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MELANESOBASIS GEN. NOV., A NEW GENUS OF FIJIAN DAMSELFLIES: A POSSIBLE LINK BETWEEN THE PLATYCNEMIDID *LIEFTINCKIA* AND CERTAIN COENAGRIONIDS (ZYGOPTERA)

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Melanesobasis gen. nov. is created for 3 described spp. of *Nesobasis* and 4 new spp., which are described and illustrated here. The genotype is *M. corniculata* (Till.), which is widespread in the Fijian Islands (Viti Levu, Vanua Levu, Kadavu, Koro, Ovalau, Taveuni, and Rabi); additional spp. are *flavilabris* (Sel.) (Viti levu), *simmondsi* (Till.) (Viti Levu, Kadavu), and the new spp. *maculosa* sp. n. (Viti Levu), *mcleani* sp. n. (Viti Levu), *prolixa* sp. n. (Moala), and *bicellulare* sp. n. (Maewo, Vanuatu). The northern population (Vanua Levu, Rabi, Taveuni, and Koro) of *M. corniculata* is recognized on coloration and structural grounds as a distinct ssp. *marginata* ssp. n. — The genus is related to *Nesobasis*, but is distinguished by its relatively large inferior appendages in the male, the dark color of the imagos, and the labial palp of the larva lacking in setae. Other characters for distinguishing the two genera are denser venation, longer legs and leg spines, and a recumbent hind lobe of the pronotum. The undulant wing margin suggests a relationship with the Platycnemididae, with the Solomon Islands genus *Lieftinckia* being a possible annectant. This relationship appears to confuse the relationship between the Coenagrionidae and the Platycnemididae and suggests that the former may be polyphyletic.

INTRODUCTION

In the course of a study of the damselflies of the *Nesobasis* group of the Fijian Islands, it appeared desirable to set certain species aside as a separate genus. Further study of this subgroup has suggested a relationship with the Platycnemididae as well as the Coenagrionidae, and I suggest that this genus might be annectant between the two groups.

The species *Nesobasis flavilabris* was described by Selys in 1891 from

specimens from "Iles Viti". In this publication *flavilabris* was grouped with the species *telegastrum* and *nigrostigma,* a most unlikely concatenation (the flagellum is not shorter than the scape plus the pedicel, among other things). In 1924 TILLYARD described additional species of *Nesobasis,* including *corniculata* and *simmondsi,* both from Viti Levu. Recently *simmondsi* has been found only in Kadavu, but *corniculata* is the most widespread species of the two genera in the Fijian Islands. I found recently that Selys had before him both specimens of *flavilabris* and *corniculata* when he named the former species; consequently I selected a male of *flavilabris* for the lectotype of the species. In recent years two additional species (*maculosa* and *mcleani*) have been taken in Viti Levu, and single males of two additional species have been found in more distant places (*prolixa* in Moala of the Fijian Islands, and *bicellulare* in Maewo, Vanuatu)

The paper is dedicated to Dr M. LIEFTINCK, whose careful and detailed studies have provided the principal stimulus for my studies in the southwest Pacific Islands. Dr Lieftinck's cheerful willingness to share specimens, ideas, and criticism serves as a shining example in the field of odonatology.

MELANESOBASIS GEN. NOV.

This genus shares with *Nesobasis* the following characters: the anal vein leaves the wing margin proximal to the arculus; Ac is closer the Ax2 than to Ax1; the arculus is at or slightly distal to Ax2; the quadrangle is elongate and trapezoidal, with the costal side about half the length of the posterior; the veins CuP and A1 (Tillyard and Fraser notation) are long; Ab is very close to Ac; the labium has a relatively shallow cleft, tarsal claws are present, the prothorax is similar in male and female and has no special structures. Compared with *Teinobasis,* which TILLYARD (1924) considered its closest relative, it is more stout, with longer legs, a wider head, and thicker thorax, and has more prominent tarsal claws. It

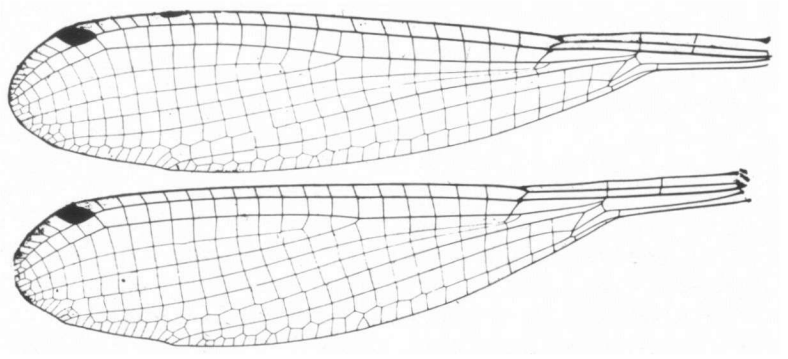

Fig. 1. Wings of *Melanesobasis corniculata.*

also lacks the unusual structure of the superior appendage of the male which has been termed an inferior branch, but which merits further study.

Melanesobasis is distinguished from *Nesobasis* primarily by the large inferior appendage of the male (which is considerably larger than the superior), and by its obscure (mainly dark) coloration (the colors are brown, gray, or black, with some minor pale marks; the only "bright" color is the reddish male abdominal appendages in a few species). The venation is denser: there are mainly 16-18 postnodal crossveins in the hind wing for wings 22-25 mm long, compared with 11-15 for *Nesobasis* of comparable size. The vein R3 originates at the 7th-8th pncv in the fore wing and at the 5th-6th pncv in the hind wing. The wing margin at the terminations of veins CuP, R4+5, and, to a lesser extent, R3 protrudes, making the margin noticeably undulant (Fig. 1). The costal side of the quadrangle of the hind wing is about 0.55 to 0.65 the length of the posterior side. The medio-anal link is always strongly deflected proximally at the crossing of the anal vein. The scape and pedicel are both short and the flagellum is long; species of *Nesobasis* either have a long pedicel, or a short pedicel and flagellum (*Nesobasis longistyla* group). The hind lobe of the pronotum is large, unornamented, entire, and recumbent, and the fore lobe is erect and rounded. The legs are longer (hind femora 3.1-3.9 mm) and have longer spines than most *Nesobasis*. The tarsal claws are well developed.

