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The final instar larva of the Sri Lankan endemic *Platysticta apicalis* Kirby (Odonata: Platystictidae, Platystictinae), including comparisons with known larvae of other platystictid subfamilies

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Abstract

The final stadium larva of *Platysticta apicalis* Kirby is described, based principally on a female exuvia collected in the wild, from near Deniyaya, southern Sri Lanka. Identification was by supposition, based on the proximity a teneral adult evidently recently emerged from the exuvia. Other exuviae of both sexes from the same site were also examined, judged to be of the same species, and used to augment the description. This is the first description of the larva of a member of the subfamily Platystictinae, and also describes the larval stage of the type genus of the family. In general form the larva of *P. apicalis* closely resembles all known members of the subfamilies Protostictinae and Palaemnematinae with a broad roughly heart shaped head, well tracheated saccoid gills and a flat prementum with convex lateral margins. In some details, such as the palmate molar crest of the left mandible, the moderately projected ligula and the longish well-spaced coronate setae on the margin of the ligula it most closely resembles species of the New World *Palaemnema* Selys, but despite the extreme conservatism in larval morphology exhibited by the family, it has several characters not seen elsewhere. This is in agreement with some, but not all, studies of relationships within the family based on analysis of adult DNA, which recognise Platystictinae and Palaemnematinae as sister groups.

Key words: Zygoptera, damselfly, nymph, naiad, larval taxonomy, Sri Lanka, tropical Asia

Introduction

The family Platystictidae occurs widely in the Oriental region, New Guinea and the Solomon Islands and also the Neotropics but is absent from Africa and Australia. At present 291 species in ten genera are recognised (Paulson *et al.* 2026). These are placed in four subfamilies: Protostictinae, widespread in tropical Asia and New Guinea; Palaemnematinae, with a sole genus *Palaemnema* Selys in the Neotropics; Sinostictinae, represented by two genera, *Sinosticta* Wilson and *Yunnanosticta* Dow & Zhang with seven species occurring in southern China with Hong Kong and Hainan, NE India and NW Vietnam, and the Sri Lankan endemic subfamily Platystictinae, with two genera and 27 species. Larvae of just 11 species, five Protostictinae (Fraser 1919; Lieftinck 1934; Asahina & Dudgeon 1987; Orr & Dow 2015; Ng 2026) and six *Palaemnema* (Novelo-Gutiérrez & González-Soriano 1986; Novelo-Gutiérrez 2003; De Marmels 2007; Amaya-Vallejo & Novelo-Gutiérrez 2011; Neiss & Hamada 2016) have been described in any detail. All share a similar, distinctive appearance with several clear synapomorphies, but are extremely conservative, with consistent differences between the known larvae of species belonging to two subfamilies Protostictinae and Palaemnematinae only evident in microscopic characters visible by dissection. Comparisons are additionally hampered by interspecific variations in certain labile characters occurring across all genera and subfamilies for which information on larvae exists.

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FIGURE 1. Adult male (above) and female of *Platysticta apicalis*, the female ovipositing into a living stem beside water, the male guarding. Photograph by Matjaž Bedjanič.

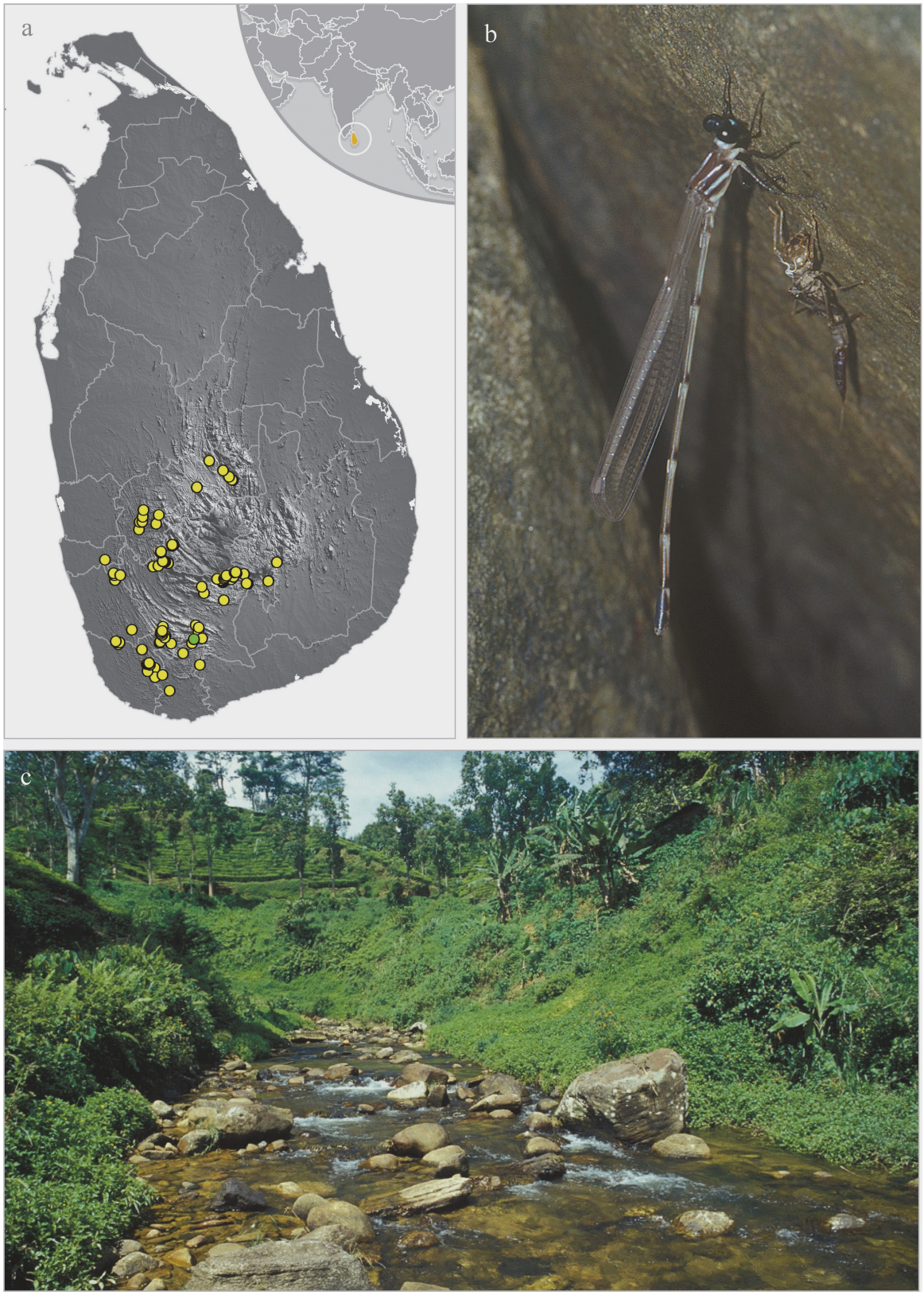

FIGURE 2. Distribution map and habitats of *Platysticta apicalis*, a) Map of Sri Lanka with known distribution of *P. apicalis* indicated by yellow dots (modified from Bedjanič *et al*. 2014 and Bedjanič *et al*. 2021). The locality of exuviae recorded near Deniyaya is coloured green; b) a teneral adult male beside its exuvia, illustrating the situation in which the described exuvia was discovered; c) clear boulder strewn stream in open habitat where the exuviae of *Platysticta apicalis* used in this study were collected – right tributary of Gin Ganga, Deniyaya, Matara District, Southern Province, Sri Lanka. Photographs by Matjaž Bedjanič.

