New cavernicolous cixiid from New Zealand (Homoptera: Fulgoroidea)

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Confuga persephone n.gen. & sp. (Cixiidae) is described from a cavernicolous population in Nelson Province, New Zealand. Most of its generic characters can be matched separately in other endemic genera, but it appears not to be closely related to any one of them. *Malpha duniana* Myers is transferred to *Aka* White.

INTRODUCTION

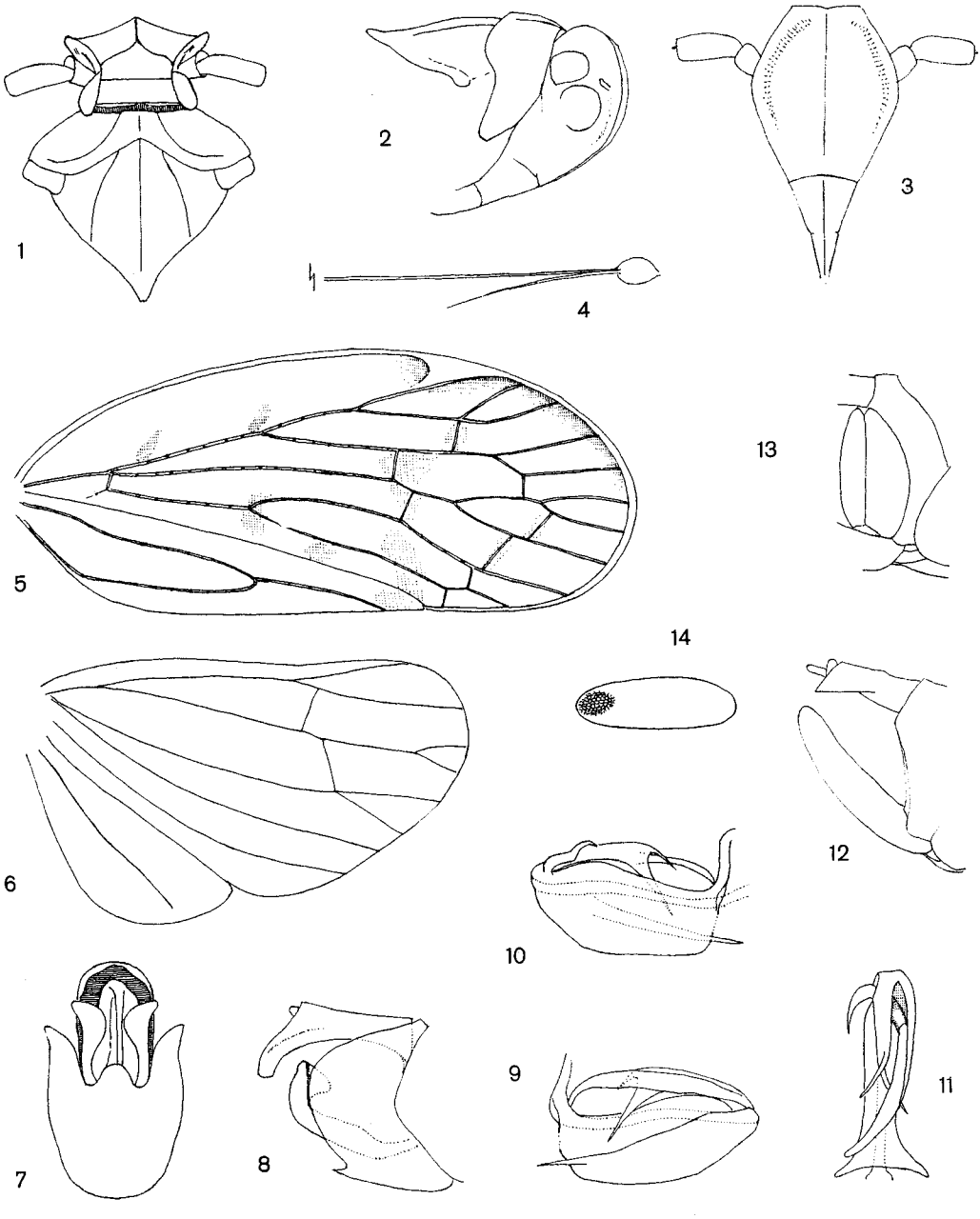
I have studied specimens of a cixiid that lives and breeds in Council Cave, east of Takaka, northern Nelson Province, New Zealand. In this population, retrogressive development had led to reduction of the compound eyes and ocelli, a general lightening of pigmentation, and some shortening of the tegmina and wings. If these adaptive features are ignored, it would still appear that the remaining characters, in combination, exclude the insect from any of the known New Zealand genera.

Confuga n.gen.

Vertex about 1.5× broader than long, anterior margin angulate, posterior margin straight, a carina across middle parallel to posterior margin; frons about 1.2× longer than broad, markedly convex transversely and in profile, lateral margins flaring, median carina present, median ocellus absent, frontoclypeal suture only slightly curved; postclypeus about one-third as long as frons, medially carinate, in profile straight; rostrum surpassing post-trochanters; eyes present but reduced, not pigmented; lateral ocelli elongate, not pigmented; antennae with segment 2 cylindrical, a little more than twice as long as broad, segment 3 bearing a long flagellum and a long arista.

Pronotum moderately long, lateral carinae curving laterad, not reaching hind margin, ventral margin of lateral lobes straight, outer angle acutely rounding; mesonotum tricarinate, lateral carinae convex, diverging caudad; post-tibiae with 3 or 4 minute spines laterally, 6 apically; basal metatarsal segment with 5 teeth apically, segment 2 also with 5 teeth; tegmina reaching to near apex of abdomen, venation complete; wings well developed.

