M. Tokota'a [loc#10] — 1 male [BPBM]. Pabitra Wabu Baseline Survey, Malaise trap, 17–20.xi.2003, 17.5833°S, 178.0833°E, 1034 m, leg. Delena Veikovi [loc#13] — 1 male [NHRS, DNA voucher IN2].

Etymology: *Vitiensis*, named after Viti Levu, the type locality of the species.

Distribution: Viti Levu.

Chimarra karoyanitensis, new species

Figs. 13, 70–74

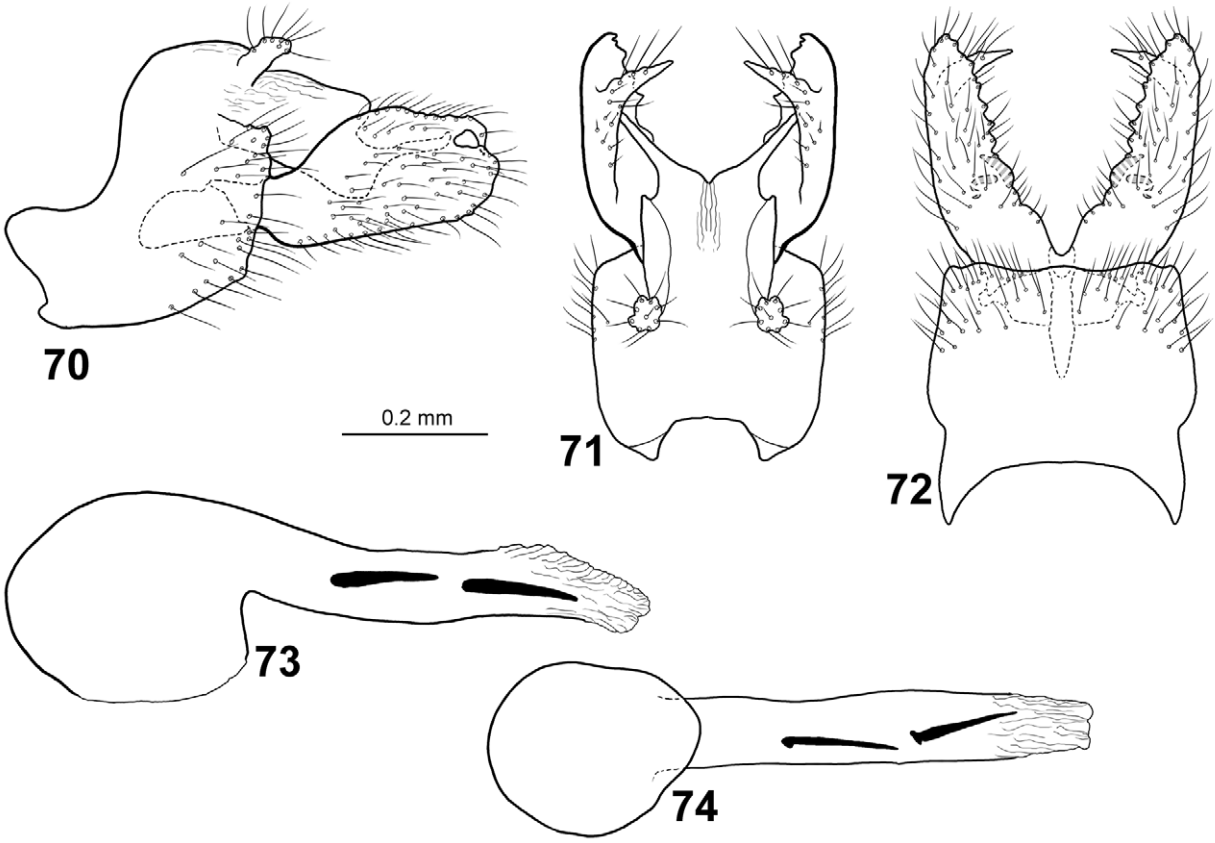
Chimarra karoyanitensis resembles *C. schlingeri*, *C. macuatensis*, and *C. signata* in having gonopods each with a long, slender, ventrally hooked dorsal process. It is most similar to *C. macuatensis* in the overall shapes of segment IX, tergum X, the gonopods, and the phallic apparatus. In lateral view, the gonopods of *C. karoyanitensis* are broadest at mid-length, while in the other species the gonopods are broadest well beyond mid-length, as far out as the origin of the dorsal branch. It is distinguished from *C. macuatensis* by the ventral branch of each gonopod posteriorly exceeding the dorsal branch, the longer ventral branches of tergum X, and the more rounded anterior lobes of segment IX in lateral view. It is distinguished from *C. schlingeri* by the gonopods that are clearly longer than broad. It is separated from *C. signata* by the straight posterior margins of segment IX in lateral view, and smaller dorsal branch of each gonopod relative to the ventral branch.

Male. Body yellowish brown, dorsal part of meso and metathorax brown. Large dark area between lateral and anterior ocelli. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 13). Forewings 5.6 mm (n=1), brown; ratio of length to breadth 3.3; R1 nearly slightly undulating before crossvein r; radial sector slightly produced anterad immediately before discoidal cell; discoidal cell originating at mid-length of wing, 2x longer than wide; median cell slightly shorter than discoidal cell; crossvein r situated at base of fork I; fork I originating before crossvein s at distance equal to 1/3rd length of crossvein s; nygma located near base of fork II; fork III 1/5th as long as wing; fork V slightly longer than fork I, shorter than fork II; Cu2 close to A at wing margin. Hind wings 4.5 mm (n=1), brown; broad, ratio of length to breadth 3.1; fork I with short footstalk, footstalk nearly as long as crossvein s; margin slightly incurved at arculus, where Cu1 and Cu2 fused with margin; fork III slightly longer than discoidal cell and 1/7th as long as wing; fork V slightly shorter than fork I; 1A+2A 2x longer than 1A.

Male genitalia (Figs. 70–74). Segment IX slightly shorter than high, nearly L-shaped in lateral view; anterior plates with large, nearly oval dorsal lobe, and small triangular lobe; posterior 1/2 of segment expanded dorsally; each anterodorsal margin deeply concave in lateral view; each ventral margin slightly convex, without incision at vertical apodeme; each posterior margin nearly straight, slightly undulating, angled 90° below cercus. In dorsal view segment IX with short, wide anterior lobes; anterodorsal margin forming shallow, wide, U-shaped incision without anterad-orienting processes on posteromesal margins. In ventral view segment IX nearly quadrangular, except narrow before anterior 1/3rd; anterior margin widely concave; posterior margin straight, with short, wide central projection. Tergum X divided into dorsal and ventral branches, surrounding phallic apparatus. Tergum X with nearly straight dorsal margin in lateral view; dorsal branches rounded triangular, angled nearly 90° at posterior end; in dorsal view each lateral branch fused at base, 1/2 as wide as segment IX. Pair of ventral branches of tergum X smooth, slightly sigmoid an oriented posterad in lateral view; straight and diverging posterolaterad in dorsal view. Sensillae on tergum X not visible. Cerci located at dorsal margin of segment IX; straight, oriented posterodorsad in lateral view; covered by long setae. Gonopods slightly oval, broadest at mid-length, about as long as segment IX; dorsal margin convex, ventral margin nearly straight; 2-branched; exceeding tergum X by length of cercus. Each dorsal branch slender, as long as individual cercus, strongly curved ventrad along its length, forming ventral hook; apex nearly as far out as apex of ventral branch; in dorsal view nearly straight, pointing posterome-

sad; mesal megasetae absent. Ventral branch of each gonopod nearly hyperbolic in lateral view, with undulating posterior and ventral margin; each with mesal margin strongly undulating in ventral view. Mesal branches absent. Phallic apparatus slightly longer than rest of genitalia, nearly straight; phallotheca, in lateral view, with anterior part 3x thicker than posterior part; in ventral view anterior part about 2x wider than posterior part; apicoventral spine absent on phallotheca; phallotremal sclerite not observed; 2 long, nearly black endothecal spines present.



FIGURES 70–74. *Chimarra karoyanitensis*, **new species**, holotype. **70**—genitalia, left lateral view; **71**—genitalia, dorsal view; **72**—genitalia, ventral view; **73**—phallic apparatus, left lateral view; **74**—phallic apparatus, ventral view.

Female. Unknown.

Holotype male: VITI LEVU: Vuda Prov., Koroyanitu Natural Heritage Park, Savuione Trail, Malaise trap, 12–19.x.2002, 17°40'S, 177°33'E [17.3333°S, 177.55°E], 450 m, M. Irwin, E. Schlinger & M. Tokota'a [loc#04] [FNIC].

Paratypes: Same data as holotype, except: 21.ix–7.x.2002 [loc#04] — 2 males [NHRS]. Viti Levu, Vuda Prov., Koroyanitu Pk., 1 km E Abaca Vlg., Malaise trap 1, 7–12.x.2002, 17.667°S, 177.55°E, 800 m, leg. E. Schlinger & M. Tokota'a [loc#03] — 2 males [BPBM]. Same data, except: 19–26.x.2002 [loc#03] — 1 male [NHRS]. Same data, except: 26.x–5.xi.2002 [loc#03] — 2 males [BPBM]. Same data, except: 26.xi–3.xii.2002 [loc#03] — 3 males [NHRS]. Same data, except: 10–17.xii.2002 [loc#03] — 1 male [FNIC].

Etymology: *Karoyanitensis*, named after Koroyanitu Natural Heritage Park, the type locality of the species.

Distribution: Viti Levu.

Chimarra tokotaai, new species

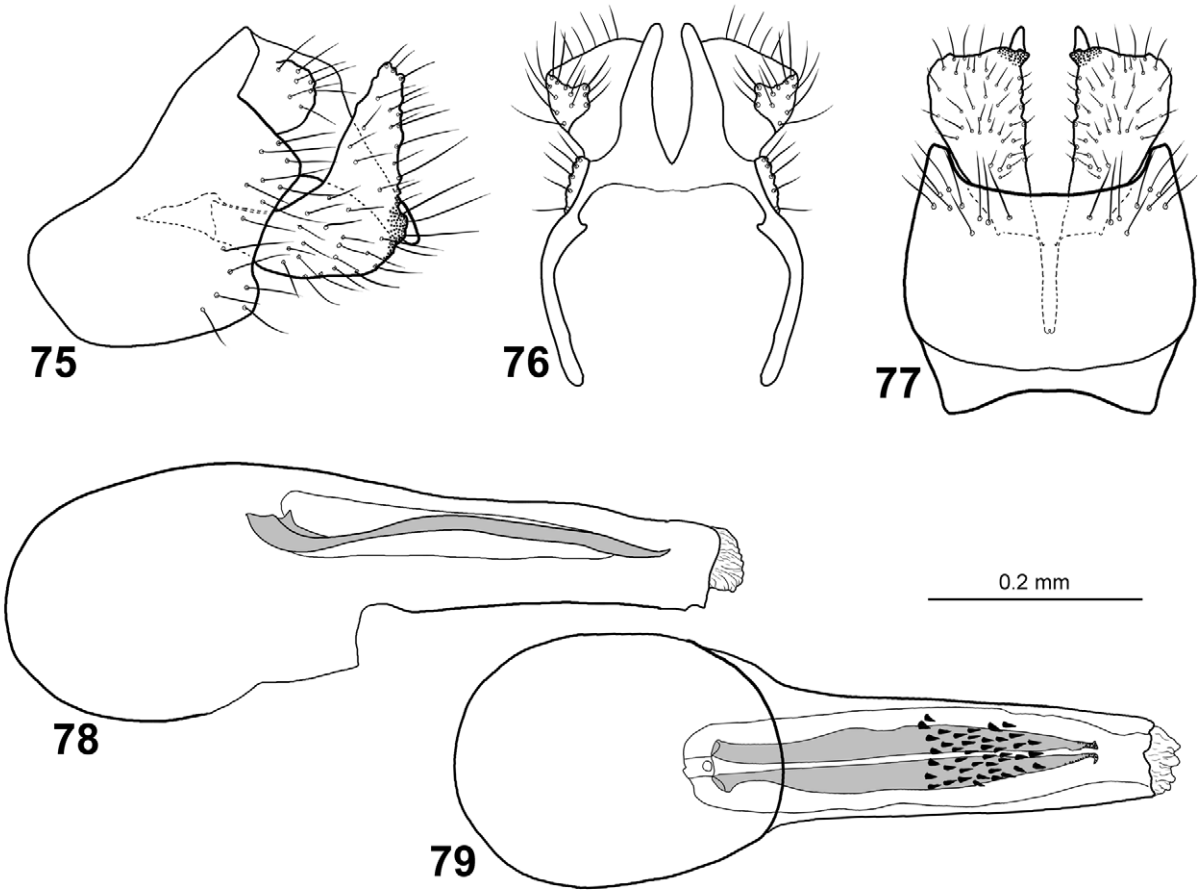
Figs. 14, 75–79

Chimarra tokotaai is similar to *C. vuda* and *C. naitasirensis* in the presence of simple, dorsad-curved gonopods; a strongly enlarged phallotremal sclerite in the phallic apparatus; absence of large endothecal spines; and an endoth-

eca with a group of minute, strongly sclerotized spicules. *Chimarra tokotaai* is distinguished from the other 2 species by having apically narrowed gonopods; a phallotremal sclerite that is 3x longer than the width of the posterior part of phallotheca; and the presence of only 1 group of sclerotized spicules in the phallic endotheca.

Male. Body dark pale brown, dorsal part of meso- and metathorax only slightly darker than rest of body. Large dark area between lateral and anterior ocelli. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 14). Forewings 4.2 mm (n=1), brown; broad, ratio of length to breadth 3.3; R1 slightly curved before crossvein r; radial sector slightly produced anterad immediately before discoidal cell; discoidal cell originating slightly distally of mid-length of wing, nearly 3x longer than wide; median cell slightly shorter than discoidal cell; crossvein r originating from R2+3, immediately before fork I; fork I originating before crossvein s at distance equal to length of crossvein s; nygma located near base of fork II; fork III 1/6th as long as wing; fork V as long as fork I, shorter than fork II; Cu2 tangential with A at wing margin. Hind wings 3.4 mm (n=1), brown; broad, ratio of length to breadth 3.0; margin slightly incurved at arculus, where Cu1 and Cu2 fused with margin; fork III as long as discoidal cell and 1/7th as long as wing; fork V about as long as fork I; 1A+2A 4x longer than 1A.



FIGURES 75–79. *Chimarra tokotaai*, **new species**, holotype. **75**—genitalia, left lateral view; **76**—genitalia, dorsal view; **77**—genitalia, ventral view; **78**—phallic apparatus, left lateral view; **79**—phallic apparatus, ventral view.

Male genitalia (Figs. 75–79). Segment IX slightly shorter than high; each anterodorsal margin shallowly concave in lateral view; each ventral margin strongly convex; each posterior margin produced posterad into large, triangular lobe starting at mid-height of cercus; ventral side of posterior 1/2 of segment IX with scattered setae (ventral view). In dorsal view with narrow anterior lobes; anterodorsal margin with wide, deep incision in dorsal view. In ventral view segment IX with shallowly concave anterior margin and moderately deep, and widely U-shaped posterior margin; posterior margin without central projection. Tergum X simple; tapering apically in lateral view (Fig. 75); orienting posteroventrad, nearly straight; divided into 2 slightly mesad-curved, lateral branches from base in dorsal and ventral view (Figs. 76, 77); each branch slightly narrowing posteriorly in dorsal and ventral view, apically rounded, without processes; sensillae invisible. Cerci large, broad, located immediately below dorsal

margin of segment IX and tergum X and oriented posterad in lateral view; very short in dorsal view; covered by long setae. Gonopodsunbranched, about as long as segment IX, curved dorsad and sickle-shaped in lateral view; anterodorsal margin concave; ventral margin nearly straight; posteroventral corner slightly produced into strongly sclerotized minute tooth; in ventral view forming broad plates widening posteriorly, each with strongly sclerotized apicomesal tooth; each mesal margin nearly straight, weakly undulating. Phallic apparatus nearly 2x longer than rest of genitalia: phallotheca, in lateral and ventral view, with anterior part 2–3x thicker than posterior part; apicoventral spine absent on phallotheca; strongly enlarged phallotremal sclerite in phallic apparatus forming paired rays and about 1/2 as long as phallic apparatus; large endothecal spines absent; endotheca with1 group of minute, strongly sclerotized, well separated spicules.

Female. Unknown.

Holotype male: VITI LEVU: Vuda Prov., Koroyanitu N.N.P. Kokabula Trail, Malaise trap, 26.x–5.xi.2002, 17°40’S, 177°33’E [17.3333°S, 177.55°E], 400 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#01] [FNIC].

Paratypes: Same data as holotype, except 6–26.v.2003 [loc#01] — 2 males [NHRS]. Vuda Prov., Koroyanitu N.M.P. Abaca Village, Malaise trap, 6–26.v.2003, 17°40’S, 177°33’E [17.3333°S, 177.55°E], 400 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#01] — 7 males [BPBM]. Vuda Prov., Koroyanitu Pk., 1 km E Abaca Vlg., Savuione Trail, Malaise trap, 21.ix–7.x.2002, 17.667°S, 177.55°E, 800 m, M. Irwin, E. Schlinger & M. Tokota’a [loc#03] — 3 males [BPBM]. Same data, except 7–12.x.2002 [loc#03] — 3 males [BPBM]. Same data, except 12–19.x.2002, M. Irwin, E. Schlinger & M. Tokota’a [loc#03] — 8 males [NHRS]. Same data, except 19–26.x.2002 [loc#03] — 3 males [BPBM]. Same data, except 26.x–5.xi.2002 [loc#03] — 5 males [BPBM]. Same data, except 26.xi–3.xii.2002, E. Schlinger & M. Tokota’a [loc#03] — 9 males [FNIC]. Same data, except 10–17.xii.2002 [loc#03] — 2 males [BPBM]. Same data, except 11–19.iii.2003 [loc#03] — 3 males [NHRS]. Vuda Prov., Koroyanitu Pk., 1 km E Abaca Vlg., Kokabula Trail, Malaise trap, 2–10.vi.2003, 17.667°S, 177.55°E, 800 m, leg. M. Tokota’a [loc#05] — 2 males [BPBM]. Vuda Prov., Koroyanitu Pk., 0.5 km N Abaca Vlg., Malaise trap 1, 26.x–5.xi.2002, 17.667°S, 177.55°E, 800 m, leg. E. Schlinger & M. Tokota’a [loc#06] — 3 males [BPBM]. Naitasiri Prov., Sovi Basin, Wainivalau, Malaise trap, 8–15.v.2003, 17°54’S, 178°14’E [17.9000°S, 178.2300°E], 300 m, leg. M. Irwin, E. Schlinger & M. Tokota’a [loc#07] — 1 male [BPBM]. Naitasiri Prov., 1.8 km E Navai Vlg., old trail to Tomaniivi, Malaise trap 4, 9–20.xii.2003, 17.521°S, 177.998°E, 700 m, leg. E. Schlinger, M. Irwin & M. Tokota’a [loc#08] — 1 male [FNIC]. Naitasiri Prov., Eteni, Navai, Malaise trap, 6.vi–15.vii.2003, 17°37’S, 177°59’E [17.6167°S, 177.9833°E], 700 m, leg. E. Schlinger, M. Irwin & M. Tokota’a [loc#09] — 3 males [NHRS]. Same data, except 13–18.ii.2004 [loc#09] — 1 male [BPBM].

Etymology: *Tokotaai*, named after Dr. M. Tokota’a, one of the collectors of the holotype.

Distribution: Viti Levu.