A brief mention of a few collected platystictid larvae from Sri Lanka by St. Quentin (1973) did not include any useful details, so until now, larvae of Platystictinae have remained unknown, and it has been unclear how they would compare with other subfamilies. Therefore, the discovery of the larva of *Platysticta apicalis* Kirby is of considerable interest. This very large and unusual platystictid belongs to an exclusively endemic Sri Lankan genus, consisting of four species distributed in the humid central and south-eastern parts of the island. *Platysticta apicalis* (Fig. 1), is found mainly in low country and lower montane areas of the wet zone where it inhabits small forest streams and streamlets inside forests, forested home gardens, and is occasionally encountered in rubber plantations. Although *P. apicalis* has been recorded from several localities, it is estimated to occupy only 9,354–12,939 km² (Fig. 2a), and due to habitat degradation, the IUCN Red List of Threatened Species lists it among globally threatened species (Bedjanič *et al.* 2014; Sumanapala 2017; Bedjanič *et al.* 2021).

The endemicity of the Sri Lankan subfamily Platystictinae is remarkable, especially given the close proximity of South India, which has numerous representatives of the subfamily Protostictinae, and stands out from both a zoogeographic and phylogenetic perspective. Based on molecular data and phylogenetic analyses, Dijkstra *et al.* (2014) retrieved Platystictinae as the sister group of Palaemnematinae, whereas Bedjanič *et al.* (2016), based on a more comprehensive dataset in the context of Platystictidae, retrieved the subfamily as the sister of Palaemnematinae + Protostictinae. Importantly, Bedjanič *et al.* (2016) clearly demonstrated that the Western Ghats species *Indosticta deccanensis* (Laidlaw) does not belong to *Platysticta* Selys and Platystictinae, instead retrieving it as the sister to Palaemnematinae, but leaving its subfamilial status unresolved due to limited taxon sampling.

This paper describes the final instar of *P. apicalis* based on an exuvia collected from a boulder in close proximity with a freshly emerged female on a stream in the vicinity of Deniyaya in southern Sri Lanka (Fig. 2b, c). The description is augmented by examination of several other exuvia found nearby and judged to be of the same species or at least, in one case, a closely related member of the genus. The characters of the larva are compared, where possible, with the other 11 species of platystictid larvae for which detailed descriptions or partial descriptions are available, and the possible phylogenetic implications of these comparisons are discussed.

Methods

Dried exuviae were examined and photographed, then soaked in 70% ethanol for 12 hours to soften the integument and permit controlled dissection. All parts became pliable following this treatment with the exception of the caudal gills, which remained in their contracted state, but these could still be measured and interpreted. Specimens were dissected using a Zeiss Stemi 6000 stereomicroscope. Photographic images were captured at 12 MP resolution and used to inform artwork. Measurements were made with reference to a 0.01mm resolution slide micrometer. Tibial and premental setae were examined at X400 magnification using an Olympus monocular microscope using both incident and transmitted light.

Description of larva

Platysticta apicalis Kirby

Figs 3–8

Material examined. 1 ♀ exuvia, verified by association with teneral adult, SRI LANKA, Matara District, Southern Province, Deniyaya, right tributary of Gin Ganga at Elawatta Tea Factory 5km NE of Deniyaya, 6.3782 N 80.5937 E, 559 m asl, leg. M. Bedjanič & M. Bedjanič, 30.iv.2003; 1 ♀ exuvia, identified by supposition, data as above; 1 ♂ exuvia, identified by supposition, data as above. 1 ♀ exuvia (labelled specimen C), suspected of being different species of *Platysticta*, data as above (not described in detail).

Description

Habitus (Fig. 3) – A medium sized zygopteran larva, large for the family, generally long and fusiform with rather short legs. Head with characteristic heart shape and saccoid gills dark with long terminal filament. Very little