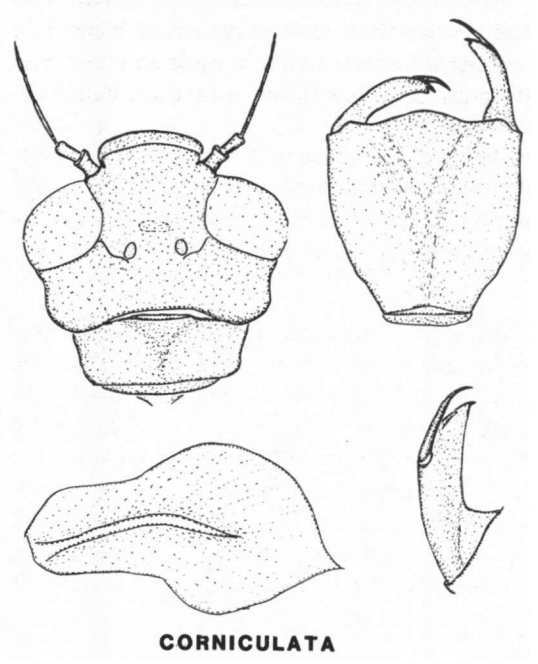

Fig. 2. Details of larva of *Melanesobasis corniculata marginata* (supposition) from Saivou, Vanua Levu, showing head, mentum, labial palp, and lateral gill.

The larva (Fig. 2) is here described from a single specimen collected on a wet rock below a seep on a hillside near Saivou, Vanua Levu. Three different larval species were collected at this site; the other two are referred to unknown *Nesobasis* species and this larvae is referred to *Melanesobasis* because of its general form and antennal segment proportions. Further comparisons are made

with four reared species of *Nesobasis* from Viti Levu; these will be dealt with in a later paper. The present larva has broad and flat gills. The rear of the head is wider than other known *Nesobasis* and the eyes are less protuberant. The mentum has a smooth and relatively slightly curved outer margin, and the labial palp has two simple teeth. The labial palp lacks the single seta that several species of *Nesobasis* possess; neither of the two genera have mental setae. The general form of the larva is stout, and the lateral gills (the dorsal is lost) are broad and quite flat.

The genotype is *Melanesobasis corniculata* (Tillyard), which is preferred to the older species *flavilabris* (Selys) both because it is more widespread and because its larva is known. The remaining species are *simmondsi* (Tillyard) and four new species (*maculosa, mcleani, prolixa,* and *bicellulare*), one of which extends the range westward to Vanuatu (New Hebrides).

The habits are as expected for obscurely colored damselflies: they occur in dark areas, such as shaded places along streams or within bushes on the stream banks. The single larva was found on a wet rock in a seepage on a hillside about 50 meters above a stream, along with larvae of two species of *Nesobasis*.

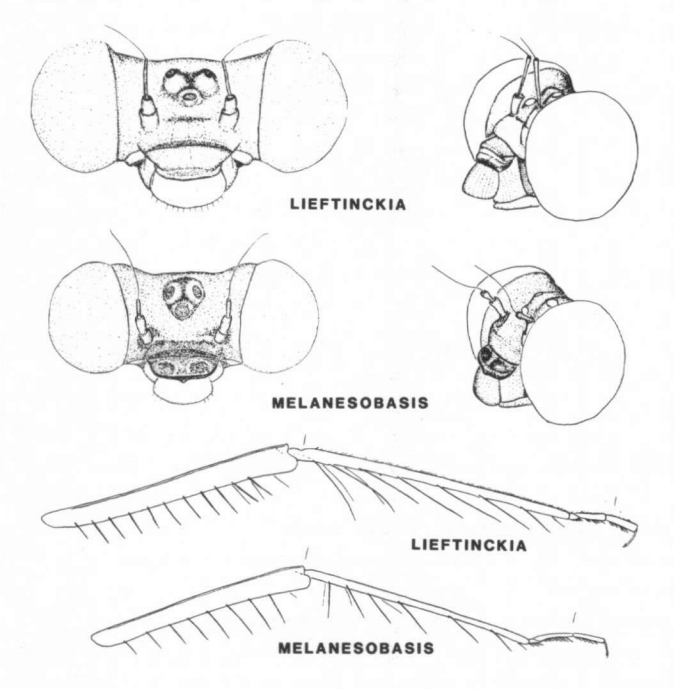

Fig. 3. Head and hind leg of *Lieftinckia lairdi* and *Melanesobasis corniculata*. Marks indicate 1/5 the length of the hind wing, to scale body size.

The name has a double meaning: the genus occurs in Melanesia, and it is characterized largely by its very dark coloration.

The relationship of this genus to other zygopteran genera poses interesting questions. Its relationship to *Nesobasis* appears to be beyond question: for one thing, several species of *Nesobasis* have a clear but somewhat diminished undulance of the wing margin, which is altogether uncharacteristic of other Coenagrionidae. Further, several larval characters (general facies, lack of mental or labial palp setae) suggest a close relationship. Whether *Teinobasis* is especially close is a question to be deferred until further treatment of *Nesobasis* proper.

Several characters of *Melanesobasis* suggest a similarity to *Lieftinckia* and other Platycnemididae: undulant wing margin, long legs with long setae (Fig.3), relatively wide head and stout thorax, and characters of larva cited above. The form of the prothorax and the relatively shallowly excavated labium suggest a further relationship (Fig. 4). I do not suggest that this genus be placed in the Platycnemididae, but I suggest that existing defined characters for this family will not suffice to exclude it.

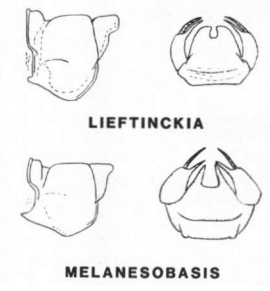

Fig. 4. Prothorax and labium of adult *Lieftinckia lairdi* and *Melanesobasis corniculata*.