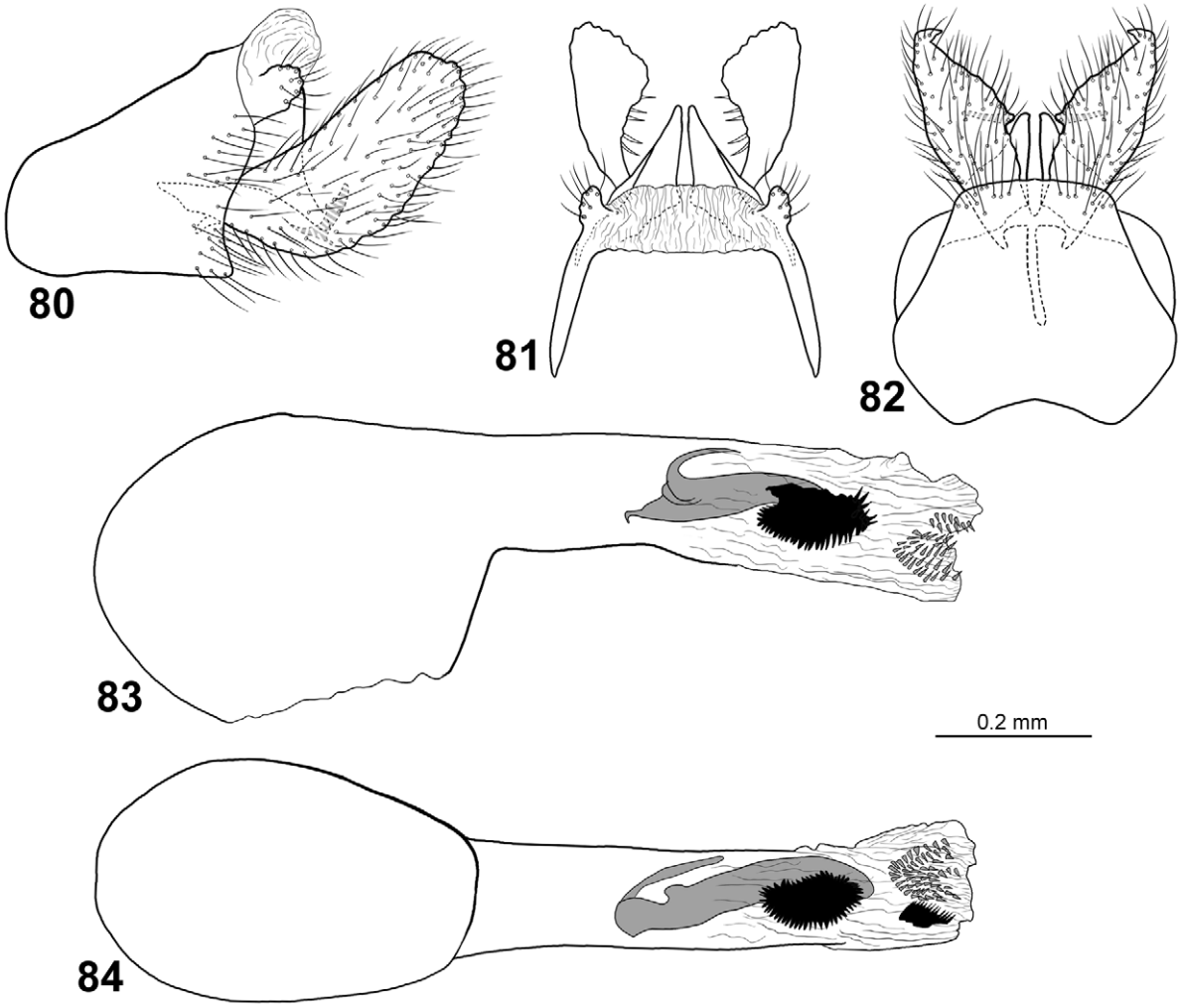
Chimarra vuda, new species

Figs. 15, 80–84

Chimarra vuda is similar to *C. tokotaai* and *C. naitasirensis* in having simple, dorsad-curved gonopods; a strongly enlarged phallotremal sclerite in the phallic apparatus; absence of large endothecal spines; and an endotheca with a group of minute, strongly sclerotized spicules. *Chimarra vuda* is distinguished from the other 2 species by its nearly parallel-sided gonopods in lateral view; a phallotremal sclerite that is about 2x longer than the width of the posterior part of phallotheca; and by the presence of 3 groups of sclerotized spicules in the phallic endotheca.

Male. Body yellowish-brown, dorsal part of meso- and metathorax brown. Large dark area between lateral and anterior ocelli. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 15). Forewings 6.6 mm (n=1), brown; broad, ratio of length to breadth 3.3; R1 slightly undulating before crossvein r; radial sector slightly produced anterad immediately before discoidal cell; discoidal cell originating slightly distally of mid-length of wing, nearly 3x longer than wide; median cell slightly shorter than discoidal cell; crossvein r originating from basis of fork I; fork I originating before crossvein s at distance equal to length of crossvein s; nygma located near base of fork II; fork III 1/5th as long as wing; fork V about as long as fork I, shorter than fork II; Cu2 situated close to A at wing margin. Hind wings 5.3 mm (n=1), brown; broad, ratio of length to breadth 2.9; margin slightly incurved at arculus, where Cu1 and Cu2 fused with margin; fork III 2x longer than discoidal cell and 1/6th as long as wing; fork V about as long as fork I; 1A+2A 4x longer than 1A.



FIGURES 80–84. *Chimarra vuda*, **new species**, holotype. **80**—genitalia, left lateral view; **81**—genitalia, dorsal view; **82**—genitalia, ventral view; **83**—phallic apparatus, left lateral view; **84**—phallic apparatus, ventral view.

Male genitalia (Figs. 80–84). Segment IX about as long as high; each anterodorsal margin nearly straight in lateral view; each ventral margin nearly straight; each posterior margin slightly produced posterad into rounded, triangular lobe starting at mid-height of cercus; ventral side of posterior-most part of segment IX with scattered setae (Fig. 82). In dorsal view with narrow anterior lobes; anterodorsal margin with wide, deep incision in dorsal view. In ventral view segment IX with shallowly concave anterior margin and almost straight posterior margin; posterior margin without central projection. Tergum X simple; tapering apically in lateral view (Fig. 80); orienting ventrad, nearly straight; divided into 2 slightly mesad-curved, lateral branches from base in dorsal and ventral view (Figs. 81, 82); each branch uniformly narrowing posteriorly in dorsal and ventral view, apically pointed, without processes; sensillae invisible. Cerci large, broad, located immediately below dorsal margin of segment IX and tergum X and oriented posterodorsad in lateral view; tube-shaped in dorsal view; covered by long setae. Gonopodsunbranched, longer than segment IX, slightly curved dorsad and sickle-shaped in lateral view; anterodorsal margin shallowly concave; ventral margin uniformly convex; posteroventral corner not produced into tooth in lateral view; in ventral view forming broad plates widening posteriorly to 1/2-length; tapering from 1/2-length into mesad curved apex; each basal 1/2 of mesal margin nearly straight, weakly diverging with minute mesal tooth. Phallic apparatus nearly 2x longer than rest of genitalia: phallotheca, in lateral and ventral view, with anterior part slightly more than 2x thicker than posterior part; apicoventral spine absent on phallotheca; strongly enlarged phallotremal sclerite in phallic apparatus forming complicated structure 1/3rd as long as phallic apparatus; large endothecal spines absent; endotheca with 3 groups of minute, strongly sclerotized, well separated spicules; anterior group very

densely packed, dark, located ventrally of posterior part of phallotremal sclerite; apical 2 groups formed by densely packed spicules, and more scattered spicules.

Female. Unknown.

Holotype male: VITI LEVU: Vuda Prov., Koroyanitu N.M.P. Abaca Village, Malaise trap, 6–26.v.2003, 17°40'S, 177°33'E [17.3333°S, 177.55°E], 400 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#01] [FNIC].

Etymology: *Vuda*, named after the Vuda Province, the type locality of the species.

Distribution: Viti Levu.

Chimarra naitasirensis, new species

Figs. 16, 85–89

Chimarra naitasirensis is similar to *C. tokotaai* and *C. vuda* in the presence of simple, dorsad-curved gonopods; a strongly enlarged phallotremal sclerite in the phallic apparatus; absence of large endothecal spines; and an endotheca with group of minute, strongly sclerotized spicules. *Chimarra naitasirensis* is distinguished from the other 2 species by having nearly drop-shaped gonopods in lateral view; a phallotremal sclerite that is about as long as the width of the posterior part of phallotheca; and by the presence of 3 groups of sclerotized spicules in the phallic endotheca.

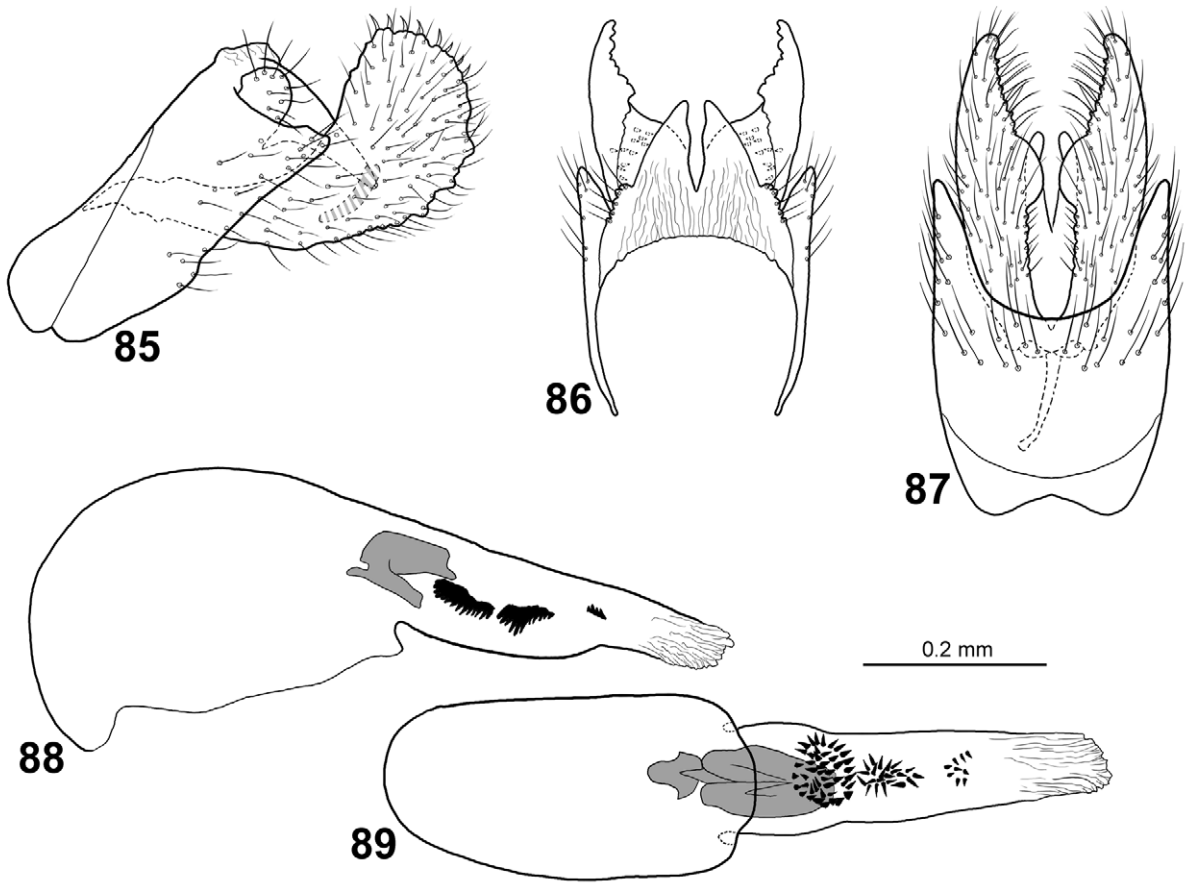
Male. Body pale brown, dorsal part of meso- and metathorax brown. Large dark area between lateral and anterior ocelli. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 16). Forewings 4.5 mm (n=1), brown; broad, ratio of length to breadth 3.3; R1 nearly straight before crossvein r; radial sector slightly produced anterad immediately before discoidal cell; discoidal cell originating at mid-length of wing, about 3x longer than wide; median cell slightly longer than discoidal cell; crossvein r situated basally of fork I by length of crossvein r; fork I originating before crossvein s at distance equal to 1/2 length of crossvein s; nygma located near base of fork II; fork III 1/6th as long as wing; fork V longer than fork I, shorter than fork II; Cu2 situated close to A at wing margin. Hind wings 3.4 mm (n=1), brown; broad, ratio of length to breadth 3.0; margin slightly incurved at arculus, where Cu1 and Cu2 fused with margin; fork III slightly longer than discoidal cell and 1/8th as long as wing; fork V nearly as long as fork I; 1A+2A 4x longer than 1A.

Male genitalia (Figs. 85–89). Segment IX about as long as high; parallelogram-shaped diagonal; each anterodorsal margin nearly straight in lateral view; each ventral margin convex, with strong incision at vertical apodeme; each posterior margin strongly produced posterad into sharply triangular lobe starting at top of cercus; ventral side of posterior 1/3rd of segment IX with setae (Fig. 87). In dorsal view with narrow anterior lobes; anterodorsal margin forming deep U-shaped incision in dorsal view. In ventral view segment IX with shallowly triangular anterior margin and deeply U-shaped posterior margin; posterior margin without central projection. Tergum X simple; tapering apically in lateral view (Fig. 85); orienting posteroventrad, nearly straight; divided into 2 lateral branches from base in dorsal and ventral view (Figs. 86, 87); each branch uniformly narrowing posteriorly in dorsal and ventral view, apically pointed, without processes; sensillae invisible. Cerci large, broad, located immediately below dorsal margin of segment IX and tergum X and oriented posterodorsad in lateral view; sharply triangular in dorsal view; covered by long setae. Gonopodsunbranched, about as long as segment IX, uniformly curved dorsad, almost drop-shaped in lateral view; anterodorsal margin nearly straight; ventral margin uniformly convex; posteroventral corner not produced into tooth in lateral view; in ventral view forming broad plates with uniformly convex lateral margins; mesal margins diverging, except with large, 1/2-circular lobes at mid-length; tapering from 1/2-length into rounded, slightly mesad-curved apex. Phallic apparatus slightly longer than rest of genitalia: phallotheca, in lateral view, with anterior part slightly more than 3x thicker than posterior part; and ventral view anterior part about 2x wider than posterior part; apicoventral spine absent on phallotheca; strongly enlarged phallotremal sclerite in phallic apparatus forming complicated structure nearly 1/3rd as long as phallic apparatus; large endothecal spines absent; endotheca with 3 groups of minute, strongly sclerotized, well separated spicules; all groups densely packed in lateral view, more scattered in ventral view; anteriormost group located ventrally of posterior part of phallotremal sclerite; posterior 2 groups in longitudinal line with anterior group.

Female. Unknown.

Holotype male: VITI LEVU: Naitasiri Prov., Nakobalevu Mt., 24–29.x.2003, 18°03'S, 178°25'E [18.0500°S, 178.4167°E], 340 m, M. Irwin, E. Schlinger & M. Tokota'a [loc#10] [FNIC].



FIGURES 85–89. *Chimarra naitasirensis*, new species, holotype. **85**—genitalia, left lateral view; **86**—genitalia, dorsal view; **87**—genitalia, ventral view; **88**—phallic apparatus, left lateral view; **89**—phallic apparatus, ventral view.

Paratypes: Same data as holotype [loc#10] — 2 males [NHRS]. Vuda Prov., Koroyanitu Pk., 1 km E Abaca Vlg., Malaise trap 1, 22.iv–5.v.2003, 17.667°S, 177.55°E, 800 m, leg. E. Schlinger & M. Tokota'a [loc#03] — 2 males [BPBM]. Vuda Prov., Koroyanitu Pk., 1 km E Abaca Vlg., Savuione Trail, Malaise trap, 7–12.x.2002, 17.667°S, 177.55°E, 800 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#03] — 1 male [BPBM]. Same data, except 21.ix–7.x.2002 [loc#03] — 2 males [FNIC].

Etymology: *Naitasirensis*, named after the Naitasiri Province, the type locality of the species.

Distribution: Viti Levu.

Chimarra veisarensis, new species

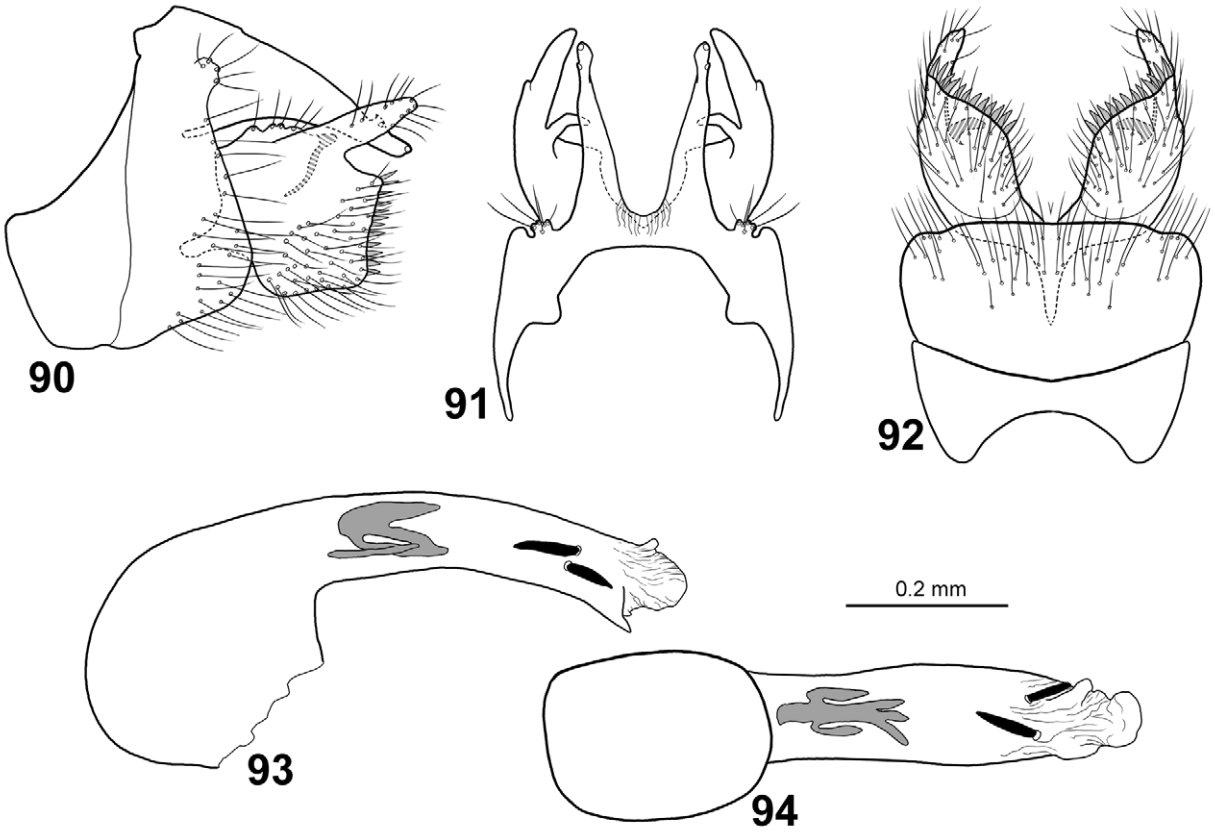
Figs. 17, 90–94

Chimarra veisarensis has genitalia resembling those of *C. schlingeri* and *C. nathani*, from which it is easily separated by having forewings and hind wings each without a large pale spot in the center. In addition, tergum X forms 2 simple, lateral processes; and the dorsal branch of each gonopod is long, broad, straight, and directed posterad.

Male. Head and thorax pale brown, dorsal part of meso- and metathorax brown. Area between ocelli yellowish-brown. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 17). Forewings 4.2 mm (n=1), brown. Forewings broad, ratio of length to breadth 3.3; R1 nearly straight before crossvein r; radial sector not produced anterad immediately before discoidal cell; discoidal cell originating at mid-length of wing, 3x longer than wide; median cell slightly shorter than discoidal cell; crossvein r fusing with basis of fork I; fork I originating before crossvein s at distance equal to length of crossvein s; nygma located near base of fork II; fork III 1/7th as long as wing; fork V about as long as fork II; Cu2 ending in wing mar-

gin distantly from A. Hind wings 3.3 mm (n=1), brown; ratio of length to breadth 2.9; margin not incurved at arculus, where Cu1 and Cu2 fused with margin; fork III as long as discoidal cell and 1/8th as long as wing; fork V nearly as long as fork I; 1A+2A about 3x as long as 1A.



FIGURES 90–94. *Chimarra veisarensis*, **new species**, holotype. **90**—genitalia, left lateral view; **91**—genitalia, dorsal view; **92**—genitalia, ventral view; **93**—phallic apparatus, left lateral view; **94**—phallic apparatus, ventral view.

Male genitalia (Figs. 90–94). Segment IX slightly taller than long; anterodorsal margins shallowly concave in lateral view; ventral margins irregularly convex; each posterior margin nearly straight, starting immediately below each cercus; ventral side of posterior 1/2 of segment IX densely covered by setae (Fig. 92). In dorsal view with pointed anterior lobes; anterodorsal margin with wide, shallow incision in dorsal view, mesal margins with rounded process, seen also in lateral view. In ventral view segment IX with concave anterior margin and nearly straight posterior margin; posterior margin without central projection. Tergum X simple; tapering along its length, slightly curved ventrad along its length in lateral view (Fig. 90); dorsal margin slightly convex, ventral margin slightly concave. In dorsal view tergum X divided basally into 2 lateral, nearly straight and diverging branches (Fig. 91); each lateral branch tapering toward apex in dorsal and ventral view; pair of sensillae located subapically and apically on each lateral branch. Cerci short, wart-like in lateral view, located dorsally on segment IX, about at mid-height of basis of tergum X and oriented slightly posterodorsad in lateral view and oriented posterad in dorsal view; covered by long setae. Gonopods shorter than segment IX, ventral branch nearly quadrangular in lateral view; anterodorsal margin slightly concave, undulating; ventral margin nearly straight; dorsal branch forming thick, nearly straight process directed posterad, about as long as posterior margin of ventral branch of each gonopod, reaching as far posteriorly as tergum X. Ventral branch of each gonopod with straight posterior margin in lateral view; posterior margin with dense row of megasetae; in ventral view with sigmoid mesal margin. Mesal process situated centrally on gonopods, strongly sclerotized, slightly curved mesad. Phallic apparatus about 1.5x longer than rest of genitalia, slightly curved ventrad along its length; phallotheca, in lateral view nearly 3x thicker than posterior part, with anterior part about 2x thicker than posterior part; apicoventral spine absent; phallotremal sclerite complex, in ventral view with five posterior rays and1 anterior ray; pair of nearly black, short, posterad and anterad directed, subequally large endothecal spines present, slightly shorter than diameter of narrowest part of phallotheca.