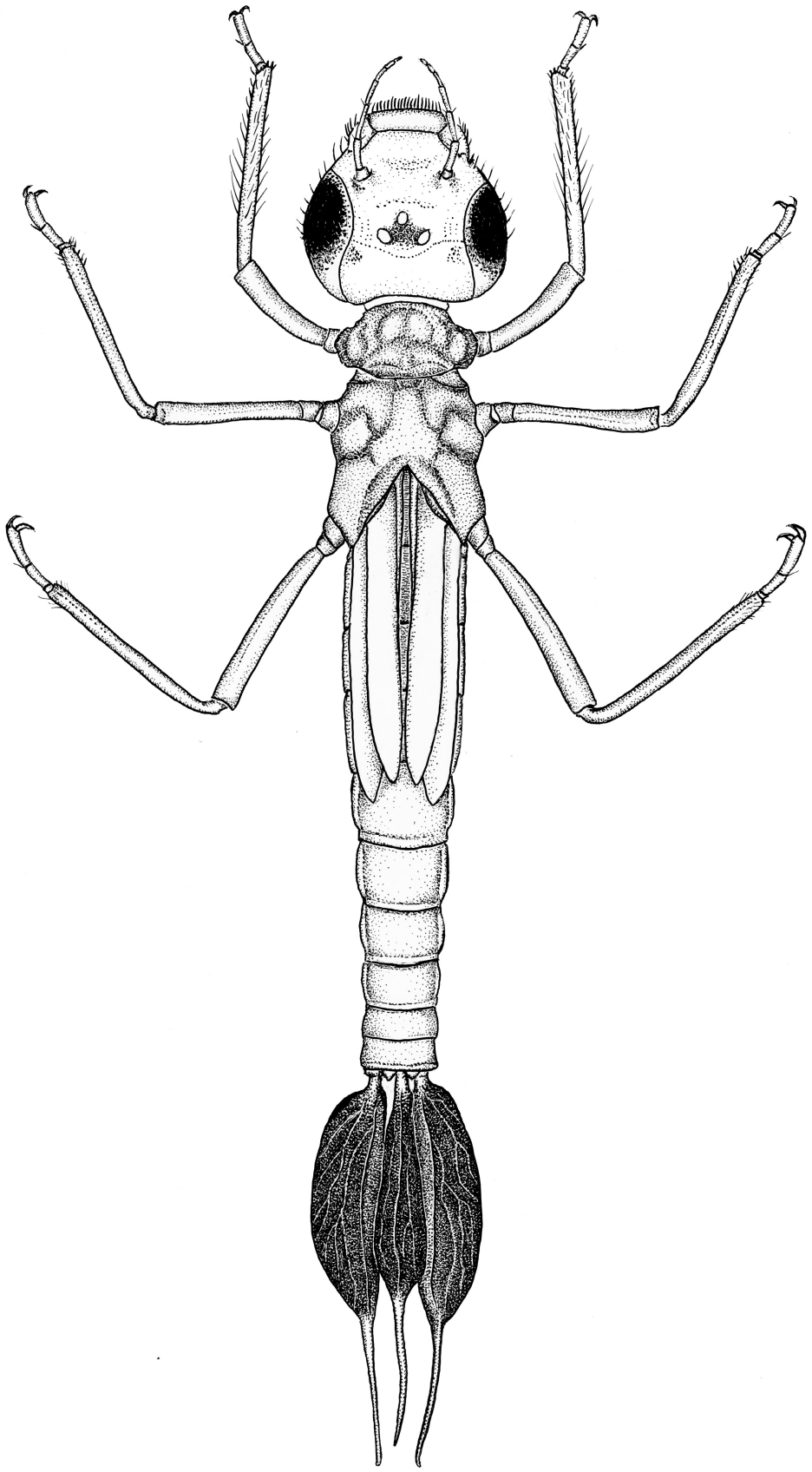

FIGURE 3. Final instar ♀ larva habitus of *Platysticta apicalis*, based on interpretation of exuvia. Extent of eye supposition. Illustration by Albert G. Orr.

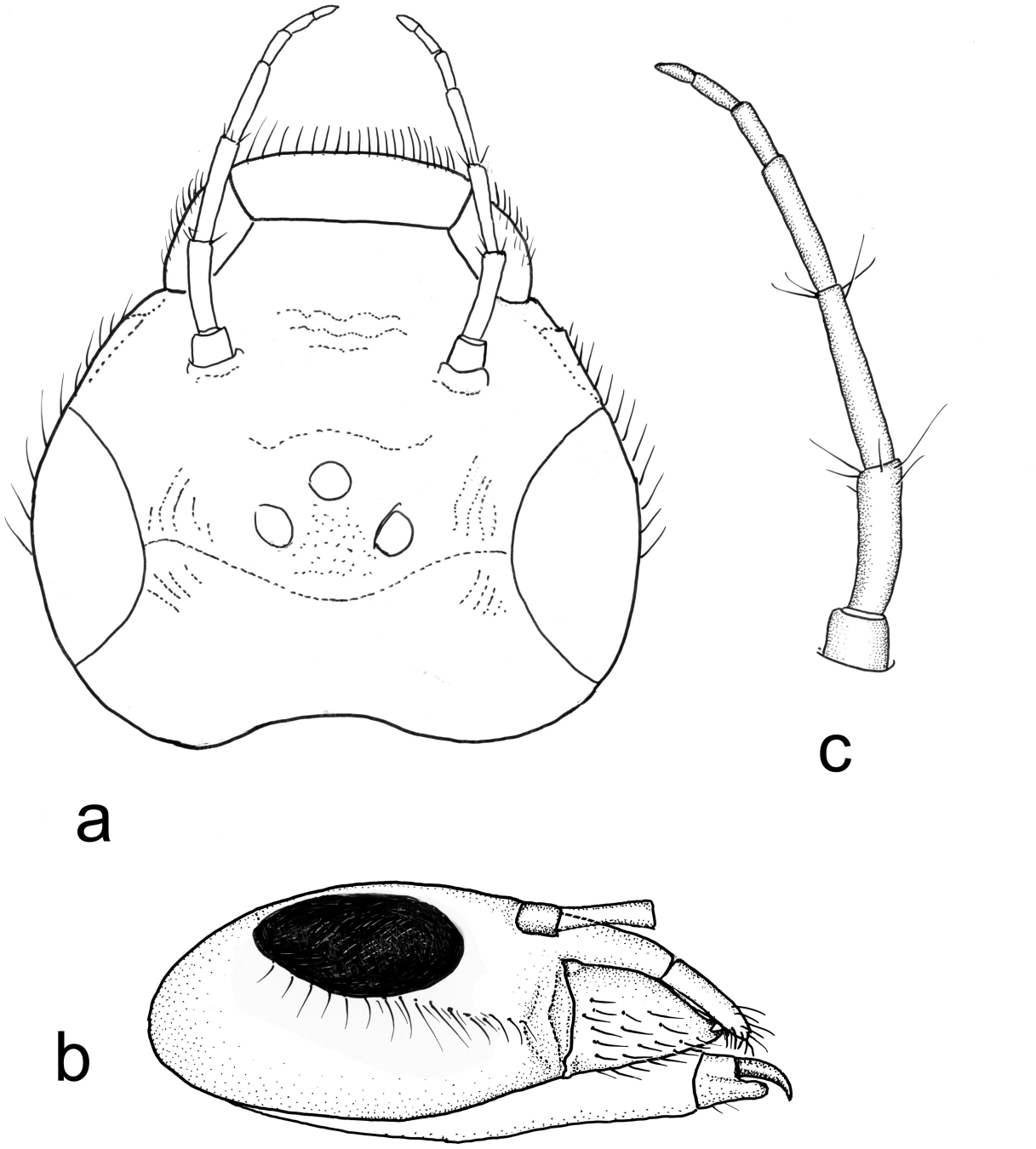

FIGURE 4. Head of *Platysticta apicalis* larva, a) dorsal detail of head, b) lateral view head – (extent of eye supposition), c) right antenna. Illustrations by Albert G. Orr.

evidence of pigmentation or patterning was evident on the exuviae, except for the gills which are a purplish black. It is unclear if this is also the case with the larva, as both unmarked and heavily patterned forms are known among other species of the family.