The family Platycnemididae was defined as a "legion" in the "Agrionidae" by Selys (1863), who noted especially the rectangular quadrangle and the long legs, with long spines. The family is especially well developed in the African and Papuan regions, with only a few genera of fairly wide range. The Papuan genera extend to the Solomon Islands (*Lieftinckia*) and have been most thoroughly treated by LIEFTINCK in a series of papers (1949, 1956, 1958, 1963). In addition to the Selysian characters for the family, Lieftinck has drawn especial attention to the denticulate margin of the wings of several Papuan genera (all genera but *Asthenocnemis, Rhyacocnemis,* and *Paramecocnemis*). This denticulation reflects the strength and importance of the long veins of the wing: they tend to protrude beyond the normal wing margin. This remarkable character is reflected in the wing margins of *Melanesobasis*. The Seychelles genus *Leptocnemis* has an undulant wing margin nearly identical to that of *Melanesobasis* (SCHMIDT, 1951).

The careful larval descriptions by LIEFTINCK (1958, 1963), also suggest a relationship: the lack of mental or labial palp setae is shared with *Lieftinckia* (but also with the coenagrionid genera *Hylaeargia* and *Palaiargia*). The simple double tooth of the labial palp is similar to that of *Risiocnemis*. The lateral gills resemble those of *Coeliccia* or *Idiocnemis*, but gills may be highly adaptive and hence phylogenetically unreliable characters.

In general facies, including the legs and head, *Melanesobasis* resembles a smaller *Lieftinckia*. The ocelli of *Lieftinckia* are raised on three rounded

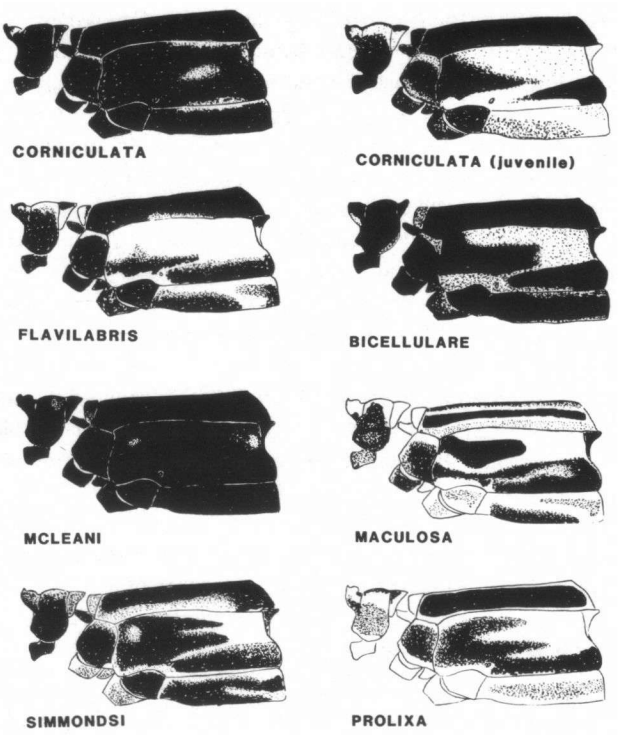

Fig. 5. Thoracic color patterns of male species of *Melanesobasis*.

protuberances, those of *Melanesobasis* slightly less so, and those of *Nesobasis* and *Teinobasis* and other Coenagrionidae still less so. The genus *Lieftinckia* has a prominent and protuberant anteclypeus and postclypeus, and the frons is rounded. The face of *Melanesobasis* is more coenagrionid in character: a less prominent anteclypeus and a slightly angulated frons. The labium of *Melanesobasis* is more excavated than that of *Lieftinckia* but less than that of other Coenagrionidae.

The squared quadrangle, although the single most constant character for the Platycnemididae is far from constant; the Mascarene genus *Paracnemis*, as well as *Cyanocnemis*, *Thaumatagrion*, *Rhyacocnemis*, *Paramecocnemis* and *Lieftinckia*, all possess quadrangles with shorther costal sides. It can be argued that *Melanesobasis* represents merely a mild extension of this condition.

In sum, while possessing a dominance of characters normally associated with the Coenagrionidae, *Melanesobasis* stands sharply apart with its undulant wing margin. Further resemblances with *Lieftinckia* suggest a close relationship and a

possible derivation from the Papuan Platycnemididae. Supporting this idea is the character of the odonate fauna in the Solomon Islands, Vanuatu, Fiji, Tonga, and Samoa: a Papuan assemblage of odonates has invaded successively more eastern islands, and except for local development of endemic genera this obviously Papuan-derived odonate fauna gradually diminishes eastward. I suggest that one lineage extends from an unnamed Papuan platycnemidid to *Lieftinckia* to *Melanesobasis* to *Nesobasis*. This suggestion leaves unanswered the origin of the *Teinobasis* group (including *Papuagrion*) and of the *Palaiargia* group. However one implication is interesting: if *Melanesobasis* and *Nesobasis* might have originated from one lineage of the Platycnemididae, then it is strongly suggested that the Coenagrionidae is polyphyletic, unless Fiji is the point of origin of the entire family!

This study takes the position that the Platycnemididae may be ancestral to the Coenagrionidae. SCHMIDT (1951) has taken a reverse view which to me is unattractive because it might make the origin of the two families even more complicated.

MELANESOBASIS MACULOSA SP. N.

Figures 5, 6, 7, 8, 9, 11

Material* — (all Viti Levu): **Holotype:** Tavua Dist; Waterfall 0.5 km. N of Waikubakuba, 550 ft, Coll. T. Donnelly, 28-30 July 1980. — **Allotype:** same locality and date; **Paratypes:** Nawaka Dist.; 0.5 km E of Namulomulo, 7 ♂, Coll. T. Donnelly, 2-3 July 1972. Vuda Dist.; Lomolomo, 4 ♂, Coll. J. McLean, 30 Jan. 1973 and 2 July 1973. Tavua Dist.; Nadarivatu Road 3 mi S. of King's Road, 1 ♂, Coll. T. Donnelly, 4 July 1972. Tavua Dist.; Waterfall 0.5 km N of Waikubakuba, 550 feet, 6 ♂, 2 ♀, Coll. T. Donnelly, 4-7 July 1972 and 28-30 July 1980. Magodro Dist.; Koronubu, 500 ft, 1 ♀, Coll. J. McLean, 1 Feb. 1973. The holotype and allotype are deposited in the New Zealand Arthropod Collection, DSIR, Auckland.