Female. Unknown.

Holotype male: VITI LEVU: Naitasiri Prov., 3.3 km N Veisari, logging rd. to Waivudava, Malaise trap, 8–31.iii.2003, 18.0592°S, 178.367°E, 300 m, leg. M. Tokota'a [loc#20] [FNIC].

Paratypes: Same data as holotype [loc#20] — 4 males [NHRS]. Naitasiri Prov., 4 km WSW Colo-i-Suva Village, Mt. Nakobalevu, Malaise trap 1, 12.iv.2004, 18.057°S, 178.42°E, 300 m, leg E. Schlinger & M. Tokota'a [loc#12] — 1 male [NHRS, DNA voucher IL3]. Rewa Prov., 3.8 km N Veisari, Waivudava Log Rd., Malaise trap, 25.iv–25.v.2003, 18.0792°S, 178.3625°E, 300 m, leg. E. Schlinger & M. Tokota'a [loc#16] — 1 male [BPBM].

Etymology: *Veisarensis*, named after Veisari, near the type locality.

Distribution: Viti Levu.

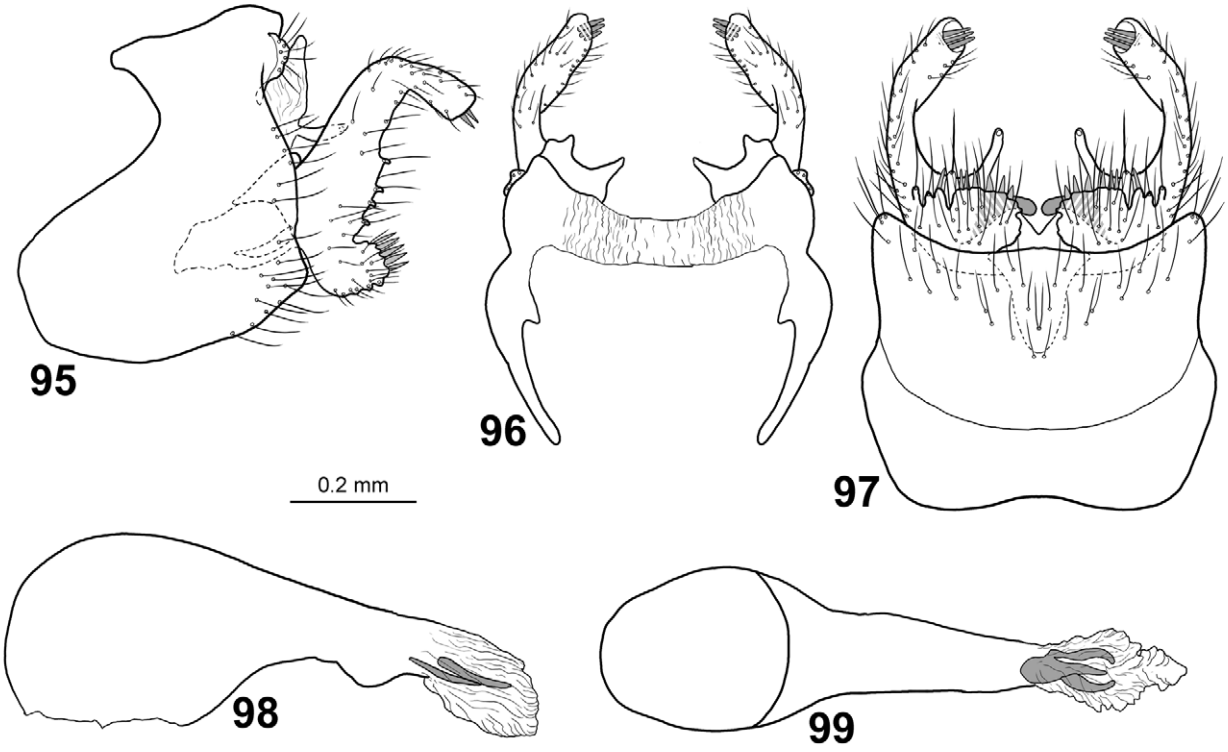
Chimarra fijiana, new species

Figs. 18, 95–99

The genitalia of *C. fijiana* are unique among the Fijian *Chimarra* in having both the ventral branch and the distal part of each gonopod angled posteriorly at 90°, and both apices of the gonopods with apical megasetae.

Male. Body dark pale yellowish-brown, dorsal part of meso and metathorax slightly darker than rest of body. Large dark area between lateral ocelli. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 18). Forewings 5.4 mm (n=1), brown; Forewings broad, ratio of length to breadth 3.4; R1 slightly curved before crossvein r; radial sector not produced anterad immediately before discoidal cell; discoidal cell originating slightly before mid-length of wing, about 3x longer than wide; median cell as long as discoidal cell; crossvein r originating from basal part of R2; fork I originating before crossvein s at distance equal to length of crossvein s; nygma located near base of fork II; fork III1/4 as long as wing; fork V slightly shorter than fork II; Cu2 ending in wing margin close to A. Hind wings 4.3 mm (n=1), brown; ratio of length to breadth 3.0; margin weakly incurved at arculus, where Cu1 and Cu2 fused with margin; fork I sessile; fork III more than 2x longer than discoidal cell and1/4 as long as wing; fork V about as long as fork I; 1A+2A more than 3x longer than 1A.



FIGURES 95–99. *Chimarra fijiana*, **new species**, holotype. **95**—genitalia, left lateral view; **96**—genitalia, dorsal view; **97**—genitalia, ventral view; **98**—phallic apparatus, left lateral view; **99**—phallic apparatus, ventral view.

Male genitalia (Figs. 95–99). Segment IX slightly taller than long; anterodorsal margins strongly concave in lateral view; ventral margins slightly convex; each posterior margin weakly produced posterad, starting immediately below each cercus, margin slightly undulating; dorsal part of segment IX produced anterad into triangular; ventral side of posterior 1/2 of segment IX covered by setae (Fig. 97). In dorsal view with pointed anterior lobes; anterodorsal plates widely separated by rectangular incision in dorsal view. In ventral view segment IX with shallowly concave anterior and posterior margins; posterior margin with very short central projection. Tergum X divided into dorsal and ventral branches. Dorsal branches of tergum X oriented vertically immediately posteriorly of segment IX, narrowing dorsally in lateral view; tapering apically in lateral view (Fig. 95); in dorsal view divided into pair of broad plates with pointed mesal and lateral corners (Fig. 96). Ventral branches of tergum X originating from lower part of dorsal branches, slender, finger-like, curved posterad in lateral and ventral view, with pair of sensillae located near apex of each branch. Cerci very short, wart-like; located dorsally on segment IX, near dorsal margin; covered by long setae. Gonopods shorter than segment IX, uniformly slender in lateral view; nearly U-shaped, with dorsal and ventral branch. Dorsal branch of each gonopod long, each with basal 2/3rds oriented nearly vertically, bent 90° posteriorly at apical 1/3rd; with 3 ventromesad orienting megasetae originating from ventromesal pocket at apex; ventral part of posterior margin of dorsal branch with large setal tubercles. Ventral branch of each gonopod strongly curved posterodorsad at base; with row of megasetae. Phallic apparatus slightly longer than rest of genitalia; phallotheca, in lateral and ventral view, with anterior part about 2x thicker than posterior part; posterior part narrowing distally in ventral view; posterior part with rounded ventral process in lateral view; apicoventral spine absent; phallotremal sclerite forming 3 longitudinal rays in ventral view; endothecal spines not observed.

Female. Unknown.

Holotype male: VITI LEVU: Vuda Prov., Koroyanitu Natural Heritage Park, Savuione Trail, Malaise trap, 12–19.x.2002, 17°40’S, 177°33’E, 450 m, M. Irwin, E. Schlinger & M. Tokota’a [loc#04] [FNIC].

Paratypes: Same data as holotype [loc#04] — 9 males [NHRS]. Same data as holotype, except 21.ix–7.x.2002 [loc#04] — 2 males [BPBM]. Vuda Prov., Koroyanitu Pk., 1 km E Abaca Vlg., Savuione Trail, Malaise trap, 26.x–5.xi.2002, 17°40’S, 177°33’E [17.3333°S, 177.55°E], 800 m, leg. M. Irwin, E. Schlinger & M. Tokota’a [loc#03] — 1 male [BPBM]. Same data, except 12–19.xi.2002 [loc#03] — 1 male [BPBM]. Same data, except 11–19.iii.2003, 17.667°S, 177.55°E [loc#03] — 1 male [BPBM]. Same data, except 22.iv–5.v.2003 [loc#03] — 15 males [BPBM]. Same data, except Kokabula Trail, 2–10.vi.2003 [loc#05] — 3 males [NHRS]. Vuda Province, 1 km SW Vaturu Dam, Malaise trap 3, 2–14.vii.2004, 17.754°S, 177.665°E, 620 m, leg. E. I. Schlinger & M. Tokota’a [loc#17] — 1 male [FNIC]. Sigatoka Prov., Sigatoka Sand Dunes National Park, Malaise trap in coastal forest, 22.ix–8.x.2002, 18°10’S, 177°30’E [18.1667°S, 177.5000°E], 30 m, leg. M. Irwin, E. Schlinger & M. Tokota’a [loc#18] — 1 male [BPBM]. Naitasiri Prov., Bakobalevu Logging Road, Malaise trap, 17.iii–9.iv.2003, leg. E. Schlinger & M. Tokota’a [loc#19] — 1 male [NHRS].

Etymology: *Fijiana*, named Fiji, the type country of the species.

Distribution: Viti Levu.

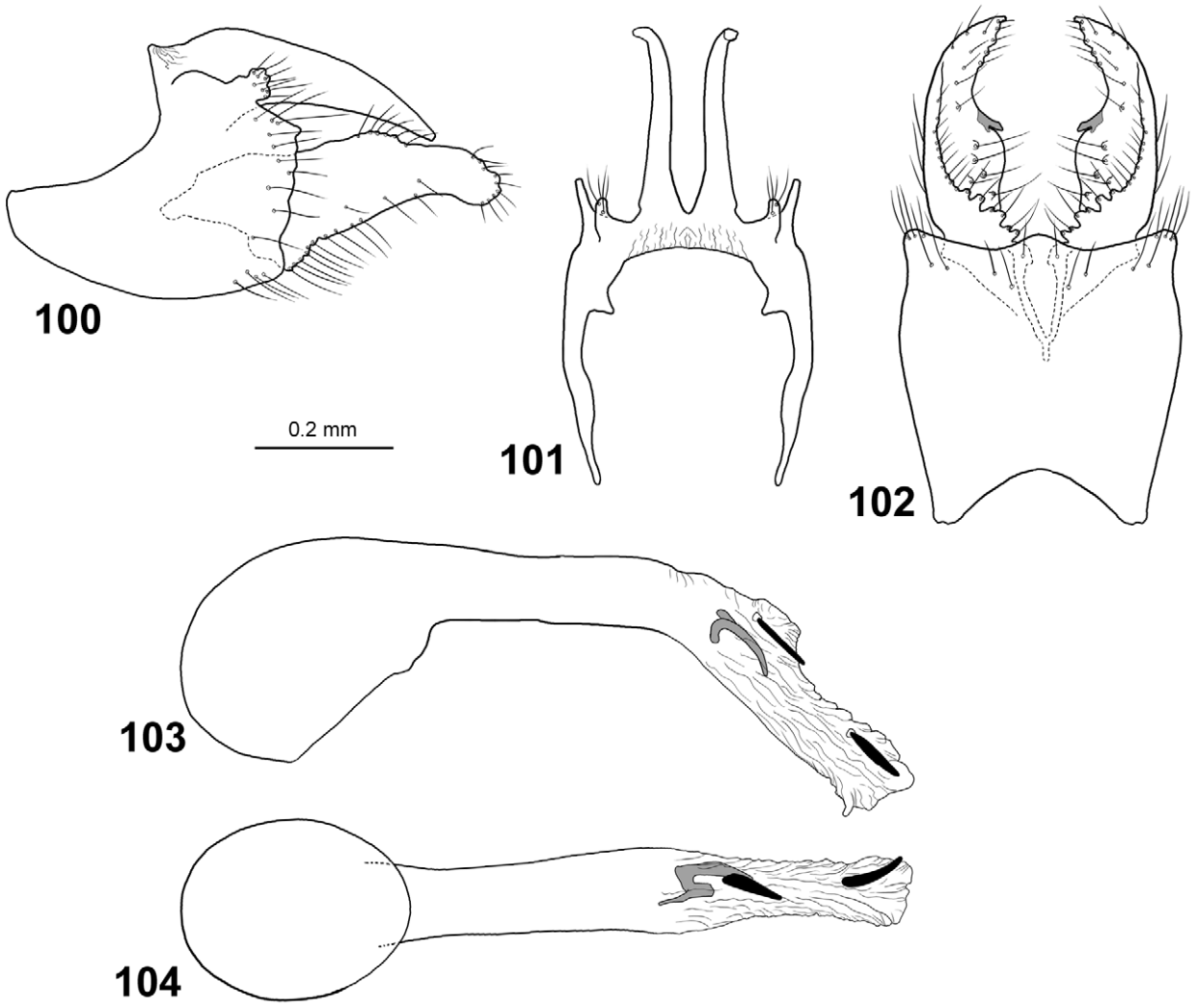
Chimarra abacensis, new species

Figs. 19, 100–104

In lateral view, the segment IX and the gonopods of *C. abacensis* resembles that of *C. cakaudrivensis*, from which it is distinguished by the less ventrally expanded basal part of each gonopod and much longer tergum X.

Male. Body brownish grey, dorsal part of meso- and metathorax pale brown. Dark area between lateral and anterior ocelli. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 19). Forewings 5.3 mm (n=1), brown; ratio of length to breadth 3.4; R1 nearly straight before crossvein r; radial sector slightly produced anterad immediately before discoidal cell; discoidal cell originating at mid-length of wing, 3x longer than wide; median cell slightly shorter than discoidal cell; crossvein r situated basally of R2; fork I originating before crossvein s at distance equal to length of crossvein s; nygma located near base of fork II; fork III 1/6th as long as wing; fork V as long as fork I, shorter than fork II; Cu2 nearly touching from A at wing margin. Hind wings 4.2 mm (n=1), brown; broad, ratio of length to breadth 2.9; margin weakly incurved at arculus, where Cu1 and Cu2 fused with margin; fork I sessile on discoidal cell, about as long as fork V; fork III about 1.5x longer than discoidal cell and nearly 1/6th as long as wing; 1A+2A 4x longer than 1A.



FIGURES 100–104. *Chimarra abacensis*, **new species**, holotype. **100**—genitalia, left lateral view; **101**—genitalia, dorsal view; **102**—genitalia, ventral view; **103**—phallic apparatus, left lateral view; **104**—phallic apparatus, ventral view.

Male genitalia (Figs. 100–104). Segment IX about as long as high; anterior plates narrowing anterad, pointed apically; posterior 1/2 of segment broad, expanded dorsally, parallelogram shaped, slightly produced dorsad (Fig. 100) and mesad (Fig. 101); each anterodorsal margin widely and deeply concave in lateral view; each ventral margin uniformly convex, without incisions; in lateral view, posterior part of segment IX produced posterad immediately below cercus, into narrow plate with nearly straight, undulating posterior margin; posterior plate with sharp posterodorsal corner. In dorsal view segment IX with long, narrow anterior lobes; in dorsal view anterodorsal margin forming deep, broad, U-shaped incision with anterodorsad orienting processes on posteromesal margins. In ventral view segment IX nearly rectangular, except slightly narrowing anteriorly and weakly convex lateral margins; anterior margin deeply concave; posterior margin slightly concave, with rounded central projection. Tergum X about as long as gonopods and undivided in lateral view; with slightly convex dorsal margin and concave ventral margin. In dorsal view tergum X divided from base into 2 parallel lateral branches, each with apex curved dorsolaterad. Sensillae on tergum X not visible. Cerci short, nearly wart-like, located near dorsal margin of segment IX and ventral margin of tergum X; broad in lateral view, narrow in dorsal view, directed posterad; covered by long setae. Gonopods shorter than segment IX in lateral view; posteriorly exceeding tergum X; with broad base; distal 1/2 about 1/2 as broad as basal 1/2, and slightly curved ventrad; in ventral view with ventromesal margin strongly undulating due to row of erect setal bases; dorsomesal margin smooth, strongly sigmoid, with minute, anteromesad-orienting, strongly sclerotized process. Phallic apparatus 1.5x longer than rest of genitalia, nearly straight, except bent ventrad at mid-length of posterior, slender part of phallotheca; phallotheca, in lateral view, with ante-

rior part 3x thicker than posterior part; in ventral view anterior part 2x wider than posterior part; apicoventral spine absent on phallotheca; phallotremal sclerite formed by complex of cylindrical plates; 2 short, blackish endothecal spines present.

Female. Unknown.

Holotype male: VITI LEVU: Vuda Prov., Koroyanitu N.M.P. Abaca Village, Malaise trap, 6–26.v.2003, 17°40'S, 177°33'E [17.3333°S, 177.55°E], 400 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#01] [FNIC].

Paratypes: Same data as holotype [loc#01] — 1 male [BPBM]. Vuda Prov., Koroyanitu N.M.P., Savuione Trail, Malaise trap, 21.ix–7.x.2002, 17°40'S, 177°33'E [17.3333°S, 177.55°E], 450 m, M. Irwin, E. Schlinger & M. Tokota'a [loc#04] — 1 male [NHRS, DNA voucher IL5].

Etymology: *Abacensis*, named after the Abaca village near the type locality.

Distribution: Viti Levu.

Chimarra manni Banks

Figs. 20, 33, 105–110

Chimarrha manni Banks, 1924: 448.
Chimarra indigota Mosely, 1941: 361, **new synonym.**

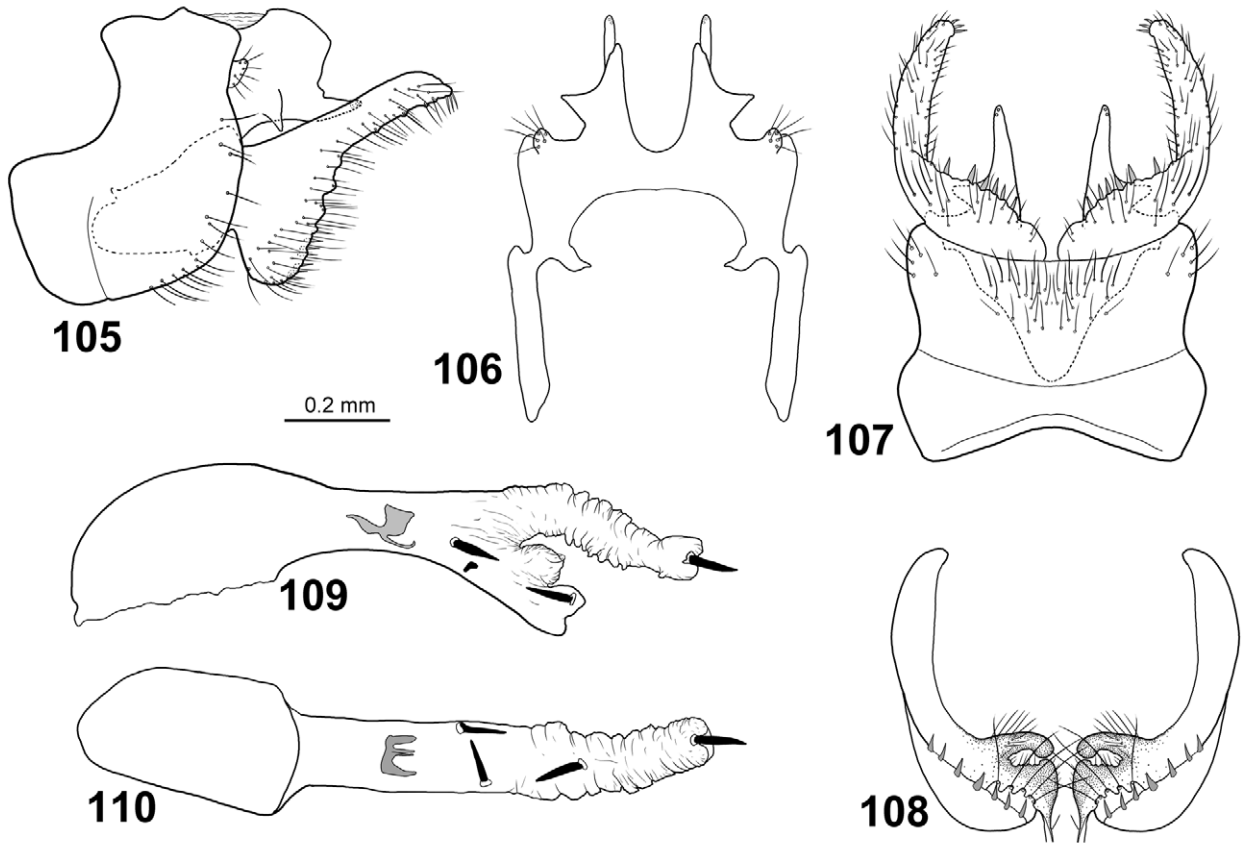
The genitalia of this species, particularly the gonopods, resemble those of *C. helomyzida*, *C. kimminsi*, *C. cartwrighti*, *C. lavensis*, *C. devoensis*, *C. cakaudrovensis*, *C. devoensis*, *C. malaisei*, and *C. vanuensis*. It is easily distinguished from *C. kimminsi*, *C. helomyzida*, *C. tipulida* and *C. cartwrighti* by the presence of 2 pairs of endothecal spines (not 1 pair); from *C. lavensis*, *C. devoensis*, and *C. vanuensis* by the absence of a prominent dorsad-oriented process on each of the lateral lobes of tergum X; and from *C. cakaudrovensis* by its shorter segment IX and more prominent dorsal branches of tergum X.