Head (Fig. 4a, b, c) – moderately broad with respect to remainder of body and generally cardoid in dorsal outline, but posterior margin only slightly concave and labrum broad. Antennae 7 segmented, of moderate length, antennomere ratios scaled to pedicel, A2 (0.34, 1.0, 1.22, 0.89, 0.43, 0.35, 0.27), encircling fine long apical setae only evident on A2 and A3 (Fig. 4c). In lateral view depressed, strongly prognathous with posterior margin smoothly rounded and mandibles prominent (Fig. 4b). No facets of compound eyes evident and margins of eyes indistinct,

but in lateral view lower margin partly defined by line of ca 12–14 long evenly spaced setae supplemented by a few aligned shorter setae extending along gena to near base of mandible. Dense heavy setae on outer face of mandible and anterior margin of labrum. Labium at rest folded so articulation sits between procoxae. Prementum (Fig. 5a, b, c) broad, ca 1.6 times as long as broad, with lateral margins strongly convex, broadest basal to midpoint; dorsal surface with two extensive patches of very fine transverse striae; median lobe of prementum (ligula) moderately convex with deep cleft indicated but entirely sealed; margin of ligula with short stout marginal setae, well separated and tending to coronate; single long strong seta on either side of ligula near base of palpal lobe, together with group of short fine setae; Labial palps (Fig. 5a, d) small in proportion to prementum, palpal lobe simple, tip slightly truncated distally in dorsal view but not bifid; movable hook robust and short, strongly tapered. Maxilla (Fig. 6d); galeolacinia with four strong, curved dorsal spines and three ventral spines continuing as line of progressively diminishing setae; maxillary palp slightly exceeding distal-most dorsal curved spine and bearing apical tuft of strong setae. Mandibles (Fig. 6a, b, c), incisor lobe with four strong teeth, becoming rounded or chisel shaped dorsally; molar lobe of right mandible with two prominent close-set spines, fused to form raised fork; molar lobe of left mandible palmate with raised oblique edge bearing 9 denticles, arranged in a slightly more projected dorsal set of 4 and a ventral set of 4–5, plus a long sharp basal spine; outer face of both mandibles bearing dense patch of mixed heavy and finer interspersed setae. Hypopharynx (Fig. 6e); anterior face narrowly triangular and slightly reflexed, bearing tufts of short strong setae, especially at distal angles.

Thorax – (Fig. 3) Prothorax short and broad, narrowing laterally to meet coxae, upper surface smoothly sculpted with two low, rounded median nodules; anterior and posterior margins weakly convex. Synthorax of similar width, surface sculped to form several low swellings, posterior margin excavated in a deep 'V' to receive bases of wing covers. Legs (Figs 3a, 7a, b, c) overall rather short; profemur short, smooth and distinctly curved; protibia long, 1.75 times length of femur, apex with 5-6 erect, brown spine like setae dorso-interiorly and row of close-packed uniform shorter rod-like setae ventrally, pressed downwards to meet tarsal margin, remainder of tibia with dense mixture of long and shorter filiform setae, none observed with serrate margins; protarsus three segmented with sparse row of fine short setae in underside and two longer setae arising from dorso-lateral apex of second segment, tarsal claws strong, (Figs 7a, b); meso and meta femora progressively longer, with few setae and more normally proportioned relative to tibia; mesotibia about 1.15 times length of femur, and similar in length to protibia; longer filiform setae densest towards apex, which lacks erect spine like setae but with ventral row of 8 rod-like setae as in protibia (Fig. 7c), mesotarsus similar; metatibia in same proportion to femur (ca 1.15), overall slightly longer, with filiform setae sparser and confined to near apex, ventral row of 9 rod-like setae as in protibia, metatarsus as in foreleg but slightly longer. Wing sheaths long, narrow, reaching abdominal S5.

Abdomen – thin, subcylindrical and tapered gently and uniformly from S1–S10 (Fig. 3). Female with short, broadly conical cerci; cerci in male more elongate. Female gonapophyses (Figs 8 a, b) arising from base of S9 with outer lobes uniformly broad, then tapering smoothly to form an upper finger-like projection in apical one fifth; inner lobes slightly longer, smooth, basally broad then ventral margin curving upwards on form of sabre tip, extending slightly beyond outer lobes. Ovipositor in total with about 40% extending beyond margin of S10. Male gonapophyses (Fig. 8c) minute, visible as a tiny cleft structure flanked by very low angular plates located centrally in venter of S9 about one third segment length from posterior margin. Caudal gills (Fig. 3) swollen saccoid, richly tracheated, dark purplish black, each with a long terminal filament almost as long as main body of gill; lateral pair slightly longer than median and slightly concave on inner margin to accommodate the latter.

Measurements (mm): Total length (without caudal lamellae or antennae) 18.3; maximum width of head 4.6; antennae 3.3 (scape 0.73); prementum 4.7 long, 3.0 wide; fore femur 2.4, fore tibia 4.2; lateral caudal gills with filament 7.6, median gill with filament 7.3.

Habitat

All exuvia were found on boulders (Fig. 2b) in a clear stream among tea plantation, thus in open habitat (Fig. 2c). As adults are predominantly forest dwelling it is surmised that the larvae had been carried downstream from headwaters situated within a nearby forested area, and that once able to fly, teneral adults fly back upstream.

