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THE FIJIAN ANTLION *DICTYOLEON NERVOSUS* (NEUROPTERA: MYRMELEONTIDAE)

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Abstract. The endemic Fijian antlion, *Dictyoleon nervosus,* is redescribed, and information on female genitalia and immature stages is given. The genus appears to be isolated within the Myrmeleontinae and its affinities are briefly discussed.

The few Myrmeleontidae known from islands of the Outer Melanesian Arc range from widely distributed species of *Distoleon* Banks to extremely local taxa such as the one discussed in this note. The monobasic genus *Dictyoleon* Esben-Petersen (1923) is known only from Fiji, although it was at one time referred to a genus from New Zealand (Banks 1924). The original description did not include information on genitalic structures and, as an adjunct to a forthcoming revision of the Australian antlions, additional information on *Dictyoleon nervosus* Esben-Petersen is provided in this note. The larva is also described, and affinities of the genus are briefly discussed.

Dictyoleon nervosus Esben-Petersen Fig. 1–12

Dictyoleon nervosus Esben-Petersen, 1923: 585.
Weelius triseriatus Banks, 1924: 435.—Esben-Petersen, 1926: 12.

Coloration. Dark brown. Eyes iridescent dark grayish brown. Labrum and clypeus pale yellow. Palpi dark brown. Broad black frontal band including antennal bases and reaching to eye margins. Vertex predominantly yellow, with 3 transverse rows of dark brown spots; anterior row with elongate median spot pair and transverse lateral marks, median row with 1 or 2 median pairs and 1 or 2 lateral marks, posterior row with larger median pair and 2 pairs of transverse lateral marks. Antennae: scape and pedicel very dark, flagellum dark brown, with intersegmental areas paler. Pronotum dark grayish brown with slight pale yellow marks at anterior angles and (interrupted) in midline and laterodorsally, setae short, black. Pterothorax unmarked dorsally except for slight traces of ivory median stripe. Wing venation predominantly dark gray; longitudinal veins with alternating dark and light lengths, much of Sc of both wings pale; pterostigma white, in forewing subtended basally by slight gray mark, membrane otherwise unmarked. Legs: femora and tibiae with dark dorsal and ventral edges, less pronounced on III; tarsal segments darkened apically; spurs and claws dark castaneous; femora and tibiae with sparse black bristles. Abdomen dark grayish brown, whole of tergum I and anterior regions of terga III–VII each with large ivory mark tapered posteriorly; setae on anterior segments white, on posterior segments predominantly white.

Morphology. Body length (♀) ca. 28 mm. Greatest head width (across eyes) 3.8 mm, interocular distance (shortest across vertex) 2.1 mm. Antennae widely spaced, seated near eyes. Apical segment of labial palp tapered. Antennal length 5 mm; all flagellar segments broader than long; shallow club over apical 14–16 segments. Vertex moderately raised. Pronotum (Fig. 1) broader than long, anterior border transverse; transverse furrow about ⅓ length from anterior.