Male. Body (Fig. 33): Head and thorax dark brown, dorsal part of meso- and metathorax slightly darker brown than rest of thorax. Area between ocelli nearly black. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 20). Forewings 6.4 mm (lectotype), dark brown, iridescent. Forewings broad, ratio of length to breadth 3.0; R1 weakly undulating before crossvein r; radial sector not produced anterad immediately before discoidal cell; discoidal cell originating distally of mid-length of wing, 2.5x longer than wide; median cell slightly longer than discoidal cell; crossvein r originating from basis of R2; fork I originating immediately before crossvein s at distance equal to 1/5th length of crossvein s; nygma located near base of fork II; fork III 1/6th as long as wing; fork V as long as fork II; Cu2 ending in wing margin well separated from A. Hind wings 5.3 mm (lectotype), brown, iridescent; ratio of length to breadth 2.8; margin weakly incurved at arculus, where Cu1 and Cu2 fused with margin; fork I originating from anterodistal corner of discoidal cell; fork III slightly longer than discoidal cell and 1/7th as long as wing; fork V longer than fork I; 1A+2A about 4x as long as 1A.

Male genitalia (Figs. 105–110). Segment IX nearly 1.2x taller than long; in lateral view each side produced anterad into rectangular ventral plate and 1/2 as high triangular dorsal plate; ventral margins slightly convex, slightly constricted at vertical apodeme; anterodorsal margin with deep, U-shaped concavity; each posterior margin slightly convex; segment IX ventrally with with setae restricted to band at posterior 1/3rd (Fig. 107). Dorsal part of segment IX irregular in lateral view, slightly membranous before tergum X. In dorsal view segment IX with long, narrow ventral plates; dorsal plates narrow, triangular; gap between dorsal plates oval. In ventral view segment IX narrowing strongly at mid-length at transverse apodeme, anterior margin shallowly triangular, posterior margin slightly concave. Tergum X short, divided into pair of lateral branches; in lateral view each lateral branch with broad dorsal, rounded lobe, and short, nearly straight, tube-shaped ventral branch, with 2 apical sensillae. Each ventral branch with ventrolaterad directed, sharply triangular lateral process situated at mid-length, near ventral margin. In dorsal and ventral view, ventral processes broad at basis; slender distally of lateral processes. Cerci located dorsally on posterior margin of segment IX, about at mid-height of tergum X; wart-like in lateral and dorsal view; with long setae. Gonopods nearly as long as height of segment IX; in lateral view broad basal 1/2, strongly expanded ventrally into rounded lobe, narrowing distally; distal 1/2 almost straight, nearly parallel-sided; each gonopod apparentlyunbranched in lateral view. In lateral view anterodorsal margin of each gonopod nearly straight, smooth; posteroventral margin undulating, with mesal megasetae on posterior margin of ventral lobe; apex with marginal, mesad oriented megasetae. In ventral view, gonopods slightly broader at base than at distal part, with

nearly straight, slightly undulating posterior margins; gonopods slightly curved mesad toward rounded apex. Phallic apparatus longer than rest of genitalia (with expanded endotheca), straight along its length; narrowest at midlength in lateral view; in lateral view phallotheca about 2x thicker than narrowest posterior part; in ventral view about 2x thicker than posterior part; apicoventral spine absent; phallotremal sclerite with 4 posterior rays originating from anterior plate, central rays very thin, situated closely; 4 nearly black, variously directed endothecal spines present, all shorter than diameter of narrowest part of phallotheca; endothecal spicules absent.



FIGURES 105–110. *Chimarra manni* Banks, 1924, lectotype. **105**—genitalia, left lateral view; **106**—genitalia, dorsal view; **107**—genitalia, ventral view; **108**—gonopods, caudal view; **109**—phallic apparatus, left lateral view; **110**—phallic apparatus, ventral view.

Female. Unknown.

Lectotype male (here designated): "Fijis: Taviuni, Somo Somo. W. M. Mann"; "Type 14825"; "Chimarrha manni Type Bks". [no date]. Abdomen macerated, in glycerol in micro vial on same pin as rest of animal [MCZ].

Paralectotypes (here designated): same data as lectotype — 2 males.

Additional material examined: Type material of *C. indigota* (examined); **TAVEUNI:** Cakaudrove Prov., Mt. Koronibuabua, 3.2 km NW Lavena, Malaise trap, 4–18.i.2004, 16°51'16.9''S, 179°53'26.2''W [16.8547°S, 179.8906°W], 234 m, leg. E. Schlinger & M. Tokota'a [loc#41] — 11 males [NHRS]. Same data, except Malaise trap in rainforest, 24.x–19.xi.2003, 16°51'28.3''S, 179°53'43.5''W [16.8579°S, 179.8954°W], 233 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#42] — 3 males [FNIC]. Cakaudrove Prov., Lavena, Malaise trap, 4–19.xi.2003, 16°51.283'S, 179°53.370'W [16.8579°S, 179.8936°W], 212 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#43] — 1 male [BPBM]. Same data, except 16°51.322'S, 179°53.338'W [16.8553°S, 179.8890°W], 213 m [loc#40] — 1 male [BPBM]. Cakaudrove Prov., Soqulu House in Soqulu Estate, Malaise trap 1, 27.xii.2002–3.i.2003, 16.833°S, 180°E, 140 m, leg. E. Schlinger & M. Tokota'a [loc#44] — 2 males [FNIC]. **VANUA LEVU:** 0.3 km S Rokosalase Village, Malaise trap 1, 28.ix–15.xi.2004, 16.531°S, 179.019°E, 94 m, leg. I. Sakealevu [loc#30] — 2 males [BPBM]. Macuata Prov., Dogotuki, 2.5 km E Nasavu River, Malaise trap,

7.vii.2003, 16.2519°S, 179.7833°E, 226 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#28] — 1 male [BPBM]. Macuata Prov., Rokosalase, Malaise trap in forest, 8–21.vi.2004, 16°31.891'S, 179°01.147'E [16.5315°S, 179.0192°E], 105 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#27] — 1 male [BPBM]. Macuata Prov., 0.4 km S Rokosalase Village, Malaise trap in forest, 23.iv–8.v.2004, 16.532°S, 179.019°E, 118 m, leg. E. Schlinger & M. Tokota'a [loc#31] — 7 males [BPBM]. Macuata Prov., 0.6 km S Rokosalase Village, Malaise trap in forest, 23.iv–8.v.2004, 16.5333°S, 179.0181°E, 180 m, leg. E. Schlinger & M. Tokota'a [loc#26] 1 male [NHRS].

Distribution: Taveuni and Vanua Levu.

Chimarra cakaudrovensis, new species

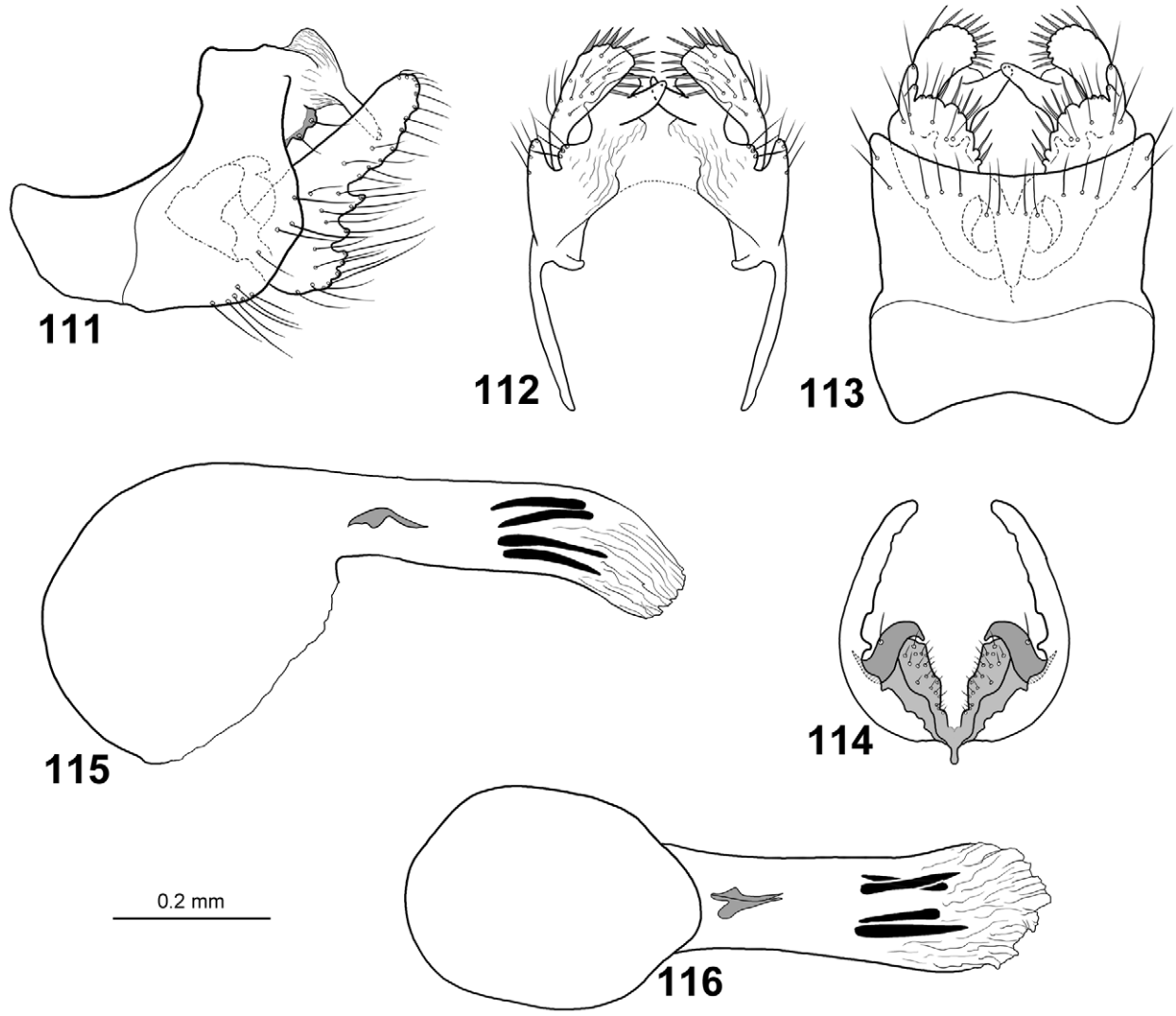
Figs. 21, 111–116

The genitalia of this species, particularly the gonopods, resemble those of *C. helomyzida*, *C. kimminsi*, *C. cartwrighti*, *C. lavensis*, *C. devoensis*, *C. manni*, *C. devoensis*, *C. tipulida*, and *C. vanuensis*. It is easily distinguished from *C. lavensis*, *C. devoensis* and *C. vanuensis* by the absence of prominent dorsad-oriented processes from the lateral lobes of tergum X; from *C. kimminsi*, *C. helomyzida*, *C. tipulida* and *C. cartwrighti* by the presence of 2 pairs of endothecal spines (not1 pair); and from *C. manni* by its strongly anterad produced segment IX. Tergum X somewhat resembles that of *C. cartwrighti* and *C. manni*, but the angle between the dorsal and ventral branches is much wider than in those 2 species, and the dorsal branches are more membranous than in *C. manni*.

Male. Head and thorax dark brown, dorsal part of meso- and metathorax slightly darker brown than rest of thorax. Area between ocelli nearly black. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 21). Forewings 5.0 mm (n=1), brown. Forewings broad, ratio of length to breadth 3.2; R1 slightly curved before crossvein r; radial sector slightly produced anterad immediately before discoidal cell; discoidal cell originating at mid-length of wing, about 3x longer than wide; median cell as long as discoidal cell; crossvein r originating on R2+3 immediately before fork I; fork I originating before crossvein s at distance equal to length of crossvein s; nygma located near base of fork II; fork III 1/5th as long as wing; fork V slightly shorter than fork II; Cu2 ending in wing margin well separated from A. Hind wings 4.0 mm (n=1), brown; ratio of length to breadth 3.0; margin weakly incurved at arculus, where Cu1 and Cu2 fused with margin; fork I originating slightly before anterodistal corner of discoidal cell; fork III as long as discoidal cell and 1/7th as long as wing; fork V as long as fork I; 1A+2A about 3x as long as 1A.

Male genitalia (Figs. 111–116). Segment IX longer than high, nearly boomerang-shaped in lateral view; anterodorsal margins slightly produced anterad, ventrum strongly produced anterad into triangular plate in lateral view; ventral margins irregularly convex; anterodorsal margin deeply concave; each posterior margin convex; segment IX ventrally with with setae restricted to row before posterior margin (Fig. 113). Dorsal part of segment IX nearly straight in lateral view, central part membranous in dorsal view; anterior margin invisible in dorsal view. In ventral view segment IX with almost parallel lateral, undulating margins, anterior and posterior margin shallowly concave; posterior margin without central projection. Tergum X short, divided into pair of lateral branches; in lateral view each lateral branch with small dorsal rounded lobe, and tube-shaped, nearly straight ventral branch with 2 apical sensillae. In dorsal and ventral view, ventral processes oriented mesad, crossing. Cerci located immediately below tergum X; wart-like in lateral and dorsal view, darkly pigmented; covered by long setae. Gonopods about as long as height of segment IX; nearly triangular in lateral view, basal 1/2 narrowing in lateral view; distal 1/2 nearly parallel-sided; each gonopod unbranched in lateral view; with well-developed dorsomesal lobe and ventromesal lobe of mesal process in ventral view. Anterodorsal margin of each gonopod nearly straight, smooth; posteroventral margin of basal 1/2 with strongly expanded setal bases, distal 1/2 with shorter setal bases; ventral margin strongly convex; apical margin armed with small megasetae. In ventral view, gonopods broad at base, forming rounded lobes with undulating margins; gonopods slightly curved mesad toward rounded apex. Mesal branch of each gonopod divided into well-developed ventromesal and dorsomesal lobe; ventromesal lobe edged, darkly pigmented, covered by minute setae; dorsomesal lobe strongly curved ventrad, with pointed apex. Phallic apparatus about 1.5x longer than rest of genitalia, straight along its length, except slightly curved ventrad at posterior apex; phallotheca, in lateral view about 3x thicker than posterior part; in ventral view about 2x thicker than posterior part; apicoventral spine absent; phallotremal sclerite small, 2-rayed, pointing posterad; 2 pairs nearly black, long, posterad and anterad directed endothecal spines present, about as long as diameter of narrowest part of phallotheca; endothecal spicules absent.



FIGURES 111–116. *Chimarra cakaudrovensis*, **new species**, holotype. **111**—genitalia, left lateral view; **112**—genitalia, dorsal view; **113**—genitalia, ventral view; **114**—gonopods, caudal view; **115**—phallic apparatus, left lateral view; **116**—phallic apparatus, ventral view.

Female. Unknown.

Holotype male: TAVEUNI: Cakaudrove Prov., Devo Forest Reserve, Malaise trap, 3–10.i.2003, 16°50'S, 179°59'E [16.8333°S, 179.9833°E], 800 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#37] [FNIC].

Paratypes: same data as holotype [loc#37] [NHRS] — 11 males. Same data as holotype, except 10–16.i.2003 [loc#37] — 9 males [BPBM]. Cakadrove Prov., Davo Peak Radio Tower, Malaise trap in rainforest, 13–20.xii.2002, 16°51'S, 179°58'E [16.8500°S, 179.9667°E], 1200 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#36] — 9 males [BPBM]. Same data, except 25.ix–7.x.2002 [loc#36] — 1 male [BPBM]. Same data, except 10–17.x.2002 [loc#36] — 2 males [BPBM]. Same data, except 31.x–21.xi.2002 [loc#36] — 1 male [BPBM]. **VITI LEVU:** Naitasiri Prov., Eteni, Navai, , Malaise trap, 6.vi–15.vii.2003, 17°37'S, 177°59'E [17.6167°S, 177.9833°E], 700 m, leg. E. Schlinger, M. Irwin & M. Tokota'a [loc#09] — 2 males [NHRS]. Vuda Prov., Koroyanitu Pk., 1 km E Abaca Vlg., Malaise trap 1, 12–19.xi.2002, 17.667°S, 177.55°E, 800 m, leg. E. Schlinger & M. Tokota'a [loc#03] — 1 male [NHRS, DNA voucher IM4]. Same data, except 19–26.xi.2002 [loc#03] — 1 male [BPBM]. Same data, except 22.iv–5.v.2003 [loc#03] — 10 male [BPBM]. Naitasiri Prov., 3.2 km E Navai Vlg., Veilaselase Track, Malaise trap 2, 18–25.x.2004, 17.624°S, 178.009°E, 1020 m, leg. E. Schlinger & M. Tokota'a [loc#15] — 1 male [FNIC]. Rewa Prov., 3.8 km N Veisari, Waivudava Log Rd., Malaise trap, 25.iv–25.v.2003, 18.0792°S, 178.3625°E, 300 m, leg. E. Schlinger & M. Tokota'a [loc#16] — 1 male [NHRS].

Etymology: *Cakaudrovensis*, after Cakaudrove Province on Taveuni, the type locality of the species.
Distribution: Taveuni and Viti Levu.

Chimarra cartwrighti, new species

Figs. 22, 117–123

The forewings of this species are dark brown and iridescent like those of *C. manni*. *Chimarra cartwrighti* is easily separated from *C. manni* by having male genitalia with segment IX appearing more or less rectangular in lateral view, and gonopods that are broader in lateral view.

Male. Head and thorax dark brown, dorsal part of meso- and metathorax even darker brown. Area between ocelli nearly black. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 22). Forewings 6.9 mm (n=1), dark brown, iridescent. Forewings broad, ratio of length to breadth 3.1; R1 weakly weaving before crossvein r; radial sector weakly produced anterad immediately before discoidal cell; discoidal cell originating distally of mid-length of wing, about 2x longer than wide; median cell slightly longer than discoidal cell; crossvein r originating from basis of R2; fork I originating before crossvein s at distance equal to 1/2 length of crossvein s; nygma located near base of fork II; fork III 1/6th as long as wing; fork V longer than fork II; Cu2 ending in wing margin well separated from A. Hind wings 5.5 mm (n=1), brown, iridescent; ratio of length to breadth 2.8; margin weakly incurved at arculus, where Cu1 and Cu2 fused with margin; fork I originating from anterodistal corner of discoidal cell; fork III slightly longer than discoidal cell and 1/7th as long as wing; fork V longer than fork I; 1A+2A about 4x as long as 1A.

Male genitalia (Figs. 117–123). Segment IX longer than high, nearly rectangular in lateral view; anterodorsal margins slightly produced into rounded lobe, ventrum slightly produced anterad and posterad in lateral view; ventral margins slightly convex; dorsal margins slightly concave; each posterior margin shallowly convex; segment IX ventrally with posterior third with setae (Fig. 120). Dorsal part of segment IX membranous, expanded into 2 rounded, posterior lobes; anterior margin invisible in dorsal view. In ventral view segment IX with parallel lateral, undulating margins, anterior and posterior margin shallowly concave; posterior margin without central projection. Tergum X short, divided into pair of lateral branches; each branch with dorsal rounded lobe, and ventral, nearly straight, tube-shaped, posterad oriented ventral lobe with 2 apical sensillae. Tergum originating deeply inside segment IX. In dorsal and ventral view, tergum X forming pair of very slender processes separated by deep U-shaped gap; each process with slender, laterad oriented thorn-like outgrowth immediately basally of mid-length of each lateral branch. Cerci located at posterodorsal corner of segment IX; slender, slightly dilated and directed posterad in lateral view; broad, rounded in dorsal view; covered by long setae. Gonopods triangular in lateral view, narrowing uniformly apically along their length; about as long as height of segment IX;unbranched in lateral view; with well-developed dorsomesal lobe and ventromesal lobe of mesal process in ventral view. Dorsal margin nearly straight, smooth; posterior margin slightly concave, strongly undulating by large setal bases; ventral margin strongly convex; gonopods slightly longer than tergum X; apical margin armed with small megasetae. In ventral view, gonopods broad at base, slightly curved mesad toward apex; mesal margins strongly diverging in ventral view. Mesal branch divided into well-developed ventromesal and dorsomesal lobe; ventromesal lobe rounded convex, darkly pigmented, covered by minute setae; dorsomesal lobe strongly curved ventrad, with rounded apex. Phallic apparatus about as long as rest of genitalia, straight along its length; phallotheca, in lateral and ventral view about 2x thicker than posterior part; apicoventral spine absent; phallotremal sclerite minute, divided into 3 posterior rays; 2 nearly black, short, posterad directed endothecal spines present, slightly shorter than diameter of narrowest part of phallotheca; group of ventrad oriented spicules present distally in endotheca.