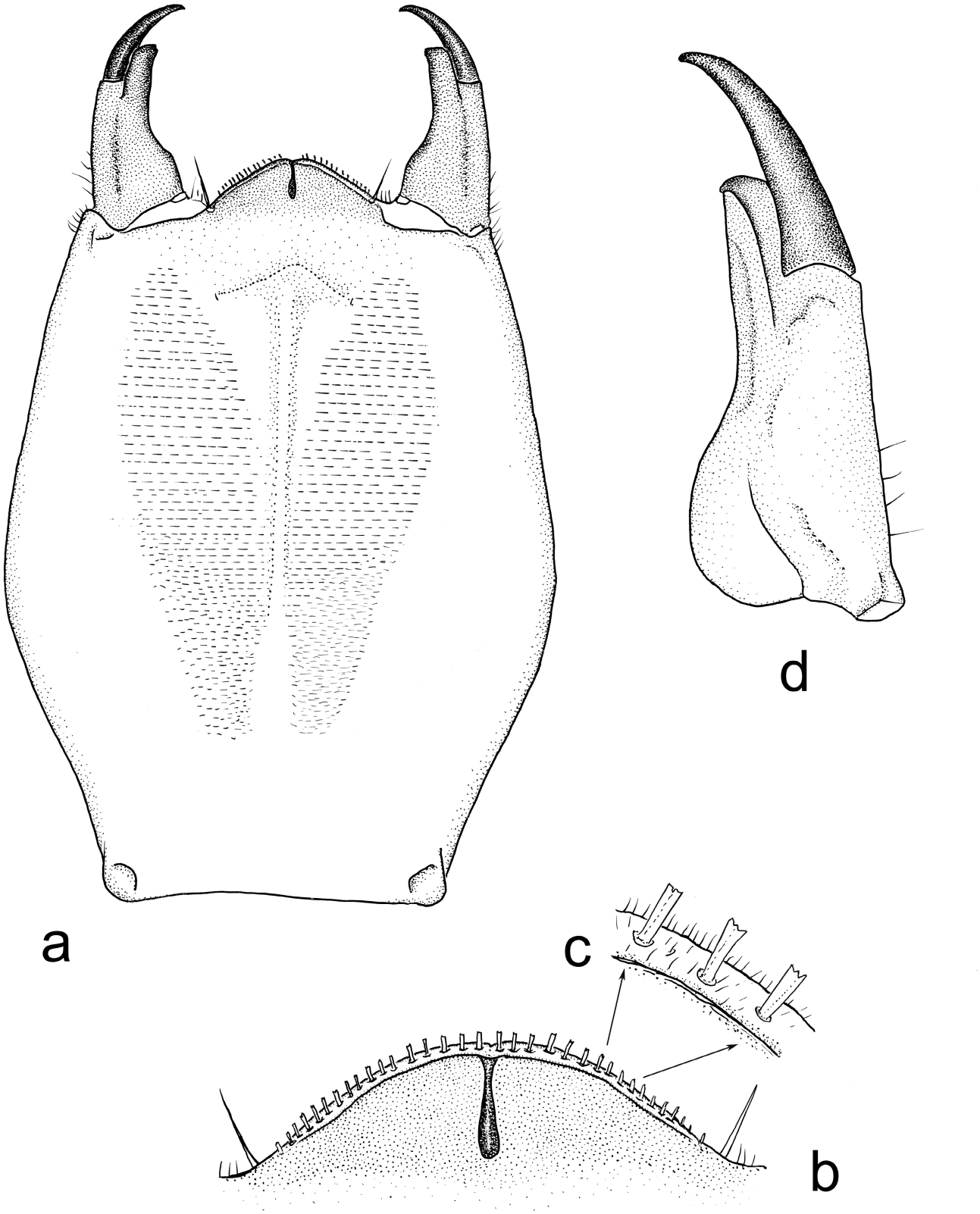

FIGURE 5. Prementum of *Platysticta apicalis* larva, a) prementum dorsal view, b) detail of ligula, c) detail of coronate setae on margin of ligula, d) labial palp, dorsal from slightly oblique outer view. Illustrations by Albert G. Orr.

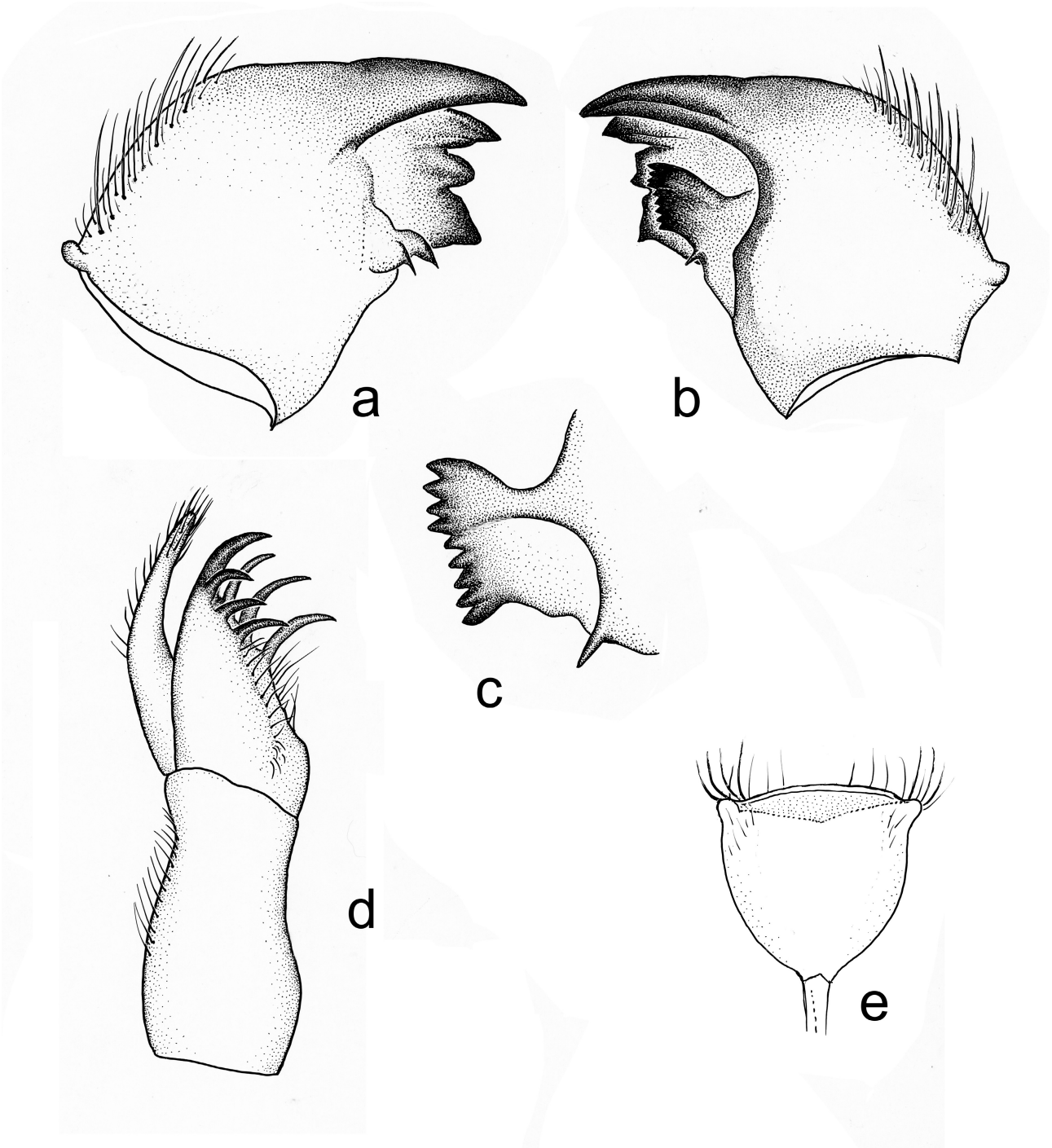

FIGURE 6. Mouth parts of *Platysticta apicalis* larva, a) right mandible in ventral view, b) same, left mandible, c) detail of molar crest of latter from an inner-ventral view, d) ventral view right maxilla, e) hypopharynx ventral view. Illustration by Albert G. Orr.

Discussion

As expected, the larva of *P. apicalis* exhibits several characters unique to the Platystictidae and found in all species so far studied. These are: head in dorsal view broadly cardoid in outline bearing few setae dorsally; ventrally flat prementum with convex lateral margins and bearing two extensive bands of very fine striae on either side of its upper surface; short thick specialised coronate setae on the anterior margin of the ligula. Variation in these characters

occurs within the family at differing taxonomic levels, as is discussed below. This overview comes with the caveat that observations are based on limited species sampling, with larval stages of only 4% of recognised platystictid species presently known.