Male: anal segment relatively long, deflexed distally; pygofer with lateral margins in side view strongly convex, medioventral process broader than long, rounded; aedeagus with phallobase (periandrium) large; genital styles simple, expanding and curved dorsad in apical third.



FIGS 1–13—*Confuga peresephone* n.gen. & sp.: 1, head, pronotum, and mesonotum; 2, head and thorax, right side (antenna not shown); 3, frons and clypeus; 4, segment 3 of antenna, arista, and basal half of flagellum; 5, tegmen; 6, wing; 7, ♂ genitalia, posteroventral view; 8, same, left side; 9, aedeagus, left side; 10, same, right side; 11, same, dorsal view; 12, ♀ genitalia, right side; 13, ceriferous plate of abdominal segment 9 of ♀, posterolateral view; 14, egg, dorsolateral view.

Female: anal segment tubular, relatively long, cylindrical; segment 9 bearing a flat, round, ceriferous plate, traversed medially by a fine seam; apposed valvulae of ovipositor tectiform in posterior view.

TYPE-SPECIES: *Confuga persephone* n.sp.

REMARKS. The gender of the generic name is regarded as feminine. This genus runs to couplet 13 in Myers's key to New Zealand cixiid genera (1924, p. 317), but differs from the alternatives, which lead to *Aka* and *Tiriteana*, in the absence of a median carina on the vertex. The structure of the vertex and of the female genitalia is broadly as found in *Huttia*. However, the small, flat postclypeus of *Confuga*, which is not inserted into the frons, contrasts with the large, tumid, and deeply inserted clypeus in *Huttia* (in fact, the frons and clypeus are rather like those in *Tiriteana*). In *Huttia*, antennal segment 2 is short and barrel-shaped, the arista on segment 3 is short, the post-tibiae are spinose laterally, and the basal and second segments of the metatarsus each have 7 apical teeth. In *Malpha*, the arista of antennal segment 3 is longer than in other New Zealand genera except *Confuga*, but *Malpha* differs from *Confuga* in the proportions of the postyclypeus, antennal segment 2, and the vertex, and in the structure of the genitalia in both sexes.

Confuga persephone n.sp. (Figs 1–13)

Length (male) 4.5 mm, (female) 5.0 mm. Pale yellowish brown, membranous areas creamy white. Tegmina dilute yellowish brown, with brown veins.

Vertex 1.5× broader than long, disc of each compartment depressed; frons nearly 1.2× longer than broad, wider at base than at apex (not quite 1.2:1), widest at middle, disc transversely convex except near lateral margins; postclypeus medially finely carinate; antennae with segment 2 2.3× longer than broad, segment 3 with arista about 5× as long as segment.

Tegmina with Sc+R and Cu_1 and union of claval veins at about same level, but venation a little variable.

Male: anal segment moderately long, deflexed in distal third, apical margin slightly excavate at middle; pygofer with medioventral process moderately large, rather broadly rounded; aedeagus with lateral margins deep, a short, stout, strongly sinuate spinose process on right near apex, a long, oblique rib on left side, descending basad from apex of phallobase and finally emerging as a spine directed cephalad; flagellum deeply bifid, the left limb long, narrow, directed basad then curving to right and ventrad, membranous mesally and distally, right limb widening, then bifurcating, with each arm tapering into a spinose process, the lower longer than the upper and curving to left; genital styles in side view abruptly curved dorsad in distal quarter and moderately widening, apical margin shallowly and evenly convex.

TYPE MATERIAL. HOLOTYPE ♂: Council Cave, Takaka, Nelson Prov., New Zealand, 4.iii.1974, L. McRae & J. McBurney (Entomology Division Coll., DSIR, Auckland). ALLOTYPE ♀: same loc. as holotype, 12.xii.1973, J.McB. Also: 6♂♂ (mutilated), 3♀♀, 8 nymphs, type loc., 14 & 21.vi.1973, 4.iii.1974, G. Kuschel, L.McR., & J.McB. (same Coll. as holotype).

REMARKS. The arista of antennal segment 3 does not taper evenly, but is very narrowly tubular for about 60% of its length, then narrows very abruptly to a fine filament. The wing-tucking apparatus of the tegmen is a stout, broadly convex flange along the posterior margin of the basal cell. In the wing, there is no recurved fold (wing-coupling apparatus) on the anterior margin.

Along with fragments of adults and nymphs accompanying these specimens were several

eggs, partly collapsed or empty, and it is probable that they are those of this species. Each is elongate-ovoid, 0.25×0.075 mm, and more narrowly rounded at one end than the other. The chorion is pellucid and smooth, except in an ovate area near the narrower pole where there is a reticulum of about 7–8 irregular rows of hexagonal cells. It can be inferred that the egg is inserted into plant tissue obliquely, leaving only the reticulate area exposed, and that this is then covered with flocculent waxy material from the plate of ceriferous pores on the 9th abdominal segment of the female.

Aka

Aka White, 1879: 216. TYPE-SPECIES: *Cixius finitimus* Walker, 1858: 81.

Aka duniana (Myers) n.comb.

Malpha duniana Myers, 1924: 55.

Myers (1924, p. 323) remarked that his species approached *Aka* in the structure of the face (frons and clypeus) and the shape of the genital styles. From examination of his material in the British Museum (Natural History), it was found that it agrees with *Aka* and disagrees with *Malpha* in other important features: the arista of antennal segment 3 is very short; the wings are trilobate; there is a flat, depressed, ceriferous plate on abdominal segment 9 of the female; the lateral spines on the post-tibiae are minute, as they are in the male type of *A. finitima* (a female of *finitima* has been seen with only a single spine on one post-tibia and none on the other). On this evidence it appears necessary to transfer *duniana* to *Aka*.

ACKNOWLEDGMENTS

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