Female. Unknown.

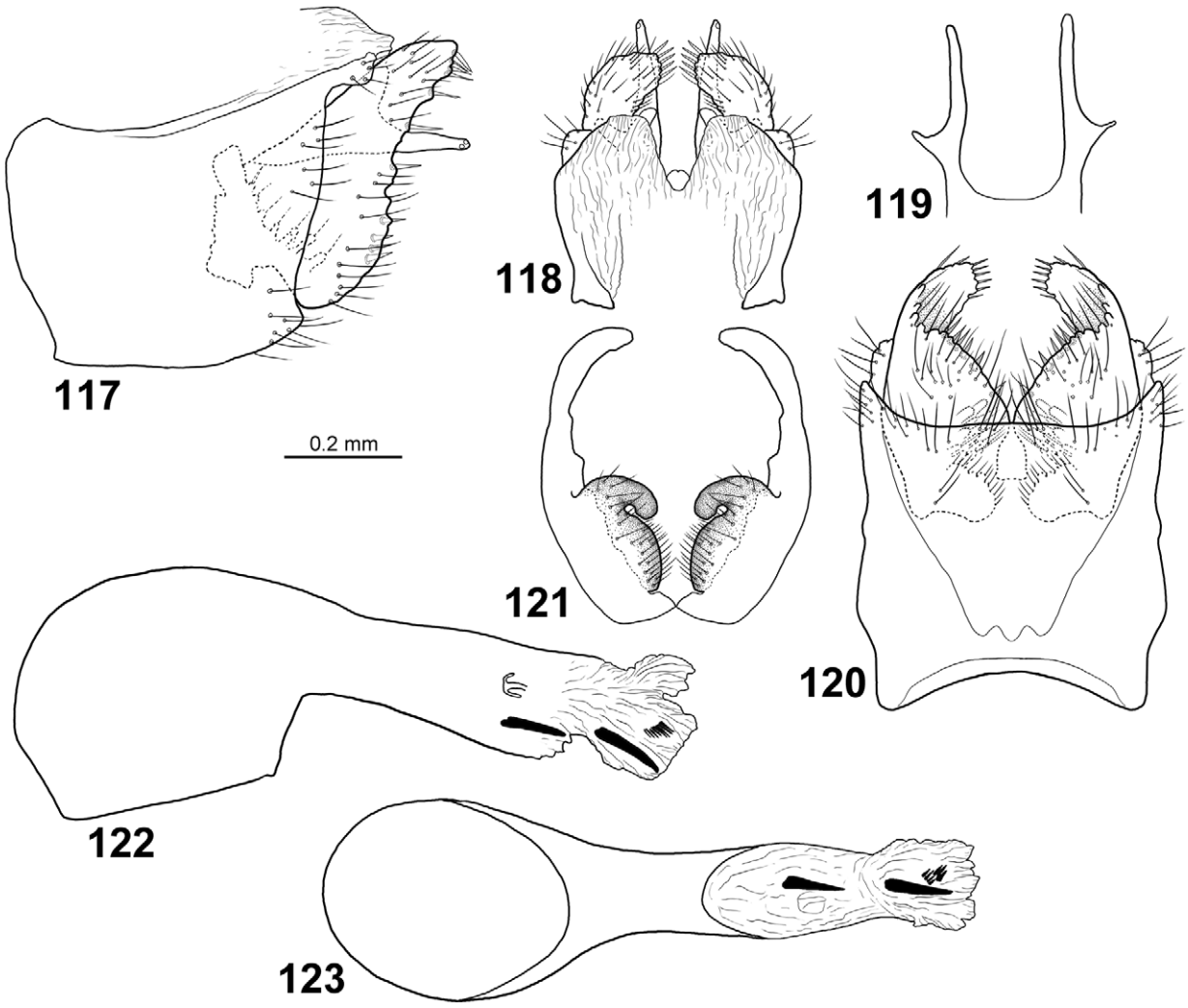
Holotype male: VITI LEVU: Vuda Prov., Koroyanitu Pk., 1 km E Abaca Vlg., Malaise trap 1, 19–26.xi.2002, 17.667°S, 177.55°E, 800 m, leg. E. Schlinger & M. Tokota'a [loc#03] [FNIC].

Paratypes: Same data as holotype, except 22.iv–5.v.2003 [loc#03] — 7 males [NHRS]. Vuda Prov., Koroyanitu Pk., 1 km E Abaca Vlg., Kokabula Trail, Malaise trap, 12–19.xi.2002, 17°40'S, 177°33'E [17°40'S, 177°33'E 17.3333°S, 177.5500°E], 800 m, leg. E. Schlinger & M. Tokota'a [loc#05] — 1 male [NHRS, DNA voucher IM8]. Naitasiri Prov., 4 km WSW Colo-i-Suva Village, Mt. Nakobalevu, Malaise trap 1, 12.iv.2004, 18.057°S, 178.42°E, 300 m, leg E. Schlinger & M. Tokota'a [loc#12] — 1 male [BPBM]. Same data, except 9–30.v.2003, 18.055°S,

178.424°E, 372 m [loc#11] — 1 male [NHRS].

Etymology: *Cartwrighti*, named after David I. Cartwright, for his valuable contribution in the taxonomy of Australian *Chimarra*.

Distribution: Viti Levu.



FIGURES 117–123. *Chimarra cartwrighti*, **new species**, holotype. **117**—genitalia, left lateral view; **118**—genitalia, dorsal view; **119**—tergum X, dorsal view; **120**—genitalia, ventral view; **121**—gonopods, caudal view; **122**—phallic apparatus, left lateral view; **123**—phallic apparatus, ventral view.

Chimarra kimminsi, new species

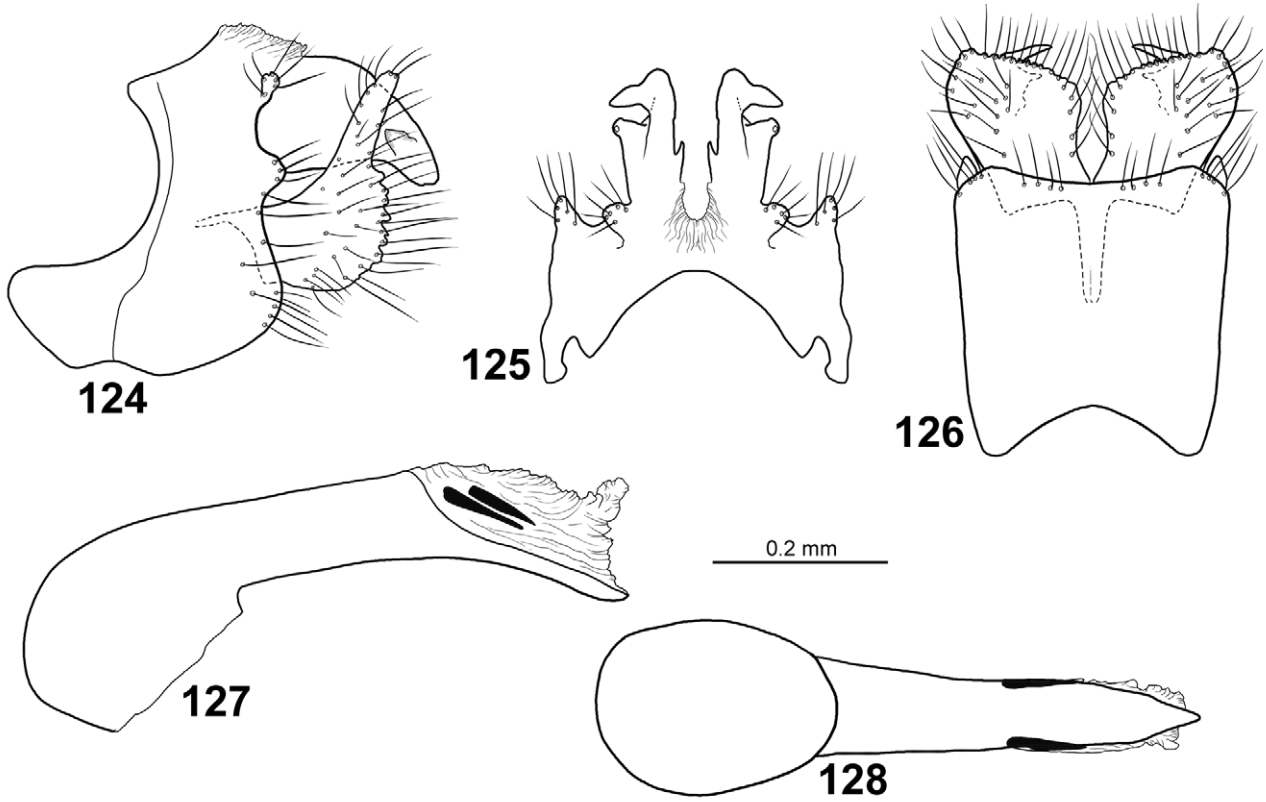
Figs. 23, 124–128

The male genitalia of *C. kimminsi* somewhat resemble those of *C. helomyzida*, *C. cakaudrovensis*, *C. cartwrighti*, *C. manni*, *C. lavensis*, *C. devoensis* and *C. vanuensis*, particularly in the shape of the gonopods in lateral view. *Chimarra kimminsi* is distinguished from these other species by the absence of a dorsal process on each of the branches of tergum X.

Male. Head and thorax brown, dorsal part of meso- and metathorax dark brown. Area between ocelli yellowish-brown. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 23). Forewings 4.1 mm (n=1), brown. Forewings broad, ratio of length to breadth 3.0; R1 nearly straight before crossvein r; radial sector not produced anterad immediately before discoidal cell; discoidal cell originating at mid-length of wing, 3x longer than wide; median cell slightly shorter than discoidal cell; crossvein r orig-

inating from basis of fork I; fork I originating before crossvein s at distance equal to 1/2 length of crossvein s; nygma located near base of fork II; fork III nearly 1/7th as long as wing; fork V about as long as fork II; Cu2 ending in wing margin close to A. Hind wings 3.3 mm (n=1), brown; ratio of length to breadth 2.7; margin weakly incurved at arculus, where Cu1 and Cu2 fused with margin; fork III slightly longer than discoidal cell and 1/5th as long as wing; fork V longer than fork I; 1A+2A about 3x as long as 1A.



FIGURES 124–128. *Chimarra kimminsi*, **new species**, holotype. **124**—genitalia, left lateral view; **125**—genitalia, dorsal view; **126**—genitalia, ventral view; **127**—phallic apparatus, left lateral view; **128**—phallic apparatus, ventral view.

Male genitalia (Figs. 124–128). Segment IX clearly taller than long; anterodorsal margins with deep rounded concavity in lateral view; ventral margins irregularly convex, incised at vertical apodeme; each posterior margin smoothly convex; with small, rounded posterior process at mid-height, starting well below each cercus; ventral side of posterior margin of segment IX with few setae (Fig. 126). In dorsal view with short, pointed anterior lobes; anterodorsal margin with wide, hyperbolic incision in dorsal view, mesal margins with triangular process corresponding to anterad oriented anterodorsal process seen in lateral view. In ventral view segment IX with nearly parallel lateral margins, concave anterior margin and weakly concave posterior margin; posterior margin without central projection. Tergum X tapering and curved ventrad along its length in lateral view (Fig. 124); dorsal margin convex, ventral margin nearly straight, except concave near apex. In dorsal view tergum X divided basally into 2 lateral, nearly straight and parallel branches (Fig. 125); each lateral branch with minute tooth at mid-length on mesal margin; large, laterad oriented process at mid-length of lateral margin, with apical sensilla; narrow, triangular process situated on lateral margin near apex oriented strictly laterad. Cerci short, slender and club-shaped in lateral view, wart-like in dorsal view; located dorsally on segment IX, opposite to anterodorsal process of segment IX; covered by long setae. Gonopods slightly shorter than segment IX,unbranched; anterodorsal margin concave, smooth; basal 1/2 broad, with strongly convex posterior margin due to presence of erect setal bases; distal 1/2 narrow, nearly straight, with smooth posterior margin; gonopods nearly reaching as far posteriorly as tergum X. In ventral view, gonopods forming broad plate, each with weakly concave mesal margin; each posterior margin undulating along its length. Phallic apparatus about 1.5x longer than rest of genitalia, weakly curved ventrad along its length; phallotheca, in lateral view nearly 2x thicker than posterior part, with anterior part about 2x thicker than

posterior part; apicoventral spine forming horizontal plate below membranous endotheca, in ventral view nearly parallel-sided along its length before pointed apex; phallotremal sclerite not observed; 2 nearly black, short, posterad directed, sub-equally large endothecal spines present, slightly shorter than diameter of narrowest part of phallotheca.

Female. Unknown.

Holotype male: VITI LEVU: Vuda Prov., Koroyanitu Pk., 1 km E Abaca Vlg., Savuione Trail, Malaise trap, 11–19.iii.2003, 17.667°S, 177.55°E, 800 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#03] [FNIC].

Paratypes: Same data as holotype [loc#03] [22 males in BPBM, 12 males in NHRS].

Etymology: *Kimminsi*, named after D. E. Kimmins for his valuable contribution in the taxonomy of Australian, Oriental and Afrotropical *Chimarra*.

Distribution: Viti Levu.

Chimarra kadavuensis, new species

Figs. 24, 129–133

Chimarra kadavuensis is unique among Fijian *Chimarra* species in the structure of the male genitalia, particularly the very short segment IX, long and narrow gonopods, and in the length of the phallic apparatus, which is shorter than the combined length of segment IX and the gonopods.

Male. Body brown, dorsal part of meso- and metathorax dark brown. Large dark area present between lateral and anterior ocelli. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 24). Forewings 6.4 mm (n=1), brown, iridescent; relatively broad, ratio of length to breadth 3.3; R1 undulating before crossvein r; radial sector not produced anterad immediately before discoidal cell; discoidal cell originating slightly distally of mid-length of wing, 2x longer than wide; median cell slightly longer than discoidal cell; crossvein r situated at base of R2; fork I originating tangentially with crossvein s; nygma located near base of fork II; fork III 1/7th as long as wing; fork V as long as fork I, shorter than fork II; Cu2 well separate from A at wing margin. Hind wings 5.1 mm (n=1), brown, iridescent; broad, ratio of length to breadth 2.8; margin slightly incurved where Cu1 and Cu2 fused with margin; fork III as long as discoidal cell and 1/9 as long as wing; fork I originating from anterodistal corner of discoidal cell, about as long as fork V; 1A+2A 3x longer than 1A.

Male genitalia (Figs. 129–133). Segment IX about 1.5x taller than long; ventral and dorsal margin about equally long in lateral view; segment narrowest immediately immediately below cerci; ventral anterior plates rounded anteriorly; dorsal anterior plates short, slender, anteriorly rounded; anterodorsal margin widely and deeply concave in lateral view; ventral margin nearly straight; posterior margins weakly undulating, nearly vertical, curved anterad immediately below cercus. In dorsal view segment IX with short, narrow anterior lobes; anterodorsal margin forming deep, straight-margined incision, with anterad-orienting processes on posteromesal margins. In ventral view segment IX with undulating lateral margins; anterior and posterior margins concave; posterior margin without central projection. Tergum X divided into lateral branches at basis. Each lateral branch of tergum X with triangular, nearly straight dorsal branch pointing posterad in lateral view, with dorsal margin on line with dorsal margin of segment IX; ventral branch originating well below dorsal branch, slender, curved posterad along its length, with apical and subapical sensilla, reaching as far posterior as dorsal branch; small rounded plate present at base between dorsal and ventral branches. In dorsal view dorsal branches of tergum X narrowing distally, curved laterad along their length; ventral branches nearly parallel, each with laterad-curved apex. Cerci small, located near dorsal margin of segment IX and tergum X; directed posterad in lateral view, tube-shaped; covered by long setae. Gonopods narrow, tapering from basis to 3/4 in lateral view, curved posteroventrad along their length, about as long as height of segment IX. Gonopodsunbranched in lateral view; in ventral view narrow and curved mesad along their length; with well sclerotized, long mesal branches oriented posterad, nearly touching apically; megasetae absent. Phallic apparatus slightly shorter than rest of genitalia, straight, compact; phallotheca, in lateral view, with anterior part 3x thicker than narrowest posterior part; in ventral view anterior part nearly 3x wider than posterior part; apicoventral spine absent on phallotheca; phallotremal sclerite simple, 3-rayed; 2 nearly black endothecal spines present. Group of spicules absent.

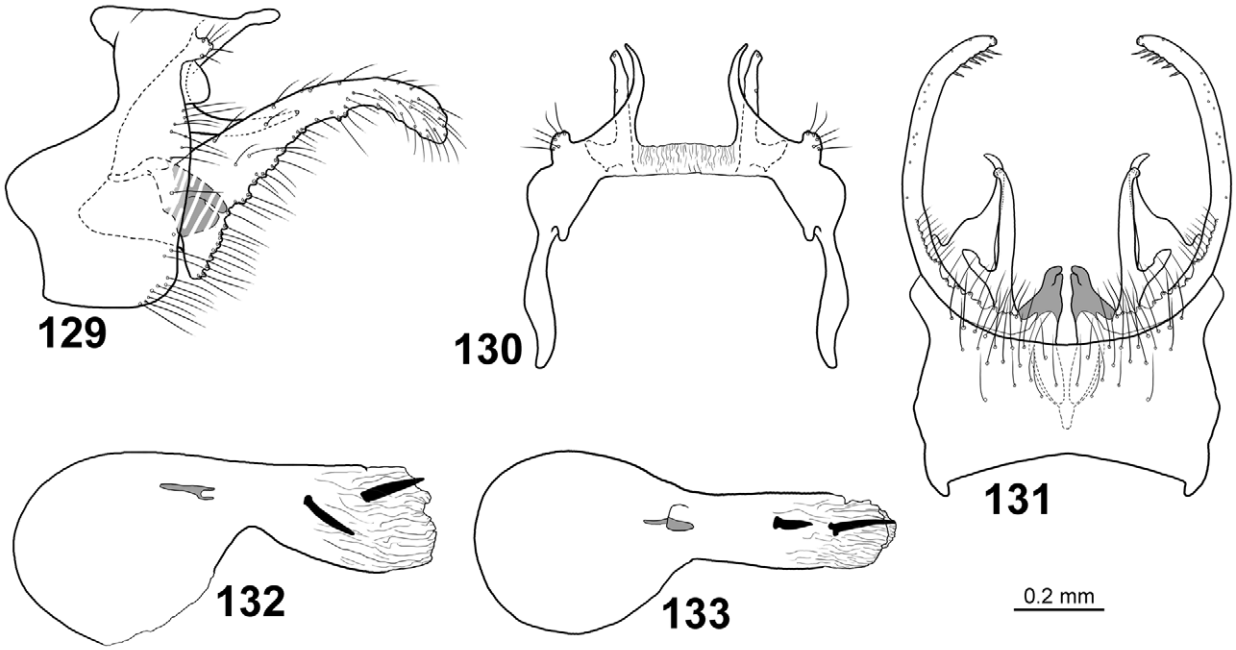
Female. Unknown.

Holotype male: KADAVU: 0.25 km SW Solodamu Vlg., Moanakaka Bird Sanctuary, Malaise trap 4, 7.iii–11.iv.2004, 19.078°S, 178.121°E, 50 m, leg. E. Schlinger & M. Tokota'a [loc#46] [FNIC].

Paratypes: Same data as holotype [loc#46] — 21 males [NHRS]. Same data as holotype, except 19.xii.2003–18.i.2004 [loc#46] — 2 males [BPBM]. Same data as holotype, except 11.iv–2.v.2004 [loc#46] — 28 males [BPBM]. Same data as holotype, except 9–15.ii.2004 [loc#46] — 4 males [NHRS]. Same data as holotype, except 15.ii–7.iii.2004 [loc#46] — 41 males [NHRS, DNA voucher IN3]. Solodamu, Malaise trap in coastal limestone forest, 11.vi–5.vii.2003, 19°04'S, 178°07'E [19.0667°S. 178.1167°E], 128 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#47] — 3 males [BPBM]. Same data, except 25.viii–23.x.2003 [loc#47] — 4 males [NHRS]. Same data, except 23.x–19.xii.2003 [loc#47] — 2 males [FNIC].

Etymology: *Kadavuensis*, named after the island Kadavu, the type locality of the species.

Distribution: Kadavu.



FIGURES 129–133. *Chimarra kadavuensis*, **new species**, holotype. **129**—genitalia, left lateral view; **130**—genitalia, dorsal view; **131**—genitalia, ventral view; **132**—phallic apparatus, left lateral view; **133**—phallic apparatus, ventral view.