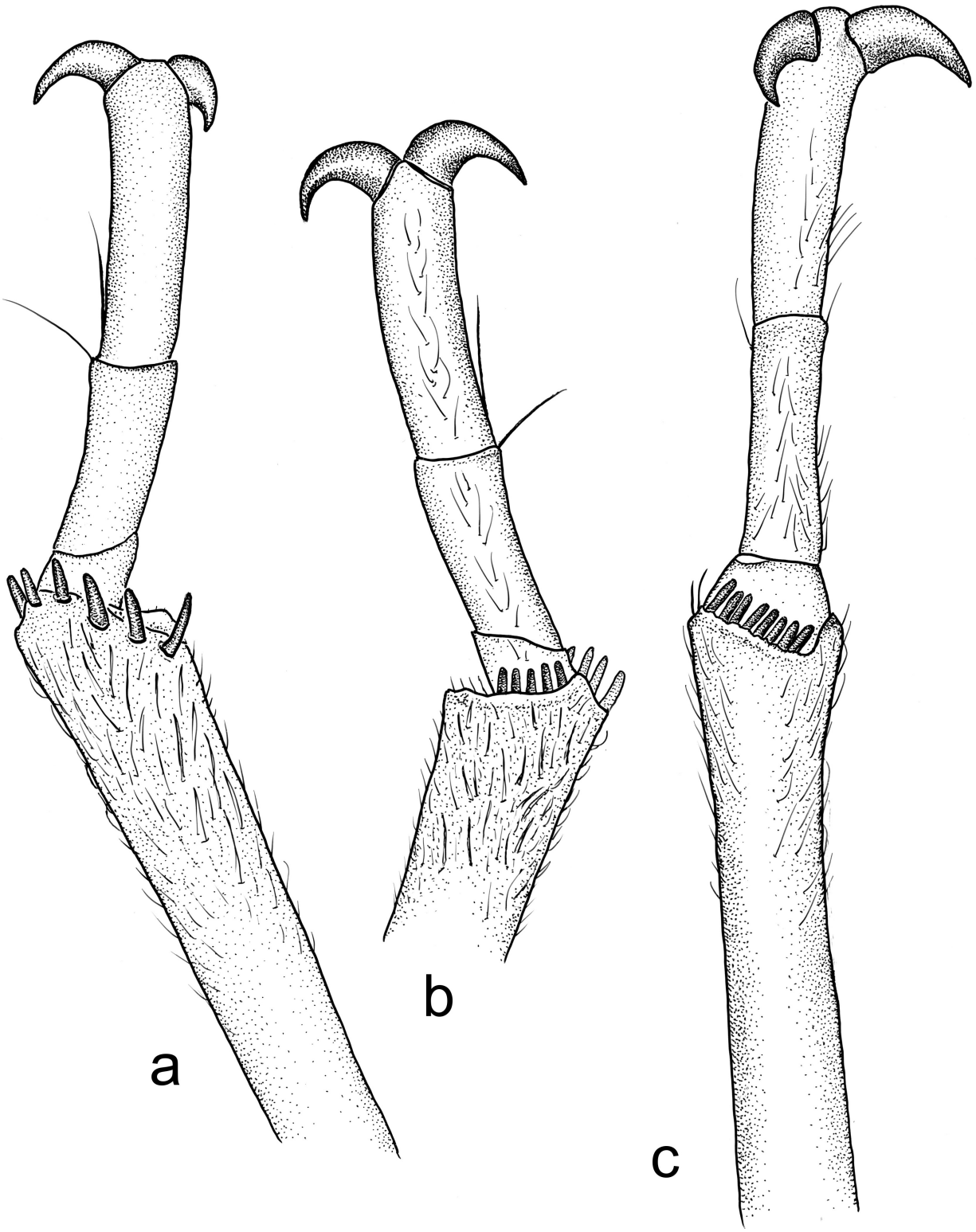

FIGURE 7. Apex of right tibiae and tarsi of *Platysticta apicalis* larva a) protibia dorsal view, b) protibia ventral view, c) metatibia ventral view. Illustrations by Albert G. Orr.