This is the smallest and palest species of the genus. It is distinguished also by the male appendages, and it appears to be most closely related to *simmondsi*.

Male (holotype) — Coloration (Fig. 5) pale brown with dark brown, cryptic markings. Head: pale, mandibles and genae shining; postclypeus with lateral dark spots; lower part of frons with dark band interrupted mesally; top of head pale with angular C-shaped dark markings at postero-lateral corners; scape and pedicel pale. Prothorax: pale, dark laterally on mid lobe of pronotum; hind lobe recumbent, with a smooth, centrally straight margin. Pterothorax: pale, dark stripe on mesepisternum narrowed centrally; dark dash on anterior half of mesepimeron; two dark dashes on metepisternum, and restricted dark markings

* Place names are here spelled uniformly in the Fijian manner, which might cause some confusion in comparing with museum labels or with the official topographic maps of Fiji. To convert Fijian spelling into English, g becomes ng, d becomes nd, b becomes mb, c becomes th and q becomes ngg.

on margins of metepimeron. Mesinfraepisternum dark, with pale dorsal and ventral edges; metinfraepisternum pale with small central dark mark; pectus pale; mesostigmal laminae pale, triangular, with sharp lateral angle and low mesal ridge. Legs: pale with brownish stripe on dorsum of femora and tibiae; spines pale brownish, the longest on femora about 1 mm. Wings: stigma brown, a rounded losenge about 1 mm long; 18/18 postnodal veins in fore wing and 17/17 in hind wing. Abdomen pale, dark as follows: lateral elongate mark on 2; band on apical fifth of 3-6; obscure sub-proximal smudge on 3-4; ventral margins of terga of 2-9; with dark expanding rearwards; 10 totally pale, the dorsum slightly raised in an apical hood; appendages (Figs 6, 7) pale, the inferior longer than superior, straight with tips bent inward. Superior appendages straight, flattened at end, with a mesal angulation. Penis (Fig. 8) with terminal segment straight, entire, slightly expanded terminally into a rounded hood. the dimensions are given in Table I.

Female (allotype) — Markings as in male, but with greater extent of pale color. Mesostigmal laminae triangular, thin, without prominent depression behind lamina. Ovipositor (Fig. 9) tip extends slightly beyond 10th segment. Fore wing with 18/17 cross veins, hind wing 16/16.

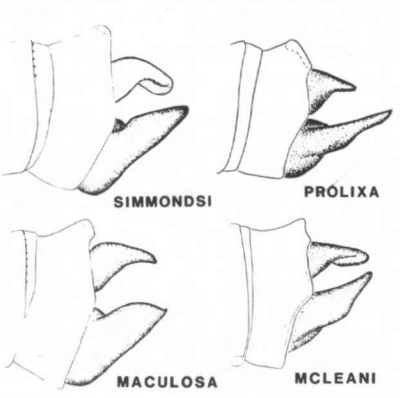

Fig. 6. Lateral views of male appendages of *Melanesobasis simmondsi, prolixa, maculosa,* and *mcleani.*

Variations among the paratype series. — The principal variation among the three populations is in size and is given in Table I. In general, vein R3 originates close to the 7th pncv in the fore wing and the 5th in the hind. the costal sides of the quadrangles are close to 0.55 the posterior side. About two thirds of the entire series have the crossveins descending from the subnodus intersecting M3 at the 3rd post quadrangular cross vein; the remainder have this intersection proximal to the 3rd cross vein. In all the specimens the medio-anal link is deflected proximally at the crossing with the anal vein.

The species *maculosa* occurs along streams in the relatively driest part of Viti Levu. The name refers to the color pattern.

MELANESOBASIS MCLEANI SP. N.

Figures 5, 6, 7, 8, 9, 11

Material — (all Viti Levu: **Holotype:** Magodro Dist.; Koronubu (10 mi S-E of Ba), 500 ft.; 1 Feb.

Table 1

Dimension for *Melanesobasis* species
(N = number of specimens; standard deviation in parentheses; pncv = post-nodal cross veins of hind wing)

Species		*Males*				*Females*		
Locality	N	abd.	h.w.	pncv	N	abd.	h.w.	pncv
c. corniculata								
Nakorobaba	12	35.8 (1.9)	22.7 (0.8)	16.9 (0.9)				
Wailotua	21	36.8 (1.1)	23.4 (1.0)	17.4 (1.1)	8	36.0 (1.9)	25.6 (1.2)	16.8 (0.8)
c. marginata								
Waiyevo	7	36.1 (1.5)	23.0 (0.5)	15.4 (0.9)	3	33.5	23.7	16.2
Bagasau	6	36.1 (0.6)	22.6 (0.5)	15.2 (0.4)				
Saivou	27	36.1 (0.8)	23.0 (0.6)	16.4 (0.9)	9	34.6 (1.4)	24.3 (0.8)	17.0 (0.7)
Koro	17	35.8 (0.8)	22.8 (0.6)	16.4 (0.8)	5	34.8 (1.6)	24.5 (1.1)	16.2 (0.9)
flavilabris								
Waikubakuba	10	35.7 (1.3)	22.8 (0.6)	16.2 (0.8)	6	33.8 (1.4)	23.9 (1.1)	16.5 (1,2)
Wailotua	3	35.8	22.8	16.3	2	34.5	24.5	17.0
Koronubu	7	34.6 (0.8)	22.6 (0.6)	16.5 (0.6)	2	33.2	23.8	15.8
simmondsi								
Kadavu	1	36.5	23.0	18.5				
Sigatoka	1	40.0	26.5	19				
prolixa								
Moala	1	37.5	25.0	17.5				
bicellulare								
Maewo	1	33.0	22.0	15				
maculosa								
Namulomulo	7	33.0 (0.6)	20.9 (0.4)	15.4 (1.0)				
Lomolomo	5	35.9 (0.9)	23.3 (0.8)	17.0 (0.9)				
Waikubakuba	7	34.2 (0.9)	22.0 (0.7)	15.9 (0.9)	3	32.7	23.0	15.8
mcleani								
Koronubu	3	39.0	24.3	16.3				
Colo-i-Suva	2	38.2	24.7	17				
Dakuivuna					1	36.0	26.0	15.5