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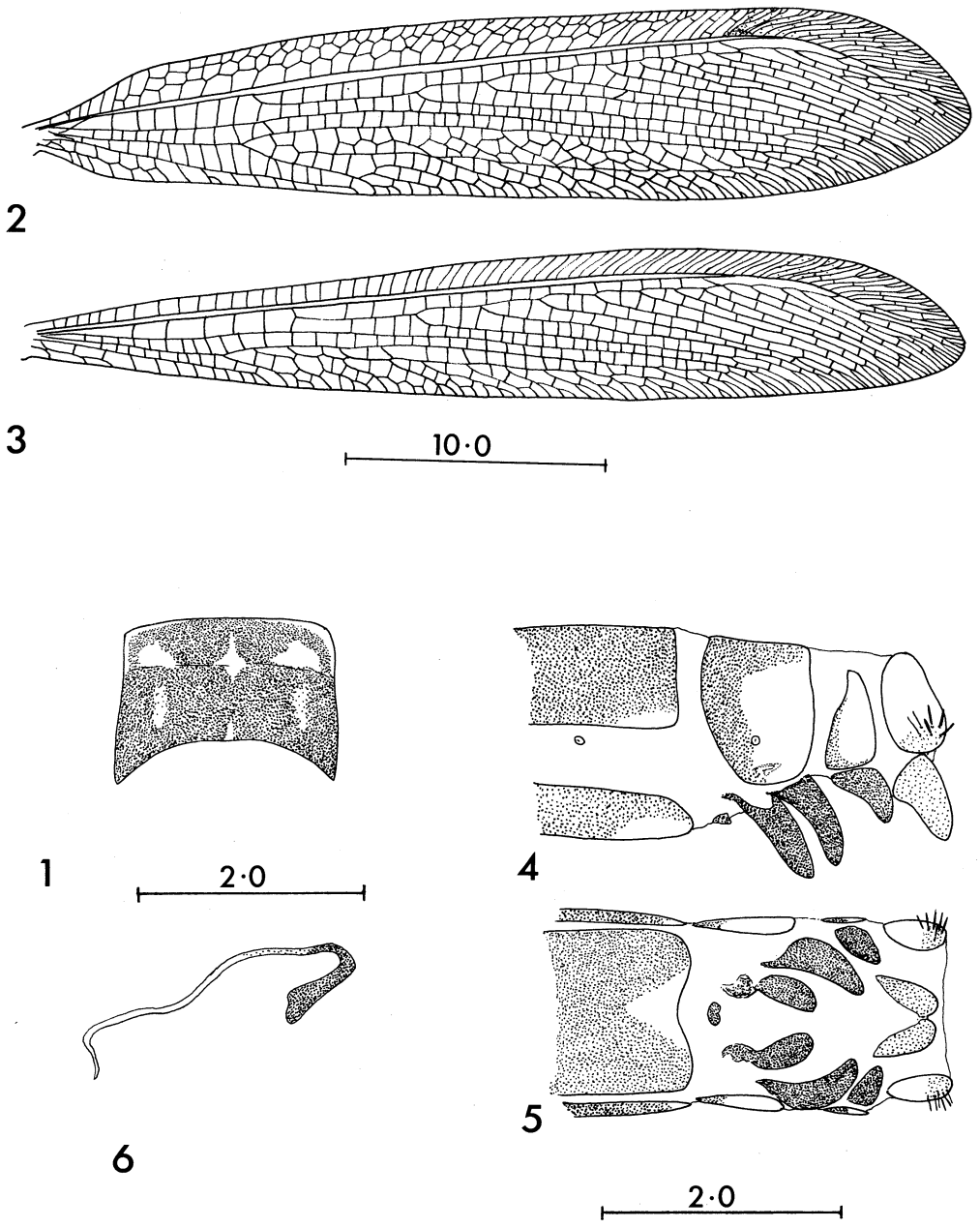

FIG. 1–6. *Dictyoleon nervosus,* ♀: **1,** pronotum; **2,** forewing; **3,** hindwing; **4,** abdominal apex, lateral aspect; **5,** abdominal apex, ventral aspect; **6,** spermatheca. Scales in mm. Normal setae omitted from Fig. 1, 4, 5.