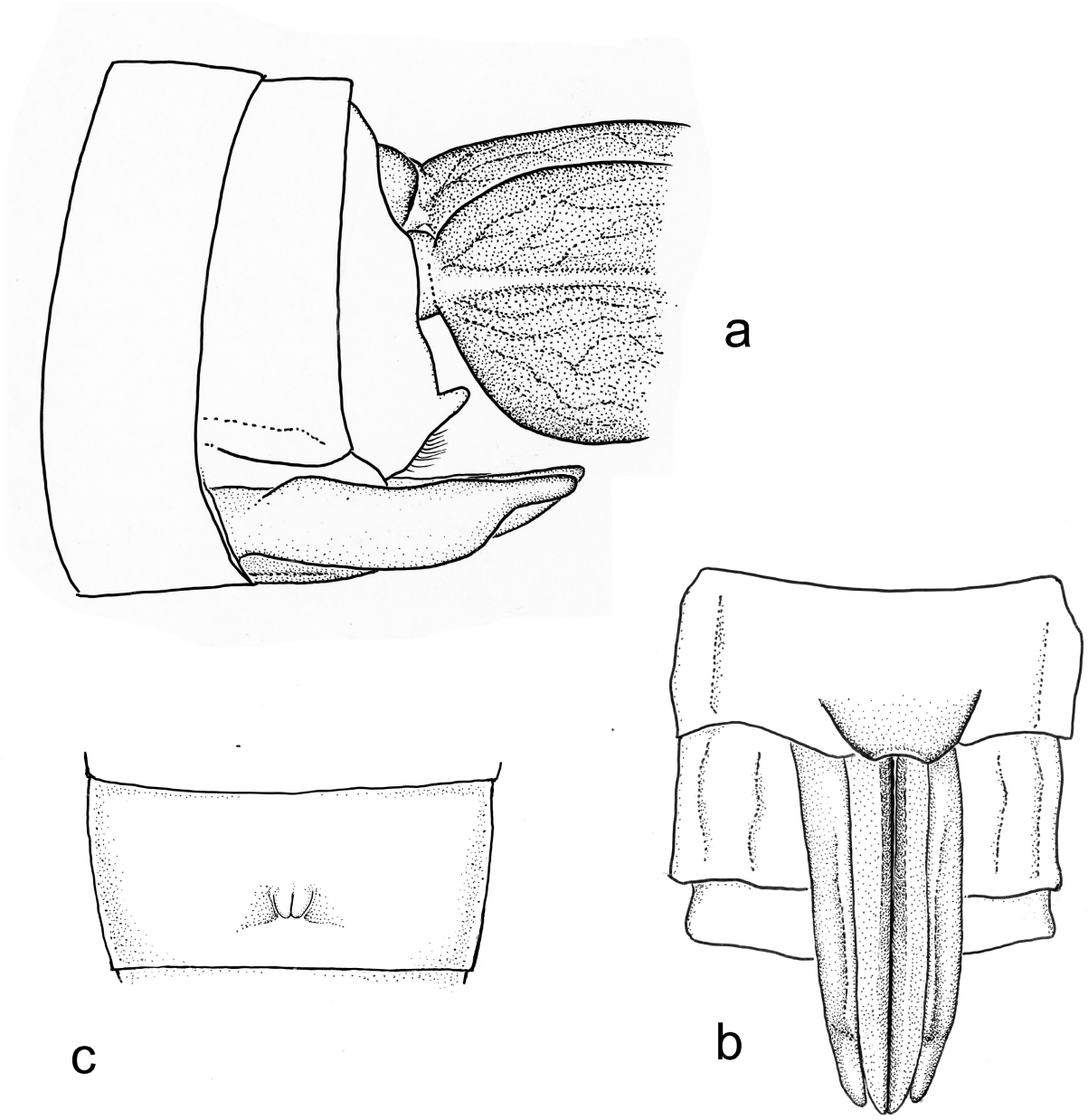

FIGURE 8. Gonapophyses of *Platysticta apicalis* larva, a) female, lateral view, b) ditto, ventral view, c) male, ventral view. Illustrations by Albert G. Orr.

In addition, several characters are probably found in all Platystictidae larvae but also occur in other families. These include: median lobe of prementum (ligula) with well-defined median cleft, varying from open to completely sealed; labial palps relatively small and simple with papal lobe not strongly divided (but apex moderately forked in *Protosticta gravelyi* Laidlaw and some *Palaemnema*); 3–6 longer erect spine-like setae on dorsal and inner apex of fore tibia; closely appressed row of rod-like setae on ventral apex of all tibiae; saccoid well-tracheated gills (with or without long terminal filament, ranging from almost transparent to very dark in colour). So far as is known most of these characters show variation within or between genera, but show no regular variation between subfamilies (Table 1).

TABLE 1. A comparison of selected characters among the known larvae of Platystictidae. Green shaded species = Protostictinae; cream shading = *P. apicalis*; blue shading = Palaemnematinae. Characters considered most important in reflecting inter-subfamilial relationships shaded flesh-coloured in heading.

	Left molar process	Right molar process	Marginal setae of ligula	Protibial dorso-internal spines	Median lobe of prementum (ligula)	Additional notes	Authority
Drepanosticta attala	Single spine with basal shoulder	Two well-spaced low points	Short, flaring coronate, close packed	-	Weakly convex with distinct fenestra at base of central cleft	Protibia ca 1.1 times profemur	Orr & Dow 2015
Drepanosticta sundana	Single main spine with short basal spine	Short and obtuse	Short, flaring coronate, close packed	3	Weakly convex with distinct fenestra at base of central cleft	Protibia ca 1.4 times profemur, only 3 teeth on left incisor	Lieftinck 1934
Protosticta taipokauensis	Single spine with short basal spine (implied)	Two prominent close-set spines, fused to form raised fork	Short, flaring coronate, close packed	4	Weakly convex with sides of central cleft closely appressed	Protibia ca 1.4 times profemur	Asahina & Dudgeon 1987; Ng 2026
Protostica gravelyi	-	-	Short, flaring coronate, close packed	-	Weakly convex with central cleft deep and open	Typical family characters present	Fraser 1919
Platystictidae sp. A (Protostictinae)	Single spine with basal shoulder	Two prominent close-set spines, fused to form raised fork	Short, flaring coronate, close packed	3	Weakly convex with distinct fenestra at base of central cleft	Protibia ca 1.4 times profemur Short setae along lower eye margin Hypopharynx very like *P. brevignoni*	Orr & Dow 2015; Orr 2026
Platysticta apicalis	Vertically palmate process with 9 denticles and long thin basal spur	Two prominent close-set spines, fused to raised fork	Longer, thinner, well-spaced not flared with weakly coronate or stubby crests	5-6	Moderately produced, median cleft long but entirely closed, with only slight dorsal groove, large strong spine on either side	Protibia ca 1.75 times profemur; Line of ca 14 -16 strong setae extending along gena and under eye; Strong straight marginal seta either side of ligula	This paper

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TABLE 1. (Continued)

	Left molar process	Right molar process	Marginal setae of ligula	Protibial dorso-internal spines	Median lobe of prementum (ligula)	Additional notes	Authority
*Palaemnema brevignoni**	Vertically palmate process with 9-10 denticles and short basal angle	Two prominent close-set spines, fused to raised fork	Longer, thinner, well-spaced not flared with weakly coronate or stubby crests	5?	Strongly produced, median cleft long but closed	Protibia ca 1.5 times profemur	Neiss & Hamada 2016 *
Palaemnema clementia	Vertically palmate process with 8 denticles and small basal spur	Two raised spines	Well-spaced, moderate length terminally coronate	4-5	Moderately produced, median cleft deep, ? with fenestra		De Marmels 2007
Palaemnema desiderata	Vertically palmate process with 7-8 teeth, ? basal spur	? not mentioned	Well-spaced, moderate length terminally coronate	Present but not counted	Strongly produced, median cleft tear-drop shaped and open	Row of strong setae below eyes Protibia ca 1.3 times profemur	Novelo-Gutiérrez & González-Soriano 1986
Palaemnema domina	Vertically palmate process with 7-9 teeth, small thorn at base	Two small spines partially fused at base	Widely separated, strongly coronate	4-5	Strongly produced, median cleft closed	Row of stiff setae on ventro-lateral margin of eyes; Some setae on protibiae flattened and serrate	Novelo-Gutiérrez 2003
Palaemnema paulitoyaca	Vertically palmate process with 8-9 teeth, ? basal spur	? not mentioned	Well-spaced, moderate length terminally coronate	Present but not counted	Produced, median cleft open	? Row of strong setae below eyes	Novelo-Gutiérrez & González-Soriano 1986
Palaemnema mutans	Vertically palmate process with 9-12 teeth, large basal spur	Two prominent close-set spines, fused to raised fork	Well-spaced, moderate length ? coronate	3-4	Strongly produced median cleft closed, several short setae either side	Row of setae along ventrolateral margin of eyes Protibia ca 1.2 times profemur	Amaya-Vallejo & Novelo-Gutiérrez 2011

Note *: Neiss & Hamada (2016) described the larva from Amazonas state in Brasil as *Palaemnema brasiliensis* Machado, which was recently synonymized with *P. brevignoni* Machet by Garrison & Ellenrieder (2024).