Chimarra lavensis, new species

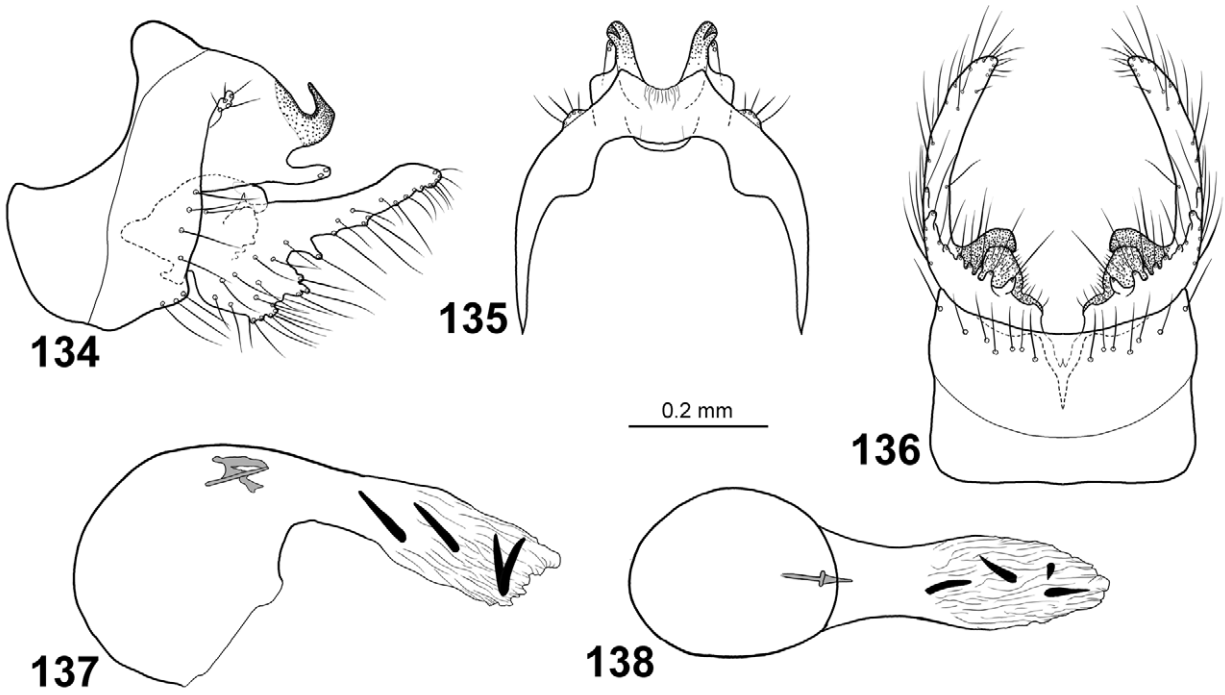
Figs. 25, 134–138

The male genitalia of this species, particularly tergum X, resembles those of *C. devoensis* and *C. vanuensis* in the presence of a strong dorsad-oriented dorsal branch of tergum X. In *C. lavensis* the ventral branch of tergum X is shorter than the dorsal branch, while in the other 2 species the ventral branch is longer than the dorsal branch. The phallic apparatus of *C. lavensis* has no spicules, which are present in *C. devoensis*; and the phallic apparatus of *C. lavensis* has 4 endothecal spines, whereas only 2 are present in *C. vanuensis*. The species is easily distinguished from *C. vanuensis* by the absence of a large pale spot between Cu1 and the end of Cu2 (arculus) in the forewings.

Male. Head and thorax brown, dorsal part of meso- and metathorax dark brown. Area between ocelli nearly black. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 25). Forewings 4.2 mm (n=1), brown. Forewings broad, ratio of length to breadth 3.1; R1 nearly straight before crossvein r; radial sector slightly produced anterad immediately before discoidal cell; discoidal cell originating at mid-length of wing, about 3x longer than wide; median cell slightly shorter than discoidal cell; crossvein r originating from basis of fork I; fork I originating before crossvein s at distance nearly equal to length of crossvein s; nygma located near base of fork II; fork III 1/7th as long as wing; fork V slightly shorter than fork II; Cu2 ending in wing margin well separated from A. Hind wings 3.4 mm (n=1), brown; ratio of length to breadth 2.9;

margin weakly incurved at arculus, where Cu1 and Cu2 fused with margin; fork I originating slightly before anterodistal corner of discoidal cell; fork III as long as discoidal cell and 1/11th as long as wing; fork V as long as fork I; 1A+2A about 3x as long as 1A.



FIGURES 134–138. *Chimarra lavensis*, **new species**, holotype. **134**—genitalia, left lateral view; **135**—genitalia, dorsal view; **136**—genitalia, ventral view; **137**—phallic apparatus, left lateral view; **138**—phallic apparatus, ventral view.

Male genitalia (Figs. 134–138). Segment IX nearly 2x taller than long in lateral view; anterodorsad produced into large, rounded, anterodorsad oriented plate; anteroventral plate large, triangular, slightly pointing dorsad in lateral view; anterodorsal margin widely and deeply concave; ventral margin irregularly convex, slightly incised at vertical apodeme; ventrum strongly produced anterad into triangular plate in lateral view; ventral margins irregularly convex; each posterior margin nearly straight; segment IX ventrally with with setae restricted to row before posterior margin (Fig. 136). Dorsal part of segment IX slightly concave in lateral view, incised at vertical apodeme; anterior margin invisible in dorsal view. In ventral view segment IX with almost parallel lateral margins, slightly narrower at transverse apodeme; anterior margin nearly straight; posterior margin weakly concave, without central projection. Tergum X short, divided into pair of lateral branches; in lateral view each lateral branch with large dorsal, darkly pigmented, anteriorly hooked dorsal branch, and short tube-shaped, nearly straight ventral branch with 2 apical sensillae. In dorsal and ventral view, ventral processes oriented posterad, nearly parallel. Cerci minute, located at posterior margin of segment IX immediately above mid-height of tergum X; wart-like in lateral and dorsal view; covered by long setae. Gonopods longer than length of segment IX; divided into broad basal third and narrow distal 2/3rds in lateral view; distal 2/3rds nearly parallel-sided; each gonopod unbranched in lateral view; with well-developed dorsomesal lobe and ventromesal lobe of mesal process in ventral view. Anterodorsal margin of each gonopod weakly concave, smooth; posteroventral margin of basal 1/2 with strongly expanded setal bases, distal 1/2 with short setal bases; ventral margin convex; apex without megasetae. In ventral view, gonopods as narrow at base as rest of gonopods, with undulating margins; gonopods slightly curved mesad along their length. Mesal branch of each gonopod divided into well-developed ventromesal and dorsomesal lobe; ventromesal lobe strongly convex, darkly pigmented, covered by minute setae; dorsomesal lobe slightly curved ventrad, with rounded apex. Phallic apparatus about as long as rest of genitalia, straight along its length; phallotheca, in lateral view nearly 4x thicker than posterior part; in ventral view about 2x thicker than posterior part; apicoventral spine absent; phallotremal sclerite complex in lateral view; in ventral view forming single posterad directed arrow head; 4 nearly black, short, variously directed endothecal spines present, about as long as diameter of narrowest part of phallotheca; endothecal spicules absent.

Female. Unknown.

Holotype male: TAVEUNI: Cakaudrove Prov., Lavena, Malaise trap, 4.i–11.iii.2004, 16°51.315'S, 179°53.323'W [16.8553°S, 179.8888°W], 213 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#40] [FNIC].

Etymology: *Lavensis*, after Lava Village, the type locality of the species.

Distribution: Taveuni.

Chimarra devoensis, new species

Figs. 26, 139–144

The male genitalia of this species resemble those of *C. lavensis* and *C. vanuensis*, particularly in the presence of a strongly dorsad-oriented dorsal branch of tergum X. In *C. devoensis* the dorsal process of tergum X is accompanied by a triangular, posterad oriented process between on the dorsal branches of tergum X. Segment IX has very long, anterolateral plates that are shorter in *C. lavensis* and *C. vanuensis*. In addition, the base of each gonopod is more strongly expanded ventrad compared to the other species. The species is easily distinguished from *C. vanuensis* by the absence of a large pale spot between Cu1 and end of Cu2 (arculus) in each forewing.

Male. Head and thorax greyish brown, dorsal part of meso- and metathorax dark brown. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 26). Forewings 5.1 mm (n=1), brown. Forewings broad, ratio of length to breadth 3.2; R1 nearly straight before crossvein r; radial sector slightly produced anterad immediately before discoidal cell; discoidal cell originating at mid-length of wing, nearly 3x longer than wide; median cell as long as discoidal cell; crossvein r originating from basis of fork I; fork I originating before crossvein s at distance equal to length of crossvein s; nygma located near base of fork II; fork III 1/6th as long as wing; fork V shorter than fork II; Cu2 ending in wing margin well separated from A. Hind wings 4.2 mm (n=1), brown; ratio of length to breadth 3.0; margin weakly incurved where Cu1 and Cu2 fused with margin; fork I originating slightly before anterodistal corner of discoidal cell; fork III as long as discoidal cell and1/10th as long as wing; fork V slightly shorter than fork I; 1A+2Ab 3x as long as 1A.

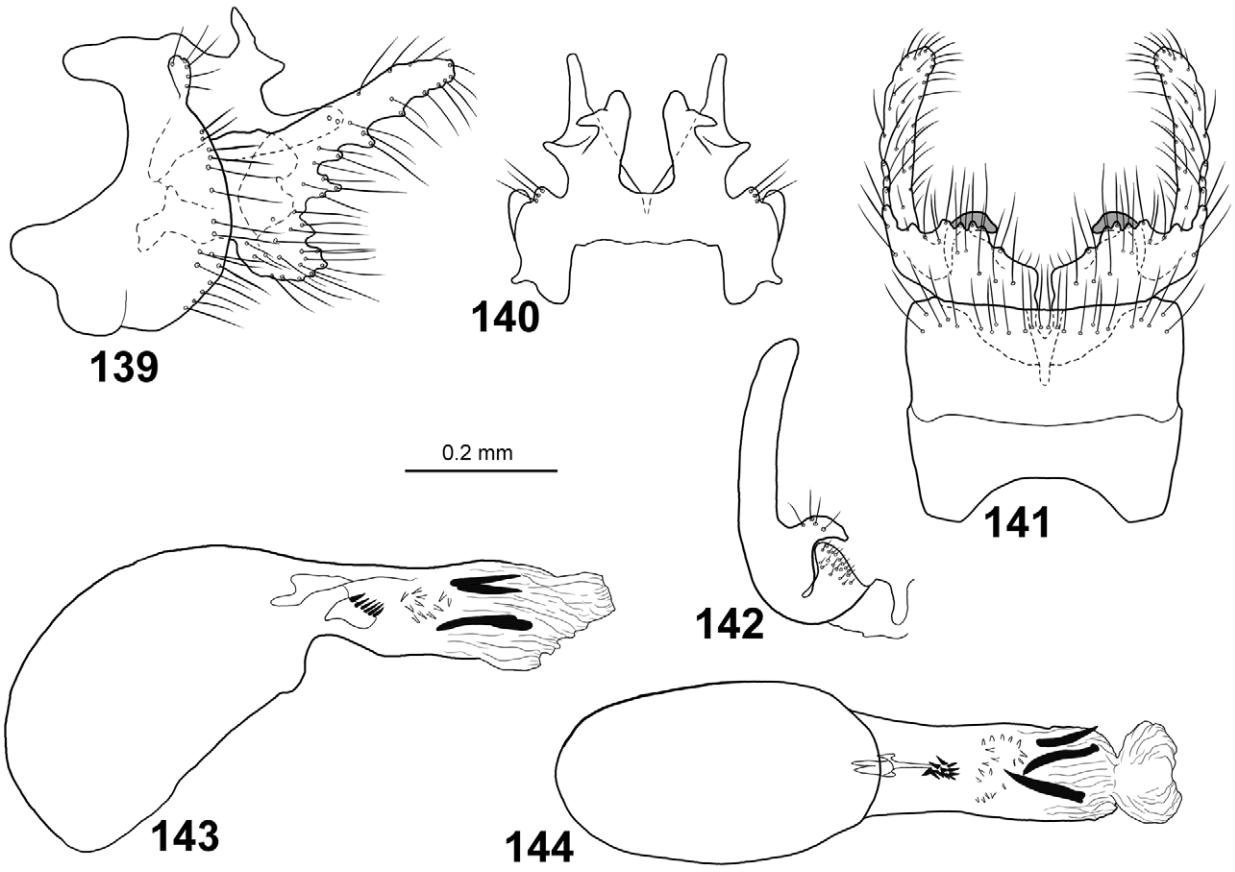
Male genitalia (Figs. 139–144). Segment IX about 1.5x taller than long in lateral view; anterodorsally produced into long, narrow, rounded, anterodorsad oriented plate; anteroventral plate large, triangular, pointing posterad in lateral view; anterodorsal margin widely and deeply concave, U-shaped; ventral margin irregularly convex, incised at vertical apodeme; each posterior margin forming uniformly convex plate originating immediately below cercus; segment IX ventrally with setae restricted to narrow band before posterior margin (Fig. 141). Dorsal margin of segment IX undulating in lateral view; anterior margin straight, membranous in dorsal view. In ventral view segment IX with almost parallel lateral margins, slightly narrower at transverse apodeme; anterior margin concave; posterior margin straight, without central projection. Tergum X nearly as long as segment IX, divided into pair of lateral branches at basis; in lateral view each lateral branch with large, straight, dorsad oriented dorsal branch, short, widely triangular posterad orienting process below dorsal branch, and long tube-shaped, nearly straight ventral branch with 2 apical sensillae. In dorsal and ventral view, ventral processes oriented posterad, slightly diverging, tapering along their length. Cerci small, wart-like, located at posterior margin of segment IX at mid-height of tergum X and covered by long setae. Gonopods longer than length of segment IX; divided into very broad basal third and narrow distal 2/3rds in lateral view; distal 2/3rds nearly parallel-sided; each gonopod unbranched in lateral view; with well-developed dorsomesal lobe and ventromesal lobe of mesal process in ventral view. Anterodorsal margin of each gonopod basally convex, distally straight; posteroventral margin concave, with strongly expanded setal bases; ventral margin of basis strongly expanded ventrad; distal apex without megasetae. In ventral view, gonopods slightly broader at base than rest of gonopods, with undulating margins; gonopods weakly curved mesad along their length. Mesal branch of each gonopod divided into well-developed ventromesal and dorsomesal lobe; ventromesal lobe strongly produced dorsad, darkly pigmented, covered by minute setae; dorsomesal lobe curved ventrad, with pointed apex. Phallic apparatus slightly longer than rest of genitalia, straight along its length; phallotheca, in lateral view nearly 4x thicker than posterior part; in ventral view nearly 2x thicker than posterior part; apicoventral spine absent; phallotremal sclerite forming simple, 3-rayed structure in lateral view; in ventral view forming single posterad directed arrow head situated on basis with 4 anterad pointing spines; 4 nearly black, short, variously directed endothecal spines present, about as long as diameter of narrowest part of phallotheca; endothecal spicules pointing posterodorsad, present in group below phallotremal sclerite.

Female. Unknown.

Holotype male: TAVEUNI: Cakadrove Prov., Devo Peak, Malaise trap, 10–16.i.2003, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#37] [FNIC].

Etymology: *Devoensis*, after Devo Peak, the type locality of the species.

Distribution: Taveuni.



FIGURES 139–144. *Chimarra devoensis*, **new species**, holotype. **139**—genitalia, left lateral view; **140**—genitalia, dorsal view; **141**—genitalia, ventral view; **142**—left gonopod, caudal view; **143**—phallic apparatus, left lateral view; **144**—phallic apparatus, ventral view.

Chimarra helomyzida, new species

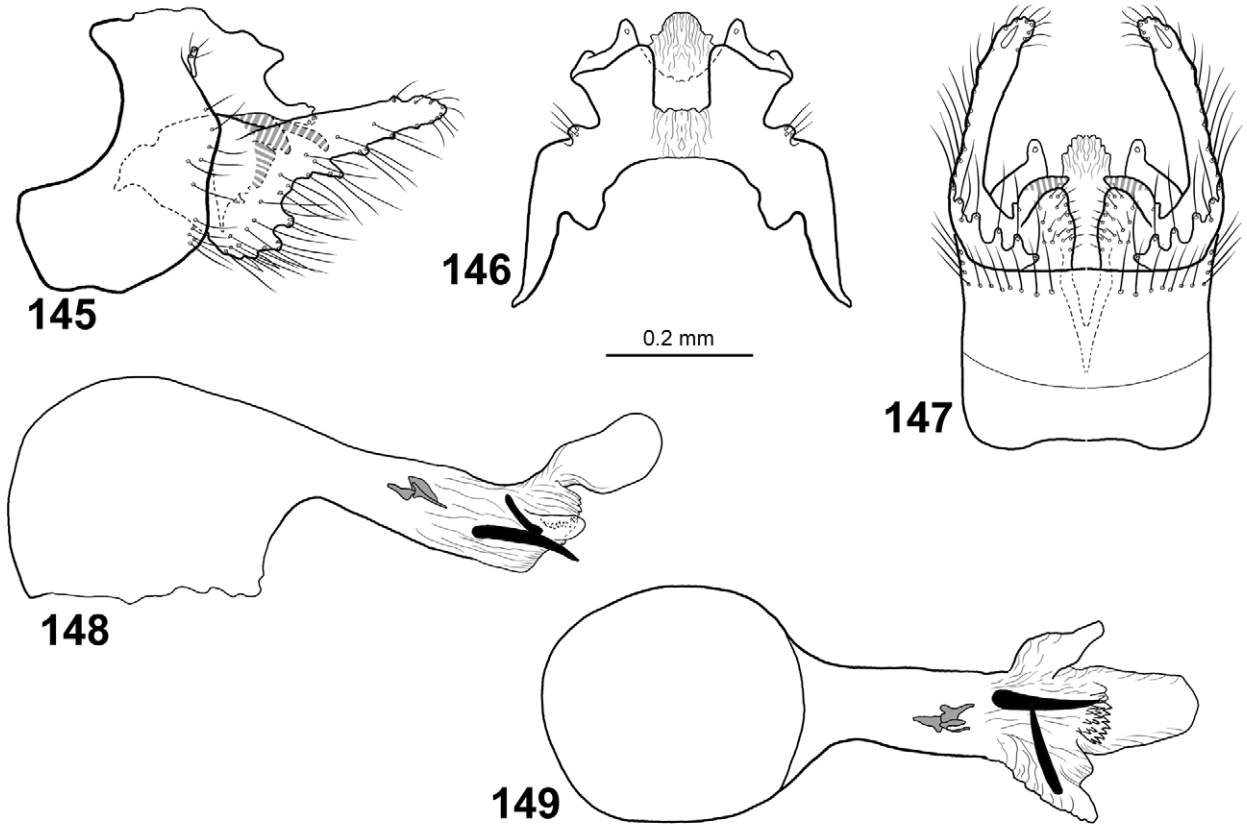
Figs. 27, 145–149

The male genitalia of *C. helomyzida* resemble those of *C. kimminsi*, *C. cakaudrovensis*, *C. cartwrighti*, *C. manni*, *C. lavensis*, *C. devoensis* and *C. vanuensis*, particularly in the shape of the gonopods in lateral view. *Chimarra helomyzida* is distinguished from *C. kimminsi* by the presence of a dorsal process on tergum X in lateral view; from *C. lavensis*, *C. devoensis*, *C. cakaudrovensis* and *C. manni* by the presence of only 2 endothecal spines in the phallic apparatus; from *C. cartwrighti* by the narrower anterior plates of segment IX in lateral view; and from *C. vanuensis* by the absence of a slender, dorsad oriented process mid-way on tergum X in lateral view.

Male. Head and thorax brown, dorsal part of meso- and metathorax dark brown. Area between ocelli nearly black. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 27). Forewings 4.2 mm (n=1), greyish-brown. Forewings broad, ratio of length to breadth 3.1; R1 weakly curved before crossvein r; radial sector not produced anterad immediately before discoidal cell; discoidal cell originating at mid-length of wing, nearly 3x longer than wide; median cell as long as discoidal cell; crossvein r originating from basis of fork I; fork I originating before crossvein s at distance equal to length of crossvein s;

nygma located near base of fork II; fork III 1/5th as long as wing; fork V about as long as fork II; Cu2 ending in wing margin well separated from A. Hind wings 3.4 mm (n=1), brown; ratio of length to breadth 2.9; margin weakly incurved at arculus, where Cu1 and Cu2 fused with margin; fork III slightly longer than discoidal cell and 1/6th as long as wing; fork V shorter than fork I; 1A+2A about 4x as long as 1A.



FIGURES 145–149. *Chimarra helomyzida*, **new species**, holotype. **145**—genitalia, left lateral view; **146**—genitalia, dorsal view; **147**—genitalia, ventral view; **148**—phallic apparatus, left lateral view; **149**—phallic apparatus, ventral view.