1973; Coll. J. McLean. — **Allotype:** Tavua Dist. or Wainimala Dist.; Navai-Nasoqo Trail, 2500--3000 feet, "west side"; Coll. E.C. Zimmermann, 12 Sept. 1938. — **Paratypes:** 2 ♂, same data as holotype. Naitasiri Dist.; Colo-i-Suva, 500 ft, 1 ♂ and 1 ♀, Coll. E.H. Bryan, Jr, 28 and 30 June, 1924; same locality. 2 ♂, Coll. T. Donnelly, 10 and 24 July, 1980. Tavua Dist.; Nadarivatu, 2500 ft, 1 ♂, Coll. J.M. Valentine, Oct. 1937. Wainibuka dist.; Dakuivuna, 500 ft, 1 ♀, Coll. T. Donnelly, 11 July 1980. The holotype is deposited in the New Zealand Arthropod Collection, DSIR, Auckland. The allotype is in the Leiden Museum.

This is the largest and darkest species of the genus. It is distinguished by the

structure of the male appendages, and by the long ovipositor. The appendages seem closest to *simmondsi* and *maculosa,* but the penis is most similar to *corniculata.*

Male (holotype) — General color (Fig. 5): black with pale colors obscure olive gray; reddish abdominal caudal appendages. Head: labrum, mandibles, and genae white, with brown-yellow tints; anteclypeus gray, postclypeus, frons, and top of head shining black; distal half of scape and pedicel pale; four obscurely pale marks on dorsum of head: the first behind ocelli, with sinuous outline, extending half the lateral distance to the eye; the second and third from the lateral ocelli extending diagonally forward to the eye; and the fourth in front of the ocelli extending to the base of the antennae, with sinuous outline. Rear of head dark. Prothorax: dark, with lateral obscure pale spots on dorsum of middle lobe and pale lateral tips of hind lobe of pronotum; hind lobe recumbent, rounded, entire. Pterothorax: dark, shining; mesepimeron dorsally pale in dorsal two-thirds, forming a three-pointed figure like a pointing hand facing forward; obscure thin pale stripe on second lateral suture and small spot on ventral margin of metepimeron; pectus dark; trochanters and remainder of legs pale, shining, with thin dark dorsal stripe on femora and tibiae; spines dark; longest femoral spines about 1 mm. Wings with 17/16 fore wing and 16 hind wing postnodals; stigma a rounded losenge 1.3 mm long. Abdomen: dark with pale incomplete basal rings on 2-7, color becoming more reddish rearwards. Appendages (Figs 6, 7)

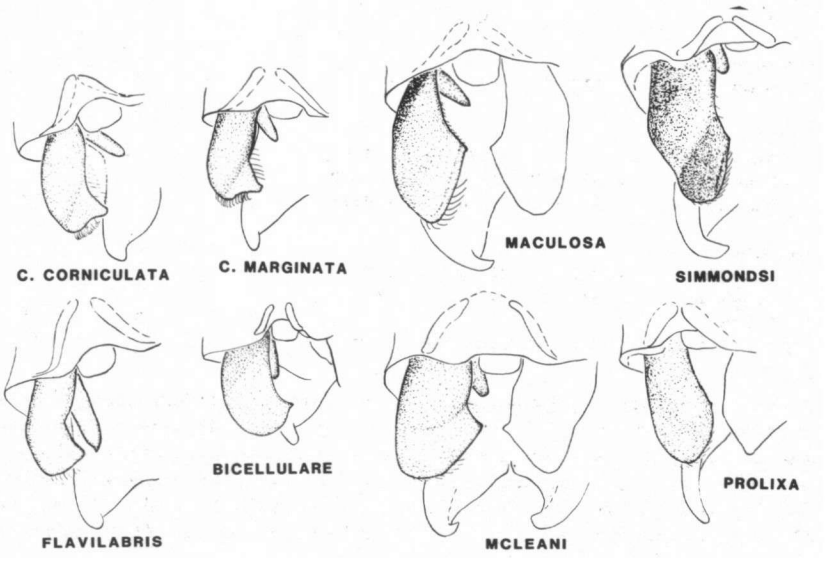

Fig. 7. Inclined apical views of male appendages of *Melanesobasis* species. Subspecies of *corniculata* are from viti Levu (*corniculata*), and Vanua Levu (*marginata*), respectively.

reddish, the inferior bright red, longer than superior, with tips bent inwards; the superior duller red, straight, flattened, rounded tips turned inwards and produced into a sharp mesal corner. Penis (Fig. 8) with terminal segment straight, tapered, bilobed laterally, with a slightly developed terminal rounded spine.

Female (allotype) — Colored more obscurely than male. Head: front of face obscurely reddish brown; labrum red-brown with pale outer margin; frons and top of head dark red brown, only lateral pale stripe present. Hind lobe of pronotum as in male; mesostigmal laminae triangular, thin, pointed. Prothorax: reddish brown, with obscure, poorly defined pale markings. Pterothorax: obscure brown, with broad pale stripe on humeral suture and connected mesally in front, isolating a dark dash on dorsum of thorax; humeral stripe connected downwards with broad, pale area at rear of mesepimeron; second lateral suture and center of metepimeron with pale stripes; pectus brown. Legs: brown, with brown spines. Wings: stigma as in male; 20 fore wing and 18 hind wing postnodals. Abdomen: brown, with obscure pale basal spots on 3-7, becoming more reddish rearwards. Ovipositor (Fig. 9) prominent, extending 1 mm beyond end of abdomen.