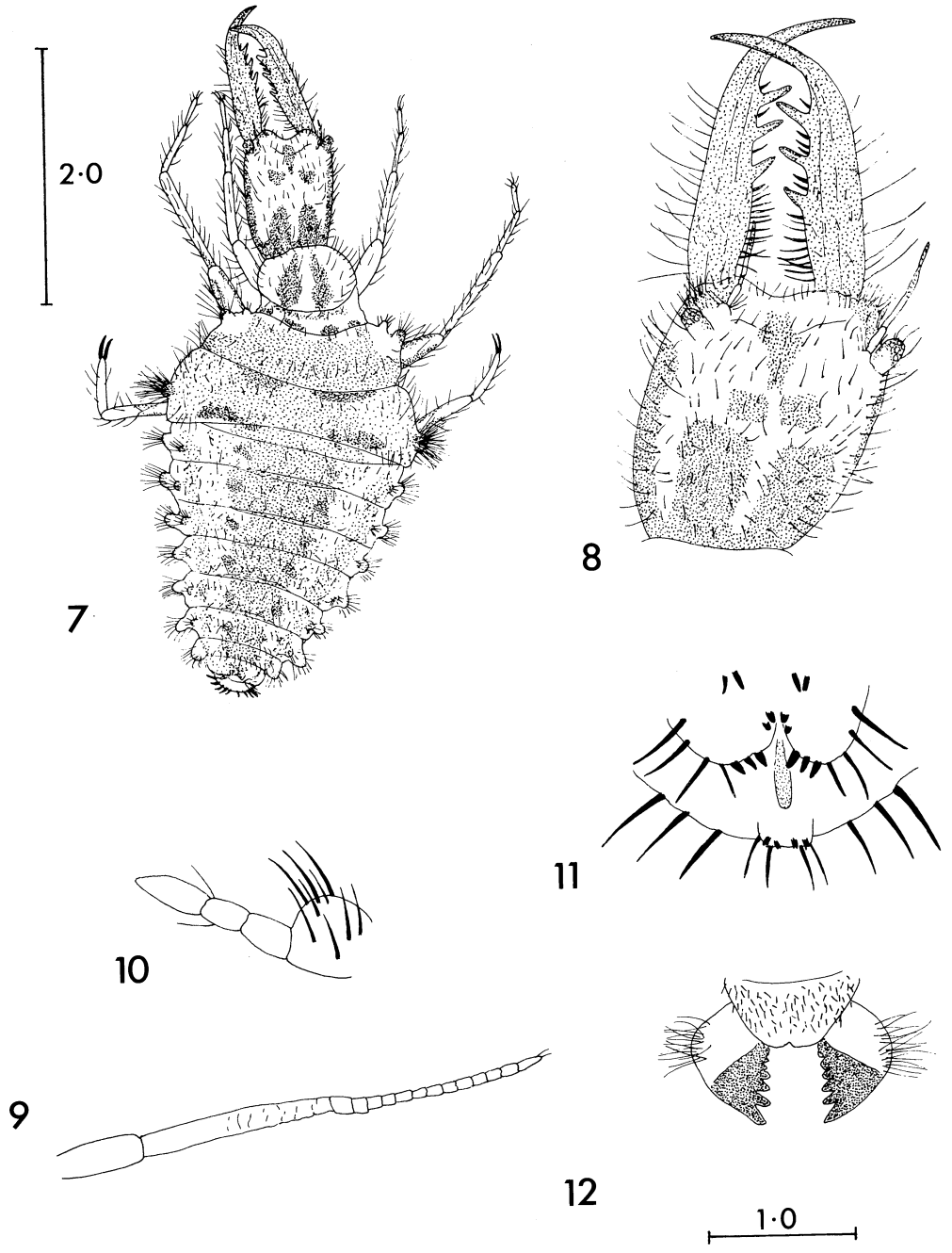

FIG. 7–12. *Dictyoleon nervosus,* immature stages: (**7–11,** 3rd-instar larva) **7,** general form; **8,** head, dorsal aspect; **9,** antenna; **10,** labial palp; **11,** sternite VIII & IX; **12,** pupal mandibles and labrum, dorsal aspect. Scales in mm.

Wing venation as in Fig. 2, 3: Forewing and hindwing of similar length, both ca. 34 mm. Forewing: costal cells in 3 rows for most of wing length, numerous crossveins in apical field. Rs+MA arises opposite or slightly beyond cubital fork, 2A and 3A fused for short length; venation dense, posterior Banksian line strongly developed. Hindwing: costal crossveins simple, 1 series of crossveins in apical field, 5 presectoral crossveins, Rs arises well beyond medial fork, posterior Banksian line present, anal region simple. Legs not markedly stout or elongate; tibial spurs extend beyond end of t_1 (I, II) or about equal to t_1 (III); $t_5 > t_1 > (t_2 = t_3 = t_4)$; $t_5 = (t_1$–t_4 inclusive); tarsal claws shallow, not opposable to t.