Male genitalia (Figs. 145–149). Segment IX clearly taller than long; anterodorsal margins with deep rounded concavity in lateral view; ventral margins irregularly convex, incised at vertical apodeme; each posterior margin shallowly concave; ventral side of posterior margin of segment IX with few setae in marginal row (Fig. 147). In dorsal view with short, rounded anterior lobes; anterodorsal margin with wide, U-shaped incision in dorsal view, mesal margins with triangular process corresponding to anterad oriented anterodorsal process seen in lateral view. In ventral view segment IX with parallel lateral margins, shallowly concave anterior margin and nearly straight posterior margin; posterior margin without central projection. Tergum X short, nearly straight and oriented posteroventrad; divided into 2 lateral branches at basis; in lateral view each lateral branch divided into short, broad dorsal branch and slightly longer, more slender, tube-shaped ventral branch with 2 apical sensillae. In dorsal view dorsal branches of tergum separated by rectangular gap, processes forming posteriorly broadening plates with laterally narrow corners and posterior rounded corners; ventral branches of tergum X separated by ellipsoid gap, processes similar in shape as dorsal processes. Cerci very short, wart-liked in dorsal view, forming narrow ridge in lateral view; located at mid-height of basis of tergum X in lateral view; covered by long setae. Gonopods slightly longer than segment IX,unbranched in lateral view, but each with well-developed dorsomesal lobe and ventromesal lobe of mesal process. Dorsal margin nearly straight, smooth; basal 1/2 clearly broader than distal 1/2, posteroventral margin slightly convex, with prominent erect setal bases; gonopods about 2x longer than tergum X. In ventral view, gonopods narrow, bent posterad at basis, straight and slightly converging after basis; each with ventromesal and dorsomesal lobe; ventromesal lobe triangular, covered by minute setae; dorsomesal lobe smooth, hook-shaped, directed mesad. Phallic apparatus about 1.5x longer than rest of genitalia, straight along its length; phallotheca, in

lateral and ventral view about 3x thicker than posterior part; apicoventral spine absent; phallotremal sclerite small, composed of 4 minute sclerites; 2 nearly black, long, posterad directed and laterad directed, sub-equally large endothecal spines present, slightly longer than diameter of narrowest part of phallotheca; group of ventrad oriented spicules present distally of spine pair.

Female. Unknown.

Holotype male: VITI LEVU: Naitasiri Prov., 3.3 km N Veisari, logging rd. to Waivudava, Malaise trap, 8–31.iii.2003, 18.0592°S, 178.367°E, 300 m, leg. M. Tokota'a [loc#20] [FNIC].

Paratypes: TAVEUNI: Cakaudrove Prov., Devo Forest Reserve, Malaise trap, 10–16.i.2003, 16°50'S, 179°59'E [16.8333°S, 179.9833°E], 800 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#37] — [2 males in BPBM, 1 male in NHRS].

Etymology: *Helomyzida*, named after the Diptera family Helomyzidae (sun flies) into which the genus *Trichoptera* Lioy was described.

Distribution: Viti Levu and Taveuni.

Chimarra tipulida, new species

Figs. 28, 150–154

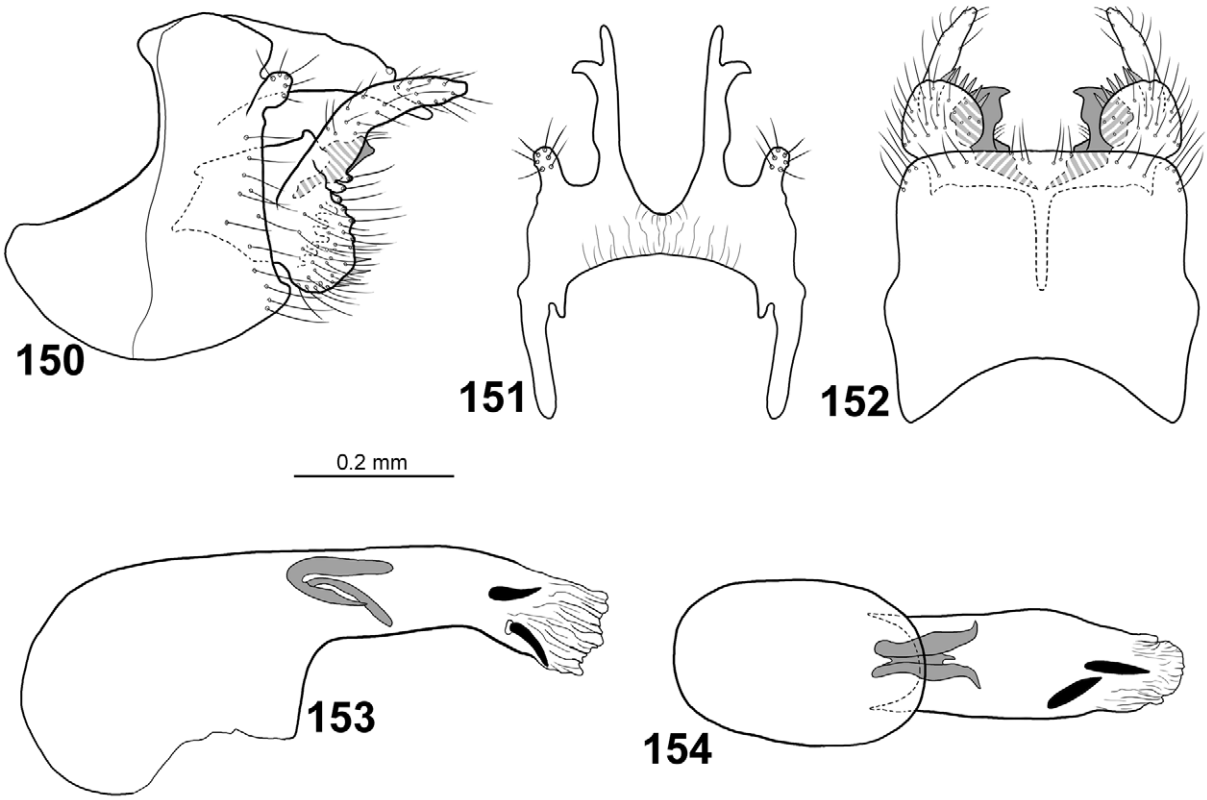
Chimarra tipulida resembles *C. psychodida*, *C. malickyi*, and *C. levuensis* in having gonopods each with both a slender, strongly produced dorsal branch, and a shorter, well-defined, plate-like ventral lobe. It is distinguished from *C. malickyi* by having segment IX with a ventral margin that is more uniformly convex in lateral view, and in having a shorter ventral branch of each gonopod. It is separated from *C. levuensis* by having parallel lateral branches of tergum X and a longer ventral branch of each gonopod. It is separated from *C. psychodida* by having a more strongly produced anterior lateral lobe of segment IX, and the absence of a dorsal process at mid-length on the lateral branches of tergum X.

Male. Body pale brown, dorsal part of meso and metathorax brown. Large dark area between lateral and anterior ocelli. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 28). Forewings 4.9 mm (n=1), greyish brown; broad, ratio of length to breadth 3.1; R1 slightly curved before crossvein r; radial sector weakly produced anterad immediately before discoidal cell; discoidal cell originating immediately before mid-length of wing, nearly 3x longer than wide; median cell slightly shorter than discoidal cell; crossvein r situated at base of fork I; fork I originating before crossvein s at distance equal to length of crossvein s; nygma located near base of fork II; fork III 1/5th as long as wing; fork V as long as fork I, shorter than fork II; Cu2 well-separated from A at wing margin. Hind wings 3.9 mm (n=1), brown; broad, ratio of length to breadth 3.0; margin slightly incurved at arculus, where Cu1 and Cu2 fused with margin; fork III clearly longer than discoidal cell and 1/7th as long as wing; fork V slightly shorter than fork I; 1A+2A 4x longer than 1A.

Male genitalia (Figs. 150–154). Segment IX clearly shorter than high; anterior plate nearly triangular; posterior 1/2 of segment expanded dorsally into rectangular plate; each anterodorsal margin deeply concave in lateral view; each ventral margin uniformly convex, without incision at vertical apodeme; each posterior margin nearly straight, starting below cercus; ventral side of posterior-most part of segment IX with setae (Fig. 152). In dorsal view segment IX with narrow anterior lobes; in dorsal view anterodorsal margin forming deep, wide, U-shaped incision with anterad-orienting processes on each side. In ventral view segment IX nearly quadrangular, with concave anterior margin and straight posterior margin; posterior margin without central projection. Tergum X simple; apical 1/3rd much more slender than basal 2/3rds (Fig. 150); tergum X orienting posterad, slightly curved ventrad along its length; divided into 2 lateral branches from base in dorsal and ventral view (Figs. 151, 152); each branch uniformly narrow in dorsal and ventral view, except apical 1/3rd narrower; without dorsal process in lateral view, but with narrow, hook-shape lateral process on each lateral branch at distal 1/3rd; pair of sensillae located on dorsal end of thickest part of lateral process. Cerci nearly club-shaped in lateral view, located at 2/3rds height of posterior margin of segment IX and oriented dorsad in lateral view and posterad in dorsal view; covered by long setae. Gonopods as long as segment IX, 3-branched. Each dorsal branch long, slightly exceeding tergum X in lateral view; uniformly slender, bending posterad at mid-length; anterodorsal margin convex; ventral margin slightly concave; in ventral view slightly curved mesad; without mesal megasetae. Ventral branch of each gonopod nearly rectangular in lateral view, with undulating posterior margin and smooth ventral margin; mesal margins strongly

convex in ventral view. Mesal branches darkly pigmented, slightly longer than each circus; straight in lateral view; curved mesad in ventral view. Phallic apparatus slightly longer than rest of genitalia: phallotheca, in lateral view, with anterior part 2x thicker than posterior part; in ventral view anterior part about 1.5x wider than posterior part; apicoventral spine absent on phallotheca; large phallotremal sclerite in phallic apparatus forming complex structure in lateral view; in ventral view forming paired rays separated by narrow plate; 2 short, nearly black endothecal spines present.



FIGURES 150–154. *Chimarra tipulida*, **new species**, holotype. **150**—genitalia, left lateral view; **151**—genitalia, dorsal view; **152**—genitalia, ventral view; **153**—phallic apparatus, left lateral view; **154**—phallic apparatus, ventral view.

Female. Unknown.

Holotype male: VITI LEVU: Vuda Prov., Koroyanitu N.N.P. Abaca Village, Malaise trap, 6–26.v.2003, 17°40’S, 177°33’E [17.3333°S, 177.5500°E], 400 m, leg. M. Irwin, E. Schlinger & M. Tokota’a [loc#01] [FNIC].

Paratypes: VANUA LEVU: Bua Prov., Kilaka, Malaise trap, 24.vi–21.vii.2004, 16°48’927’’S, 178°59’110’’E [16.8258°S, 178.9864°E], 146 m, M. Irwin, E. Schlinger & M. Tokota’a [loc#24] — 1 male [NHRS, DNA voucher IK9]. **TAVEUNI:** Cakadrove Prov., 5.6 km SE Tavuki Village, Malaise trap in rainforest, 31.x–14.xi.2002, 16.843°S, 179.955°W, 1187 m, E. Schlinger & M. Tokota’a [loc#39] — 1 male [BPBM].

Etymology: *Tipulida*, named after the Diptera family Tipulidae (crane flies) into which the genus *Trichoptera* Strobl was described.

Distribution: Taveuni, Viti Levu and Vanua Levu.

Chimarra psychodida, new species

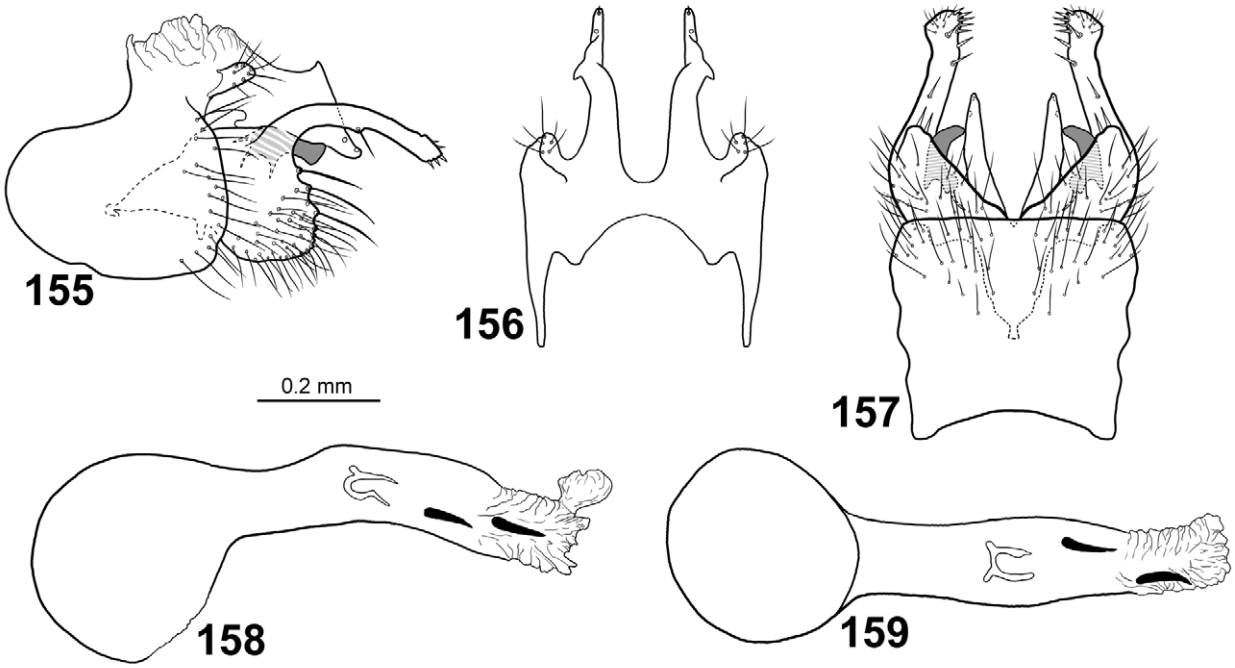
Figs. 29, 155–159

Chimarra psychodida resembles *C. tipulida*, *C. malickyi*, and *C. levuensis* in having gonopods each with both a slender, strongly produced dorsal branch, and a short, well-developed plate-like ventral branch. It is distinguished from *C. malickyi* in that segment IX is more rounded anteriorly in lateral view; the lateral branches of tergum X are

nearly parallel; and tergum X is clearly shorter than each gonopod. It is separated from *C. levuensis* by the presence of parallel lateral branches of tergum X. It is separated from *C. tipulida* by the broader anterodorsolateral processes of segment IX; and slightly shorter and broader tergum X in lateral view.

Male. Body brown, dorsal part of meso- and metathorax dark brown. Large dark area between lateral and anterior ocelli. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 29). Forewings 5.7 mm (n=1), greyish brown; broad, ratio of length to breadth 3.2; R1 slightly curved before crossvein r; radial sector not produced anterad immediately before discoidal cell; discoidal cell originating at mid-length of wing, about 3x longer than wide; median cell slightly shorter than discoidal cell; crossvein r situated at base of fork I; fork I originating before crossvein s at distance equal to length of crossvein s; nygma located near base of fork II; fork III 1/5th as long as wing; fork V as long as fork I, shorter than fork II; Cu2 nearly fused with A at wing margin. Hind wings 4.7 mm (n=1), grey; broad, ratio of length to breadth 2.9; margin weakly incurved at arculus, where Cu1 and Cu2 fused with margin; fork III slightly longer than discoidal cell and 1/7th as long as wing; fork V as long as fork I; 1A+2A 5x longer than 1A.



FIGURES 155–159. *Chimarra psychodida*, **new species**, holotype. **155**—genitalia, left lateral view; **156**—genitalia, dorsal view; **157**—genitalia, ventral view; **158**—phallic apparatus, left lateral view; **159**—phallic apparatus, ventral view.

Male genitalia (Figs. 155–159). Segment IX slightly shorter than high; longitudinally oval except posterior part expanded dorsally; each anterodorsal margin deeply concave in lateral view; each ventral margin convex, with strong incision at vertical apodeme; each posterior margin slightly convex, starting below cercus; ventral side of posterior 1/2 of segment IX with setae (Fig. 157). In dorsal view segment IX with narrow anterior lobes; in dorsal view anterodorsal margin forming deep U-shaped incision with anterad-orienting processes on each side. In ventral view segment IX nearly quadrangular, with shallowly concave anterior margin and straight posterior margin; posterior margin without central projection. Tergum X simple; tapering apically from mid-length in lateral view (Fig. 155); with dorsal process at mid-length; orienting posteroventrad, nearly straight; divided into 2 lateral branches from base in dorsal and ventral view (Figs. 156,157); each branch uniformly narrowing posteriorly in dorsal and ventral view, apically pointed, without processes; pair of sensillae located on dorsal part of each apex. Cerci large, cylindrical, located well below dorsal margin of segment IX and tergum X and oriented posterodorsad in lateral view; covered by long setae. Gonopods as long as segment IX, 3-branched. Dorsal branch of each gonopod long, exceeding tergum X in lateral view; dorsal branch uniformly slender, uniformly curved posteroventrad; anterodorsal margin convex; ventral margin slightly concave; in ventral view slightly converging before apex; apex running parallel, with small mesal megasetae. Ventral branch of each gonopod hyperbolic in lateral view, with undulating

posterior margin and more smooth ventral margin; in ventral view, mesal margins nearly straight, strongly diverging. Mesal branches darkly pigmented, about 2x longer than each circus; in lateral view curved posterad before mid-length; in ventral view curved mesad at mid-length. Phallic apparatus slightly longer than rest of genitalia: phallotheca, in lateral view, with anterior part nearly 3x thicker than posterior part; and in ventral view anterior part about 2x wider than posterior part; apicoventral spine absent on phallotheca; small phallotremal sclerite in phallic apparatus forming U-like structure about as long as endothecal spines; 2 short, nearly black endothecal spines present.

Female. Unknown.

Holotype male: TAVEUNI: Cakadrove Prov., Devo Peak Radio Tower, Malaise trap in rain forest, 25.ix–7.x.2002, 16°51'S, 179°58'E [16.8500°S, 179.9667°E], 1200 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#36] [FNIC].

Paratypes: Same data as holotype, except 13–20.xii.2002 [loc#36] — 4 males [NHRS]. Cakaudrove Prov., Devo Forest Reserve, Malaise trap, 3–10.i.2003, 16°50'S, 179°59'E, 800 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#37] — 1 male [BPBM]. Same data, except 10–16.i.2003 [loc#37] — 4 males [BPBM]. Cakadrove Prov., 5.5 km SE Tavuki Village, Malaise trap in rainforest, 30.iv–14.viii.2004,16.843°S, 179.955°W, 1188 m, E. Schlinger & M. Tokota'a [loc#38] — 1 male [NHRS, DNA voucher IN1]. **VANUA LEVU:** Bua Prov., Kilaka, Malaise trap, 28.vi–2.vii.2004, 16°48'412''S, 178°59'017''E [16.8114°S, 178.9839°E], 412 m, M. Irwin, E. Schlinger & M. Tokota'a [loc#23] — 3 males [NHRS].

Etymology: *Psychodida*, named after the Diptera family Psychodidae (moth flies) into which the genus *Trichoptera* Meigen was described.

Distribution: Taveuni and Vanua Levu.

Chimarra levuensis, new species

Figs. 30, 160–164

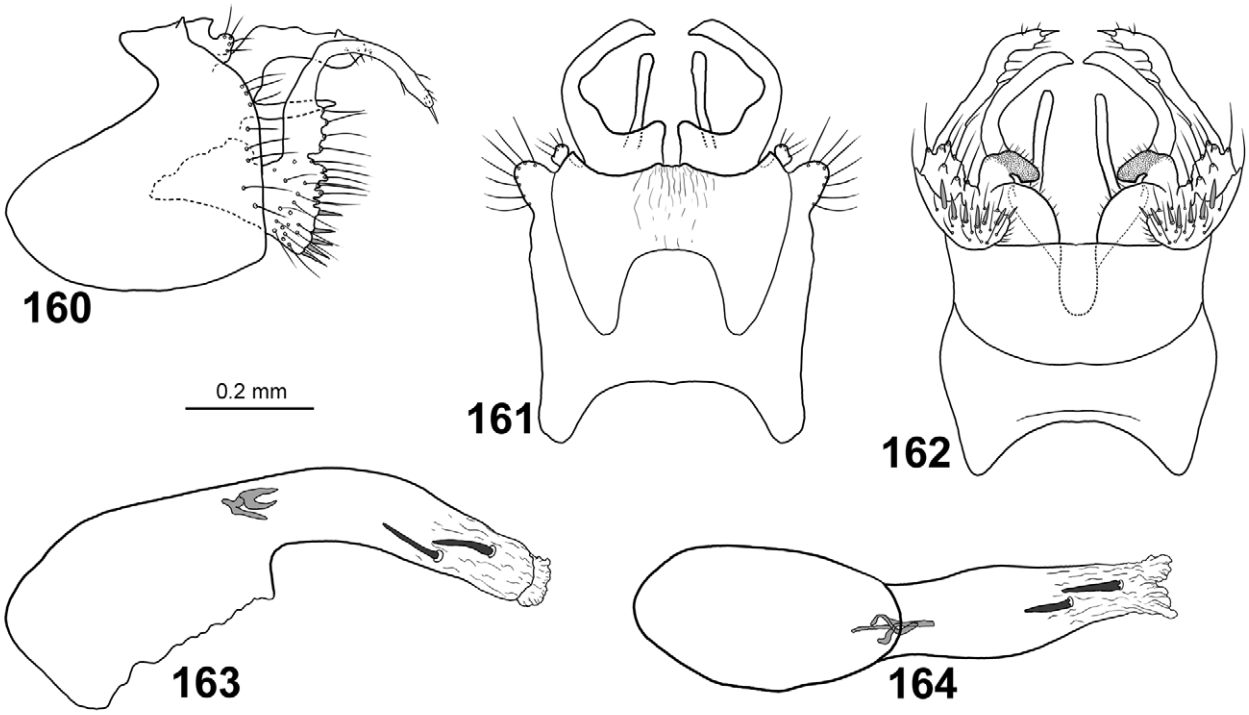
Chimarra levuensis resembles *C. psychodida*, *C. malickyi*, and *C. tipulida* in having gonopods each with both a slender, strongly produced dorsal branch, and a shorter, plate-like ventral lobe. It is distinguished from all these species by the more rounded anteroventral margin of segment IX in lateral view, the shorter basoventral region of each gonopod, the presence of an apical megaseta on the dorsal branch of each gonopod, each lateral branch of tergum X being divided into dorsal and ventral branches, and the strongly mesad curved dorsolateral branch of each lateral branch of tergum X.