Variation among the paratype series. — Variations are mainly in size and are given in Table I. The 3 males from Koronubu appear to be consistently smaller than either the highland (Nadarivatu, Navai-Nasoqo Trail), or eastern moist lowland (Dakuivuna, Colo-i-Suva) specimens.

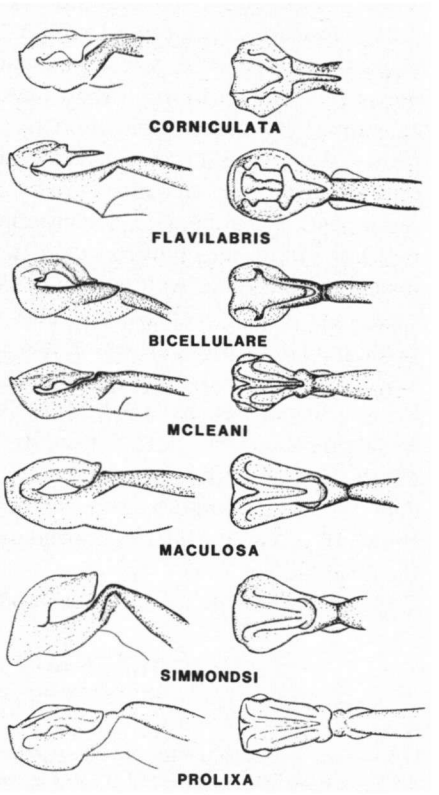

Fig. 8. Penes of *Melanesobasis* species.

This species is named for JOHN McLEAN, formerly of the College of the South Pacific, who collected the holotype. Dr McLean was also a delightful field companion on several occasions and provided extensive and valuable collections of Odonata from Viti Levu and outlying small islands. His contribution is fully as significant as the earlier collecting by Simmonds, and it is fitting that a species related to *simmondsi* carry his name.

MELANESOBASIS PROLIXA SP. N.

Figures 5, 6, 7, 8, 11

Material — (Fijian Islands): Moala; 1 ♂, Coll. E.H. Bryan, Jr, 13 July 1924. The holotype is desposited in the Leiden Museum.

This species is known from a single male specimen from Moala Island, Fiji. It is easily distinguished by the very long inferior appendage of the male.

Male (holotype) — Coloration brown, obscure (Fig. 5) ; Head, labrum yellow, obscurely dark central subbasal spot; mandibles and genae yellow; anteclypeus obscurely pale; postclypeus dark; frons dark with pale ventral margin; dorsum of head dark, with yellow lines from lateral ocelli to bases of antennae, extending rearwards to join short transverse stripe at rear of head; scape and pedicel short, pale. Prothorax: dark laterally, pale dorsally, with obscure dark central-dorsal line expanded rearwards; hind lobe of pronotum entire, recumbent. Pterothorax: mesepisternum dark with broad pale line along humeral suture; mesepimeron dark in front, pale to rear, with two dark lines; metepisternum dark, with pale short dorsal-caudal and broad ventral margins; metepimeron pale with obscure dark central-caudal elongate lines; mesinfraepisternum dark with pale dorsal margin; metinfraepisternum pale; pectus pale. Legs: yellow, with obscure dorsal dark stripe of femora and tibiae; long spines. Wings: stigma losenge shaped; 20/19 fore wing and 17/18 hind wing postnodals; costal side of quadrangle 0.55 the posterior side; R3 originates at 8 (fore wing) and 5.5 (hind wing). Abdomen: obscurely pale, becoming obscurely dark apically; dark apical rings on 3-5; dark ventral margins on 8-9; appendages (Figs 6, 7) brownish yellow, the inferior appendage elongated more than for other species in the genus.

The name refers to the unusual elongation of the male inferior appendage.

MELANESOBASIS BICELLULARE SP. N.

Figures 5, 7, 8, 10, 11

Material — Vanuatu (New Hebrides): Maewo; Sourwari, 0-360 m, 1 ♂, Coll. G.M. Nishida, 4-5 Sept. 1979. The holotype is deposited in the Bishop Museum, Honolulu, Hawaii.

This species is represented by a single male specimen from Maewo Island, Vanuatu (New Hebrides). It is most easily mistaken for *flavilabris*, but is distinguished by the male superior appendage, the penis, the mesostigmal laminae, and the presence of only two post-quadrangular cells in the hind wing.

Male (holotype) — Coloration dark (Fig. 5); Head: dark; labrum yellow; pale spots on dorsum of head between lateral ocelli and antennae bases; antennae brown, pale ring at end of scape; pedicel pale; obscurely pale transverse band on occiput. Prothorax: dark; anterior lobe with obscure pale lateral marks; hind lobe

entire, recumbent. Pterothorax: dark, pale as follows: dorsal half (except extreme anterior part) and rear 2/5 of ventral half of mesepimeron; diagonal line through spiracle, and ventral margin of metepisternum; dorsal and ventral borders of metepimeron; obscure pale on center of hind coxae; mesostigmal laminae broad, triangular, rounded, with lateral extremity bluntly rounded. Legs: pale yellow with dark dorsal stripe on femora and tibiae; spines long, dark. Wings: stigma losenge shaped; 15/16 fore wing and 15/15 hind wing postnodals; R3 at 7th (fore wing) and 6th (hind wing) postnodal cross vein; two post-quadrangular cross veins in hind wings. Abdomen: obscure brown, pale yellow basal rings on 3-8; obscurely pale on dorsum of 7. Appendages brown, inferior appendage pale reddish brown. Superior appendages (Fig. 10) flattened, rounded, produced into medial apical point, with pointed cylindrical inner branch. Inferior appendage longer than superior, produced into rounded, inwardly deflected tip. Penis (Fig. 8) with terminal segment narrow, hood-shaped, decurved, with small pointed lateral "wings".

The name refers to the unusual (for the genus) two post-quadrangular cross veins in the hind wings.