♀. Genitalia as in Fig. 4–6. Ectoproct with about 6 slightly thickened setae on ventral ½; lateral gonapophyses strongly extended ventrally, no thickened setae; large sclerotized ventral processes below tergite IX; anterior and posterior gonapophyses both long, tapered, heavily sclerotized; all above with dense long black setae; pregenital plate small; sternite VII broad, slightly emarginate medially; spermatheca small, duct not markedly convoluted.

♂. Genitalia unknown.

Third instar larva. Dark brown marking on pale ivory ground. General form as in Fig. 7. Head (Fig. 8) with distal mandibular tooth slightly longer than more basal teeth; inner mandibular setae slightly thickened, other head setae simple, black; no dolichasters; ventral side of head sparsely setose. Antenna (Fig. 9) longer than width of mandible base; apical ½ of flagellum distinctly segmented, basal part of flagellum incipiently segmented. Labial palp (Fig. 10): base with thickened black setae, apical segment slightly tapered. Mesonotum with 2 pairs of scoli, anterior pair small. Metanotum with 1 pair of densely setose scoli. Abdominal terga I–VII each with pair of lateral scoli, each scolus subtended dorsally by small setose tubercle (? remnant of dorsal scolus). Sternites VIII and IX (Fig. 11): VIII bilobed, with short median spines and longer extended spines; IX with median insert with both short and longer spines, external margin with longer spines.

Pupa. Mandibles as in Fig. 12, with 6–7 teeth; labrum incipiently bilobed medially.

Specimens examined. FIJI: Viti Levu: Nandarivatu, 2♀ reared in February and May 1965 from larvae collected XI.1964, preserved with pupa cases; 2 3rd-instar larvae, same data (N. McFarland); 1♀, Viti Levu: Suva, V.1924, A.M. Lea (all in South Australian Museum, Adelaide).

Remarks. The superficial appearance of *D. nervosus* explains Banks' (1924) allocation of the species to *Weeleus* Navás. *Weeleus acutus* (Walker), the only antlion recorded from New Zealand, usually has 2 (rarely and intermittently 3) rows of forewing costal cells, and has posterior Banksian lines in both wings and short tibial spurs. In *W. acutus* the forewing cubital fork is basal to the origin of Rs, and there are other venational differences between the 2 taxa. Features of the female genitalia confirm that *acutus* and *nervosus* cannot be congeneric.

The genitalia of *acutus* (unpublished data) are relatively simple in that the anterior gonapophysis is scarcely developed, the posterior gonapophysis is a small lobe, and the lateral gonapophysis is short and rounded, bearing about 30 slightly thickened setae. There are no ventral lobes from tergite IX. Indeed, within the Myrmeleontinae the degree of genitalic exaggeration found in *nervosus*—so that there are, in effect, 4 pairs of tapering sclerotized ventrally directed structures—appears to be unusual and possibly unique. The lack of thickened "digging setae" on any of these may imply that oviposition occurs in very loose sand. Esben-Petersen (1923), without considering

genitalic structures, believed *Dictyoleon* to represent a "peculiarly specialised group" within the Myrmeleontini. Knowledge of the male may further indicate its affinities.

There are no similar taxa known in Australia and, although the multiplicity of forewing costal cells is shared with some South American Myrmeleontinae, such as *Bridarollus* Navás [as figured by Navás (1933), now considered a synonym of *Lemolemus* Navás (Stange 1967)], these appear to differ substantially in other wing features. Genitalia of these South American taxa have not been described.

It is at present difficult to assess the taxonomic information provided by the immature stages, as very few taxa have been adequately described. The larva, a pit-dweller (McFarland, label data), is grossly similar to larvae of several described Myrmeleontinae. The single metathoracic scoli are by far the most setose of all body projections, and the small dorsal abdominal scoli are distinct. The emarginate pupal labrum and the relatively small number of pupal mandible teeth are features shared with (at least) some Australian Myrmeleontinae.

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