Male. Body pale brown, dorsal part of meso- and metathorax brown. Large dark area between lateral and anterior ocelli. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 30). Forewings 4.7 mm (n=1), brown; relatively broad, ratio of length to breadth 3.5; R1 nearly straight before crossvein r; radial sector not produced anterad immediately before discoidal cell; discoidal cell originating at mid-length of wing, 3x longer than wide; median cell as long as discoidal cell; crossvein r situated at base of fork I; fork I originating before crossvein s at distance equal to 1/2 length of crossvein s; nygma located near base of fork II; fork III 1/7th as long as wing; fork V slightly longer than fork I, shorter than fork II; Cu2 well-separated from A at wing margin. Hind wings 3.9 mm (n=1), brown; broad, ratio of length to breadth about 3; margin slightly incurved at arculus, where Cu1 and Cu2 fused with margin; fork III as long as discoidal cell and1/10th as long as wing; fork V as long as fork I; 1A+2A 3x longer than 1A.

Male genitalia (Figs. 160–164). Segment IX as long as high; anterior plate nearly oval; posterior 1/2 of segment expanded dorsally and anteriorly parallelogram shaped plate; each anterodorsal margin deeply concave in lateral view; each ventral margin uniformly convex, without incision at vertical apodeme; each posterior margin nearly straight, curved anterad below cercus. In dorsal view segment IX with short, wide anterior lobes; in dorsal view anterodorsal margin forming deep, narrow, U-shaped incision without anterad-orienting processes on posteromesal margins. In ventral view segment IX nearly quadrangular, except incised at transverse apodeme; anterior margin widely concave; posterior margin straight; posterior margin without central projection. Tergum X divided into dorsal and ventral branches, surrounding phallic apparatus. In lateral view, dorsal branches parallel-sided along their length, angled nearly 90° posterad at mid-length; small dorsal process present immediately before apex; in dorsal view each lateral branch broad at base, slender distally, bent mesad at mid-length. Pair of ventral branches

of tergum X smooth, shorter than dorsal branches, oriented posterad along their length. Sensillae on tergum X not visible. Cerci located near dorsal margin of segment IX and tergum X; slightly curved dorsad in lateral view and oriented posterolaterad in dorsal view; covered by long setae. Gonopods slender along their length, about as long as segment IX, 3-branched. Each dorsal branch clearly exceeding tergum X in lateral view; uniformly slender except with posterad produced setal tubercles basal posterior margin; bending posterad at mid-length before curved ventrad; in ventral view curved mesad; mesal megasetae absent. Ventral branch of each gonopod nearly triangular in lateral view, with undulating posterior margin and smooth ventral margin; each with mesal margin strongly irregular in ventral view. Mesal branches darkly pigmented, long, curved mesad in ventral view. Phallic apparatus slightly longer than rest of genitalia, curved ventrad along its length; phallotheca, in lateral view, with anterior part 2x thicker than posterior part; in ventral view anterior part about 1.5x wider than posterior part; apicoventral spine absent on phallotheca; small phallotremal sclerite in phallic apparatus complex constitutes of slender structures visible in lateral and ventral view; 2 short, nearly black endothecal spines present.



FIGURES 160–164. *Chimarra levuensis*, **new species**, holotype. **160**—genitalia, left lateral view; **161**—genitalia, dorsal view; **162**—genitalia, ventral view; **163**—phallic apparatus, left lateral view; **164**—phallic apparatus, ventral view.

Female. Unknown.

Holotype male: VITI LEVU: Naitasiri Prov., 4 km WSW Colo-i-Suva Vlg., Mt. Nakobalevu, Malaise trap, 24.iv–12.v.2004, 18.055°S, 178.424°E, 372 m, leg E. Schlinger & M. Tokota'a [loc#11] [FNIC].

Paratypes: Same data as holotype [loc#11] — 1 male [BPBM]. Same data as holotype, except: 9–30.v.2003 [loc#11] — 1 male [NHRS, DNA voucher IM9].

Etymology: *Levuensis*, named after Viti Levu, the type locality of the species.

Distribution: Viti Levu.

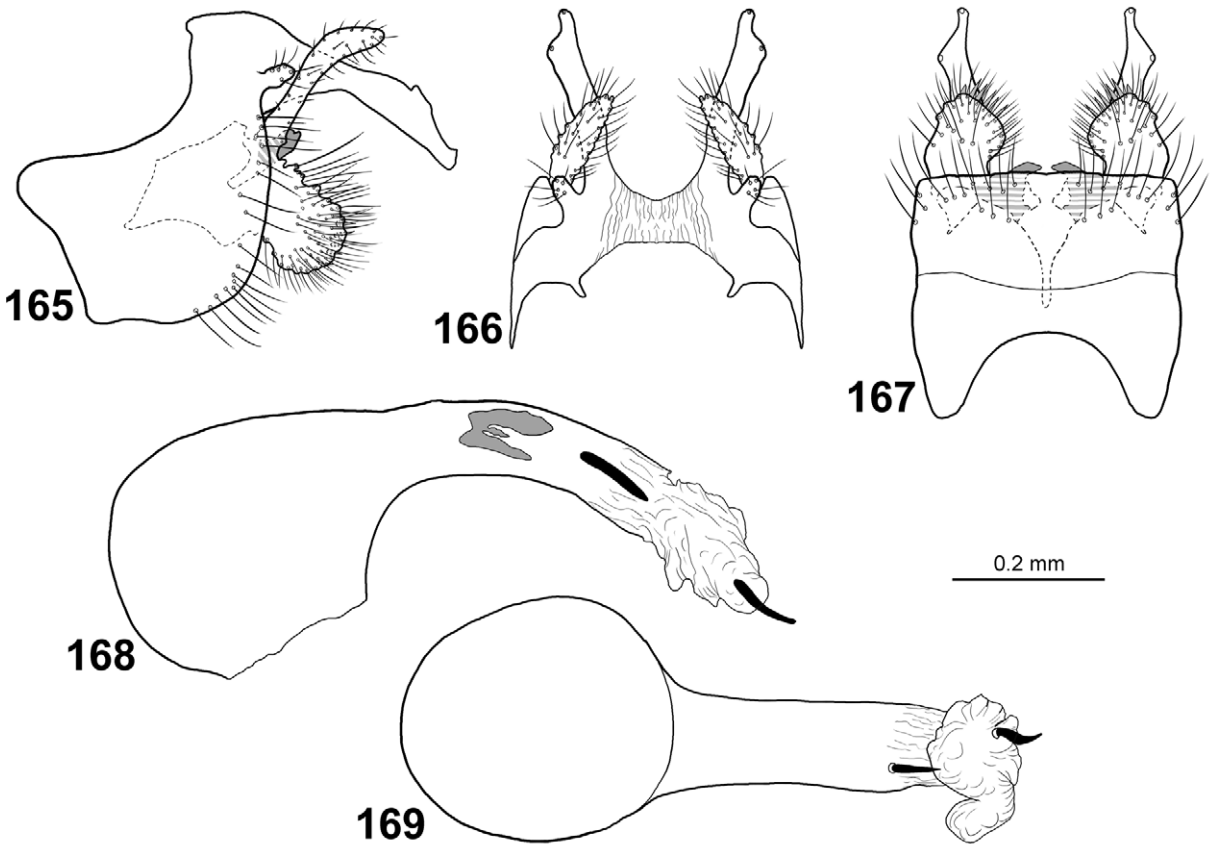
Chimarra malickyi, new species

Figs. 31, 165–169

Chimarra malickyi is most similar to *C. psychodida*, particularly in the shape of the gonopods in lateral view. It is distinguished from *C. psychodida* by the narrower anteroventral lobe of segment IX in lateral view, longer tergum X, and absence of megasetae on the apex of the dorsal branch of each gonopod.

Male. Body yellowish brown, dorsal part of meso- and metathorax brown. Large dark area between lateral and anterior ocelli. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 31). Forewings 4.9 mm (n=1), brown; broad, ratio of length to breadth 3.4; R1 curved before crossvein r; radial sector weakly produced anterad immediately before discoidal cell; discoidal cell originating at mid-length of wing, about 3x longer than wide; median cell slightly longer than discoidal cell; crossvein r situated immediately basally of fork I; fork I originating before crossvein s at distance equal to length of crossvein s; nygma located near base of fork II; fork III 1/6th as long as wing; fork V as long as fork I, shorter than fork II; Cu2 nearly fused with A at wing margin. Hind wings 4.0 mm (n=1), brownish-grey; broad, ratio of length to breadth 3.0; margin weakly incurved at arculus, where Cu1 and Cu2 fused with margin; fork III nearly 1.5x longer than discoidal cell and 1/7th as long as wing; fork V as long as fork I; 1A+2A 4x longer than 1A.



FIGURES 165–169. *Chimarra malickyi*, **new species**, holotype. **165**—genitalia, left lateral view; **166**—genitalia, dorsal view; **167**—genitalia, ventral view; **168**—phallic apparatus, left lateral view; **169**—phallic apparatus, ventral view.

Male genitalia (Figs. 165–169). Segment IX slightly shorter than high; ventral part of segment produced into hyperbolic lateral plates in lateral view, with minute ventral projection at anteroventral corner; dorsal part of segment produced into small rounded, anterad directed lobe, finger-like in dorsal view; each anterodorsal margin deeply concave in lateral view; each ventral margin convex; each posterior margin forming slightly convex plate originating immediately below cercus; posterior quarter of ventrum IX with setae (Fig. 167). In dorsal view anterodorsal margin forming wide incision with short, narrow, anterad-orienting processes on each side. In ventral view segment IX with nearly parallel lateral margins, with deeply concave anterior margin and nearly straight posterior margin; posterior margin without central projection. Tergum X simple; forming pair of lateral branches from basis of segment; lateral branches slightly curved ventrad in lateral view, with small tooth on dorsal margin at 2/3rds its length; in dorsal view straight, diverging along their length, uniformly narrow before tapering into finger-like apex. Cerci short, cylindrical, situated on posterior margin of segment IX at mid-height of basis of tergum X in lateral view and oriented posterodorsad in lateral view; covered by long setae. Gonopods nearly as long as segment IX, 3-

branched. Dorsal branch of each gonopod long, but not exceeding tergum X in lateral view, uniformly slender, straight before slightly ventrad curved apex in lateral view; anterodorsal margin nearly straight before apex, ventral margin straight before concave at apex; in dorsal view slightly converging long their length; without megasetae. Ventral branch of each gonopod strongly produced ventrad in lateral view, with undulating margins; in right angle to dorsal brach; in ventral view, ventral branches forming broad plates slightly curved mesad, with megasetae along posterior margin. Mesal branches simple, darkly pigmented, about 2x longer than cercus; in lateral view orienting posterodorsad; in ventral view thorn-shaped, apices pointing mesad, nearly tangential. Phallic apparatus about 1.5x longer than rest of genitalia; curved along its length: phallotheca, in lateral view, with anterior part about 4x thicker than posterior part; and in ventral view anterior part about 3x wider than posterior part; apicoventral spine absent on phallotheca; large phallotremal sclerite in phallic apparatus forming U-like structure with central spine, about as long as endothecal spines; 2 short, nearly black endothecal spines present.

Female. Unknown.

Holotype male: VITI LEVU: Naitasiri Prov., 3.3 km N Veisari, logging rd. to Waivudava, Malaise trap, 8–31.iii.2003, 18.0592°S, 178.367°E, 300 m, leg. M. Tokota'a [loc#20] [FNIC].

Paratype: Vuda Prov., Koroyanitu Pk., 1 km E Abaca Vlg., Savuione Trail, Malaise trap, 26.xi–3.xii.2002, 17.667°S, 177.55°E, 800 m, leg. M. Irwin, E. Schlinger & M. Tokota'a [loc#03] — 1 male [NHRS, DNA voucher IM9].

Etymology: *Malickyi*, named after Hans Malicky, in recognition of his great contribution to our knowledge of caddisflies.

Distribution: Taveuni and Vanua Levu.

Chimarra obscurella Banks

Figs. 34, 170–174

Chimarrha obscurella Banks, 1924: 449.

The genitalia of *C. obscurella* somewhat resemble those of *C. tokotaai*, particularly in the shape of the gonopods in lateral view. It is distinguished from *C. tokotaai* by the more stepwise narrowing of tergum X in lateral view and broader tergum X in dorsal view; by the presence of 2 large endothecal spines; and the ventral, transverse apodeme of segment IX is located nearer the mid-length of the segment.

Male. Body brown, dorsal part of meso- and metathorax brown. Large dark area between lateral and anterior ocelli. Foreleg anterior claw as long as foreleg spur.

Wings (Fig. 34). Forewings 4.6 mm (holotype), brown; R1 nearly straight before crossvein r; radial sector strongly produced anterad immediately before discoidal cell; discoidal cell originating at mid-length of wing, about 3x longer than wide; median cell as long as discoidal cell; crossvein r situated as basis of fork I; fork I originating before crossvein s at distance equal to 1.2x length of crossvein s; nygma located near base of fork II; fork III 1/5th as long as wing; fork V as long as fork I, shorter than fork II; Cu2 separate from A at wing margin. Hind wings 3.6 mm (holotype), brownish; margin nearly straight at where Cu1 and Cu2 fused with margin; fork III as long as discoidal cell and 1/8th as long as wing; fork V as long as fork I.

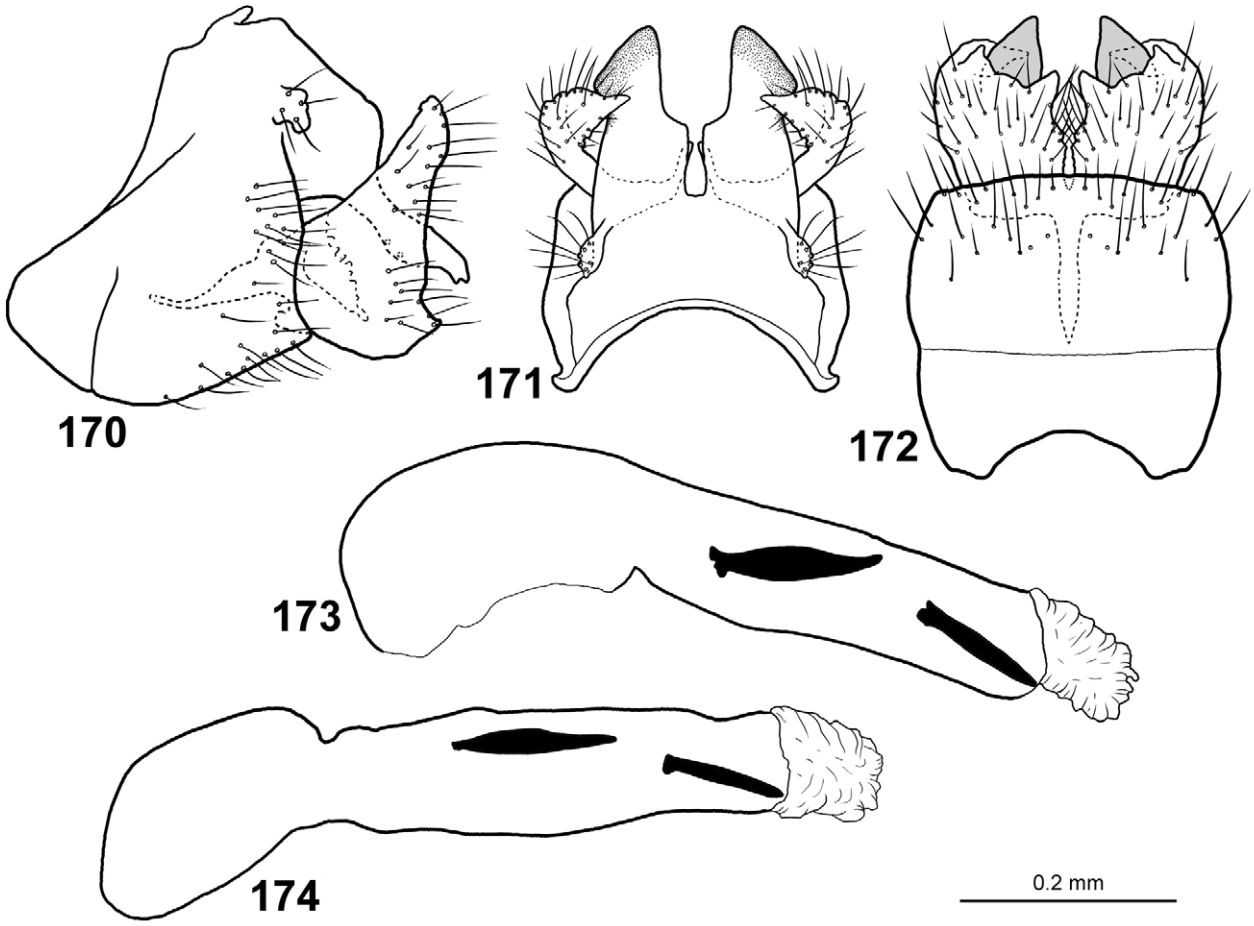
Male genitalia (Figs 170–174). Segment IX slightly shorter than high; ventral part of segment produced into hyperbolic lateral plates in lateral view; dorsal part of segment not produced anterad; each anterodorsal margin shallowly and widely concave in lateral view; each ventral margin convex, incised at anterior 1/3rd at vertical apodeme; each posterior margin forming irregular plate pointing posterad at ventral corner; originating immediately below cercus; posterior third of ventrum IX with setae (Fig. 172). In dorsal view anterodorsal margin forming wide, shallow, U-shaped incision without processes. In ventral view segment IX with undulating lateral margins, incised at transverse apodeme; with concave anterior margin and nearly straight posterior margin; posterior margin without central projection. Tergum X simple; forming pair of lateral branches from basis of segment, immediately posteriorly of cerci; lateral branches nearly straight, directed posteroventrad in lateral view; basal 1/3rd broad in lateral view, sharply narrowing before mid-length; in dorsal view forming very broad, posterad directed, nearly parallel plates, slightly narrowing mesally at mid-length into trapezoid distal 1/2; each lateral process with apex located mesally. Cerci short, cylindrical, situated on posterior margin of segment IX at mid-height of basis of ter-

gum X in lateral view and oriented posterad in lateral view; covered by long setae. Gonopods nearly as long as segment IX, nearly triangular in lateral view, with very large tapering dorsal branch, and minute, triangular ventral branch. Dorsal branch of each gonopod produced dorsad, not posteriorly exceeding tergum X in lateral view; anterodorsal and posterior margins slightly convex before apex, ventral margin convex; in dorsal view dorsal branches curved and pointed mesad above tergum X; without megasetae. Ventral branch of each gonopod short triangular in ventral view; orienting posteromesad, with irregular mesal margins; megasetae absent. Mesal branches formed by produces setal bases, located basally on gonopods. Phallic apparatus about 1.5x longer than rest of genitalia; nearly straight along its length: phallotheca, in lateral and ventral view, with anterior part slightly thicker than posterior part; apicoventral spine absent on phallotheca; phallotremal sclerite not observed; 2 long, thick, nearly black endothecal spines present.

Female. Unknown.

Holotype male: "Fijis: Taviuni, Somo Somo. W. M. Mann"; "M.C.Z. Type 14824"; "Chimarrha obscurella type Bks". Abdomen macerated, in glycerol in micro vial on same pin as rest of animal [MCZ].

Distribution: Taveuni.



FIGURES 170–174. *Chimarra obscurella* Banks, 1924, holotype. 170—genitalia, left lateral view; 171—genitalia, dorsal view; 172—genitalia, ventral view; 173—phallic apparatus, left lateral view; 174—phallic apparatus, ventral view.

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