MELANESOBASIS CORNICULATA (TLLYARD)

Figures 1, 2, 5, 7, 8, 9, 10, 11

Material — Viti Levu; Wainibuka Dist., Wailotua, 21 ♂, 7 ♀, Coll. T. Donnelly and J. McLean, 6 July 1972, 13 Nov. 1972, 28 Jan. 1973, 11-27 July 1980. Viti Levu; Wainibuka Dist., Dakuivuna, 1 ♂, Coll. T. Donnelly, 11 July 1980. Viti Levu: Suva Dist., Nakorobaba, 12 ♂, Coll. T. Donnelly, 26 Jan. 1973. Ovalau, Lovoni, 1 ♂, Coll. T. Donnelly, 26 July 1980. Kadavu, Vunisea, 1 ♂, Coll. J. McLean, 2 Sept. 1973. Additional localities from Leiden Collection: Viti Levu, Tavua Dist., Navai; Viti Levu, Suva Dist., Lami and Suva Bay.

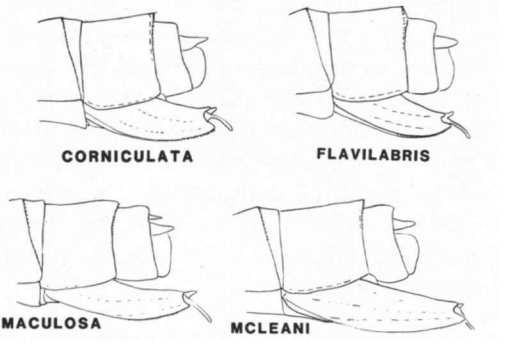

Fig. 9. Lateral views of ovipositors of *Melanesobasis* species.

This species is recognized by its black color (Fig. 5), the distinctive "pinched" tip to the male superior appendage (Figs 7, 10), and by the mesostigmal laminae (Fig. 11) of the female. It is the most widespread species of the genus and was not recognized by Selys, who included specimens in his series under the name of *flavilabris*.

MELANESOBASIS CORNICULATA MARGINATA SSP. N.
Figures 7, 11

Material — Taveuni; Cakaudrove Dist., 1 km S of Waiyevo, 7 ♂, 3 ♀, Coll. T. Donnelly, 21-22 July 1980. Vanua Levu; Cakaudrove Dist., 1 mi N of Bagasau, 6 ♂, 1 ♀, Coll. T. Donnelly, 30 Jan. 1973. Vanua Levu; Sasa Dist., 3.7 km E of Saivou, 850 ft, 27 ♂, 9 ♀, Coll. T. Donnelly, 17-18 July 1980. Koro, trib. Nabuna Cr., 17 ♂, 5 ♀, Coll. D. Perlman, 27-29 Dec. 1980.

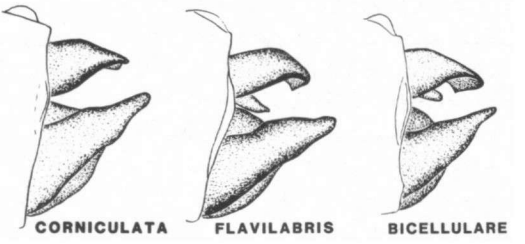

Fig. 10. Lateral views of male appendages of *Melanesobasis corniculata, flavilabris,* and *bicellulare.*

This subspecies is named for specimens of the species that occur in the northern Fijian Islands: Vanua Levu, Taveuni, Rabi, and Koro. The subspecies differs consistently from the typical subspecies in possessing a distinct apical black band on the labrum, whereas *corniculata* has the labrum shining white throughout (but both forms may have an obscure central basal dark spot). Females of *marginata* are distinguishable by a structural character: the depression along the caudal margin of the mesostigmal laminae (Fig. 11) In *corniculata* this depression is very prominent and extends at least half the distance to the lateral tip, whereas in *marginata* the depression is much smaller and extends about a quarter of this distance. Curiously, I can find no analogous structural difference in the male superior appendage (Fig. 7). A further difference between the two subspecies is found in the fraction of specimens having three complete post-quadrangular cells: in *corniculata* fully 70 per cent have the cross vein descending from the subnodus intersecting M3 proximal to the third post-quadrangular cross vein, but in *marginata* only 30 per cent of specimens show this character.

MELANESOBASIS FLAVILABRIS (SELYS)
Figures 5, 7, 8, 9, 10, 11

Material — Viti Levu; Wainibuka Dist., Dakuivuna, 2 ♂, Coll. T. Donnelly, 11 July 1980. Viti Levu; Wainibuka Dist., Wailotua, 1 ♂, Coll. T. Donnelly, 11-27 July 1980. Viti Levu; Navosa Dist.; Nasaucoko, 2 ♂, Coll. J. McLean, 29 Jan. 1973. Viti Levu; Tavua Dist., Nadarivatu, 1 ♀, Coll. T. Donnelly, 5-7 July 1972. Viti Levu; Magodro Dist., 7 ♂, 2 ♀, Coll. J. McLean, 1 Feb. and 3 July 1973. Viti Levu; Tavua Dist., Waikubakuba, 11 ♂, 6 ♀, Coll. T. Donnelly and J. McLean, 4-7 July 1972, 3 Feb. 1983, 28-30 July 1980. Ovalau, Lovoni, 7 ♂, 1 ♀, Coll. T. Donnelly, 26 July 1980.

This species lives in slightly drier parts of Viti Levu than does its near relative *corniculata.* It is browner in color (Fig. 5) and has a distinctive male superior

appendage (Figs 7, 10), which is not "pinched" in appearance at the tip.

MELANESOBASIS SIMMONDSI (TILLYARD)

Figures 5, 6, 7, 8, 11

Material — Kadavu; Vunisea, 1 ♂, 31 Aug. 1973, Coll. J. McLean.

This species is large and brown (Fig. 5), with a characteristically high hood on the apical segment of the abdomen. The shape of the superior appendage (Figs 6, 7) separates it from its close relative *maculosa.* Although originally collected in southeastern Viti Levu, it has been taken recently only in Kadavu.