The larva of *P. apicalis* shares two conspicuous characters with *Palaemnema* (Table 1). The first of these is the characteristic palmate molar crest on the left mandible. It differs slightly from some *Palaemnema* species in the number of denticles and the basal spur is particularly well developed, whereas in *Palaemnema* species this varies from being completely reduced to strongly developed, as in *Palaemnema desiderata* Selys (Novelo-Gutiérrez & González-Soriano 1986), although it appears that in the latter case that it is located more apically and may not be homologous. The form of the main lobe however is very similar in all cases, typically with slightly differentiated upper and lower sections, and if we accept the interrelationships retrieved by Bedjanič *et al*. (2016) it is probably best interpreted as a symplesiomorphy for the family, with the single spine with basal shoulder or spur representing the left molar lobe found in Protostictinae representing a derived condition.

The second shared character is the form of the heavy coronate setae fringing the anterior margin of the median lobe of the prementum (ligula). In both *Palaemnema* species for which this is adequately described and in *P. apicalis* these are relatively long and thin and widely spaced, as illustrated (Figs 5b, c). In known Protostictinae these are always much shorter and close packed. This again could be interpreted as a possible symplesiomorphy for the family, especially as the protostictine condition is a more extreme deviation from more usual hair-like setae.

In all available illustrations of the prementum in *Palamnema* species its broadest point is about one third from the base. This is true also in *P. apicalis*, but the condition in Protostictinae is variable, with a similar shape to the prementum in *Drepanosticta ? attala* Lieftinck (Orr & Dow 2015). On the other hand the anterior margin of median lobe of prementum (ligula) is strongly produced in all known *Palaemnema* larvae, whereas it is weakly convex in all Protostictinae and intermediate in *P. apicalis*. The consistency of these differences between the subfamilies could only be established with the study of many more species. In both *Palaemnema* and Protostictinae the median cleft on ligula varies greatly both in depth and whether open, sides closely appressed, or completely sealed, and marked only by a pigmented groove, as in *P. apicalis*.

The prothorax in *P. apicalis* is short and broad, and this is more consistent with the condition in *Palaemnema* that in Protostictinae where it tends to be longer and shield-like, but the lack of information and extent of variation among species does not permit any definite conclusions to be drawn. The ovipositor in *P. apicalis* is virtually identical in general form to all *Palaemnema* but the ovipositor has not been recorded in Protostictinae, hence we have no way of knowing if this is significant. Another character for which little information is available concerns the hypopharynx. In *P. apicalis* the anterior face forms a shallow triangle and is reflexed upward and posteriorly. In other species for which this has been examined *Palaemnema mutans* Calvert (Amaya-Vallejo & Novelo-Gutiérrez 2011) and *Palaemnema brevignoni* Machet (Neiss & Hamada 2016), and Platystictidae sp. A (from Brunei, sensu Orr & Dow 2015) – (Orr unpublished data), the anterior face is convex and protruding to form a rounded or sub-triangular anterior structure.

Using SEM, Novelo-Gutiérrez (2003) illustrated clearly serrate subapical setae on the tibiae of *Palaemnema domina* Calvert. These have not been studied in other *Palaemnema* species but it was confirmed that they are not present in *P. apicalis*. On the other hand in *P. apicalis* there is one very strong straight seta at each corner of the median lobe of the prementum (ligula), together with a group of short fine setae (Figs 5a, b). The former are known only from *Platysticta* and are the most convincing unique generic character observed. The latter are probably present to a greater or lesser extent in all other species, although not all descriptions record them.

One minor character that seems present in all *Palaemnema* is the presence of an apical/subapical ring of long fine setae on each antennomere A2–6, and often also on A7. The condition in Protostictinae is less clear. Neither Fraser (1919) or Lieftinck (1934) mention antennal setae in *Protosticta gravelyi* and *Drepanosticta sundana* (Krüger), respectively, but they may have been overlooked. Asahina & Dudgeon (1987), do not mention the setae in the text but illustrate sparse setae on A2–3 in *Protosticta taipokauensis* Asahina & Dudgeon, however Ng (2026) illustrates numerous setae present on A2–7 in this species. Orr & Dow (2015) figure the antenna of *D. ?attala* with dense setae on A2–6 with A7 wholly covered with long setae, and state that the condition is the same in Platystictidae sp. A. Bearing in mind that setae may be lost in the exuviae, we are confident that in *P. apicalis* long, sparse setae are present at the apex of A2–3 only of specimens examined. It is not clear if this character is consistent or relevant. In addition, the line of setae fringing the lower margin of the compound eye and continuing to nearly the base of the mandible is particularly well developed in *P. apicalis* but setae fringing the lower margin of the eye are recorded in several other species of both Palaemnematinae and Protostictinae, and the difference, if genuine, is a matter of degree and difficult to quantify with confidence.

While most exuvia studied were judged to be conspecific with *P. apicalis*, 'specimen C' noted above was clearly of a different species. Due to its comparable size it almost certainly represents a closely related *Platysticta* such as

P. serendibica van Tol & Bedjanič which also occurs in the region at nearby localities. The principal difference is the length of the female ovipositor, which does not exceed the posterior margin of S10, but other small differences were noted, such as 7, as opposed to 9 denticles on the molar crest of the left mandible, slight differences in the shape of the teeth of the incisor lobe on both mandibles, the fore tibia being proportionally slightly longer (1.85 times length of femur) and other minor differences. Taken singly these differences might be judged to represent individual variation but in combination, and with the shorter ovipositor, the specific distinctness of this specimen cannot be in doubt, and provides some insight into the degree of interspecific variation among congeners that we may expect to observe in the future.

In summary, several characters of *Platysticta* appear to place it closer to Palaemnematinae than Protostictinae, as suggested by Dijkstra *et al.* (2014), but an equally valid interpretation is that these represent symplesiomorphies for the family, and this view is consistent with the phylogeny presented by Bedjanič *et al*. (2016), which places Platystictinae as the sister group to all Palaemnematinae + Protostictinae, as well as *Indosticta* Bedjanič. This scheme, based on molecular data, recognises Sinostictinae as the basal lineage, sister to all other Platystictidae. Therefore, the larvae of *Sinosticta* and *Yunnanosticta* when discovered, should help us better understand the observed patterns of morphological variation within the family. Indeed, studies of platystictid larval stages would be highly rewarding and deserve special attention, as knowledge in this area remains extremely limited. Apart from the subfamily Sinostictinae mentioned above, the larvae of genera *Ceylonosticta* Fraser, *Telosticta* Dow & Orr and *Sulcosticta* van Tol are also entirely unknown. In recent years, increasingly accessible molecular tools – particularly DNA barcoding, for which reference libraries of locally occurring platystictid taxa should be developed as a basis – would enable reliable larval identification, as demonstrated a decade ago by Orr & Dow (2015). In addition, rearing platystictid larvae under controlled conditions represents another promising approach. Together, these methods provide a systematic way forward for future research on Platystictidae larval biology and taxonomy.

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