DIAGNOSIS OF SPECIES OF *MELANESOBASIS* GEN. NOV.

The following discussion replaces the conventional dichotomous key and it intended to supplement the figures. Especially valuable for diagnosis are male appendages (Figs 6, 7, 10), the ovipositor (Fig. 9) (for the four known females), mesostigmal laminae (Fig. 11), and coloration (Fig. 5), especially of the labrum. The penes (Fig. 8) are also quite distinctive.

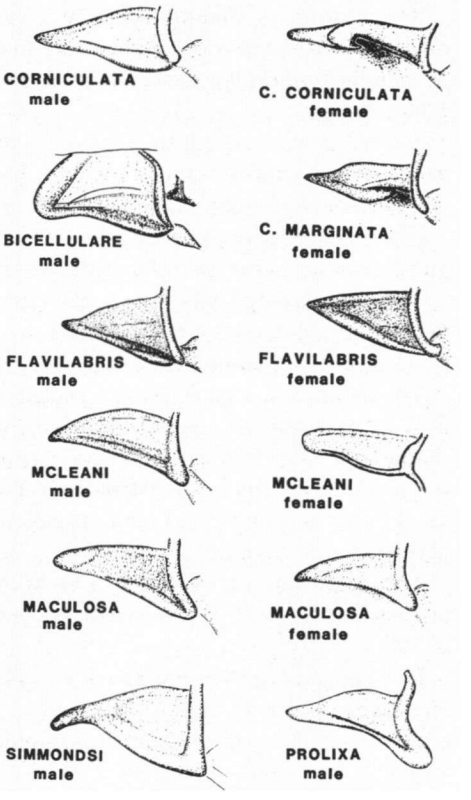

Fig. 11. Mesostigmal laminae of *Melanesobasis* species. Subspecies of *corniculata* from Viti Levu (*corniculata*) and Vanua Levu (*marginata*), respectively.

In general coloration, *corniculata* and *mcleani* are the darkest, and *maculosa* stands out by its pale colors, with dark marks on a pale background. Collectors are warned that there are striking ontogenetic variations in the extent of dark color pattern. Further, the reddish color which is characteristic of male appendages of *corniculata* and *mcleani* is not constant, nor is this color clearly characteristic of age.

The dorsum of the head shows only two small pale diagonal spots adjacent tc the lateral ocelli for *corniculata* and *flavilabris.* The species *bicellulare* shows in

addition a transverse spot on the occiput; on *flavilabris* there is a very thin line at the rear of the occiput. The species *simmondsi* has two lateral spots, a thin pale mark on the occiput, and a pale spot in front of the central ocellus. In *mcleani* the lateral spots are longer, and there are prominent pale spots on the occiput and in front of the central ocellus. In *prolixa,* the lateral spots extend forward to the front of the antenna bases and are confluent rearward with the pale stripe on the occiput.

The labrum is shining white in *corniculata* (except for *marginata*), and *flavilabris.* It is yellow or yellow-white in *maculosa, mcleani,* and *bicellulare.* In *prolixa* the basal half is dark, and in *simmondsi* the labrum is centrally dark, with a pale margin.

Viewed laterally, the 10th segments of the abdomen of *corniculata, flavilabris,* and *bicellulare* are low (about 1.1 mm). The height is greater in *mcleani* (1.3 mm) and *prolixa* (1.35 mm), and greater still in *maculosa* and *simmondsi* (1.45 mm).

The male superior appendage has an inferior spine in *corniculata, flavilabris,* and *bicellulare.* Further differences are seen in the figures.

The terminal segment of the penis is narrowed and pointed in *corniculata* and *flavilabris,* wider, with a narrow hood in *bicellulare* and *mcleani,* and wider still, hooded, and broadened at the tip in *maculosa, simmondsi,* and *prolixa.*

The mesostigmal laminae are especially characteristic in male *bicellulare* (very broad, triangular, rounded), *flavilabris* (wide, pointed laterally). In females the shapes are especially characteristic, with *flavilabris* being wide and sharply triangular, *maculosa* being narrow and sharp, *mcleani* being narrow and parallel sided, with a rounded tip, and *corniculata* narrow, with a prominent caudal depression (cf. above).

The ovipositor varies in the four known species from shortest (*flavilabris;* just beyond 10) to longest (*mcleani;* beyond appendages by more than the length of 10).

Groupings of species are uncertain. The species *corniculata, flavilabris,* and *bicellulare* appear to be fairly close to each other, as do *maculosa, simmondsi,* and *prolixa.* The position of *mcleani* would appear to be closest to the *maculosa* group.

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REFERENCES

LIEFTINCK, M.A., 1949. The dragonflies (Odonata) of New Guinea and neighbouring islands. Part VII. Results of the Third Archbold Expedition (II Zygoptera). *Nova Guinea* (N.S.) 5: 1-271.

LIEFTINCK, M.A., 1956. Two new Platycnemididae (Odonata) from the Papuan Region. *Nova Guinea* (N.S.) 7: 249-258.

LIEFTINCK, M.A., 1958. A review of the genus Idiocnemis Selys in the Papuan region, with notes on some larval forms of the Platycnemididae (Odonata) *Nova Guinea* (N.S.) 9: 253-292.

LIEFTINCK, M.A., 1963. Contributions to the odonate fauna of the Solomon Islands, with notes on zygopterous larvae. *Nova Guinea* (N.S.) 21: 523-542.

SCHMIDT, E., 1951. Ueber neue und weniger bekannte afrikanische Platycnemididen (Odon.). *Mitt. münch. ent. Ges.* 51: 217-240.

SELYS, E. de, 1891. Causeries odonatologiques No. 3. Nesobasis Selys. *C. r. Soc. ent. Belg.*: 1-7.

TILLYARD, R.J., 1924. The dragonflies (order Odonata) of Fiji, with special reference to a collection made by Mr. H.W. Simmonds, FES, on the island of Viti Levu. *Trans. ent. Soc. Lond.* 1924: 305-346.