

Loamaggalangta pedderensis gen. & sp. nov.: A new mayfly from Tasmania (Ephemeroptera: Leptophlebiidae: Atalophlebiinae)

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Abstract The genus *Loamaggalangta* gen. nov. is established to accommodate a species of leptophlebiid mayfly from Tasmania. Adults and nymphs of *Loamaggalangta pedderensis* sp. nov. are described and figured. Nymphs have only been collected from greater than 5 m below the surface in the impounded Lake Pedder. Nymphs of additional species from mainland south-eastern and south-western Australia probably also belong in the genus, but formal descriptions must await associations with adults.

Key words Australia, Leptophlebiidae, mayflies, taxonomy.

INTRODUCTION

Although the Leptophlebiidae of Australia are in desperate need of taxonomic revision, the short duration of subimago and imago life stages makes the collection of adults difficult. As a consequence, there is a limited amount of material held in museum collections, and past descriptions of new taxa have only appeared as and when material has become available. Dean and Suter (1996) have produced a key to identify nymphs of 14 described and seven undescribed leptophlebiid genera, thus providing a framework for generic revision. While one of these undescribed genera has since been formally named (Dean 1997), subsequent examination of collections of nymphs from northern Australia has led to the recognition of additional undescribed genera.

The present paper erects a new genus to accommodate an undescribed species of Leptophlebiidae from Tasmania. Nymphs of the new species key out with several mainland species as 'Genus K' in Dean and Suter (1996), and it is likely that the taxa are congeneric. However, until nymphs from the mainland can be associated with adults this question must remain unresolved. Examined material has been preserved in alcohol, with parts of some specimens mounted on microscope slides. Type specimens and other material examined are lodged in the Australian National Insect Collection, Canberra (ANIC), the Museum of Victoria, Melbourne (MV) and the Queen Victoria Museum and Art Gallery, Launceston (QVM).

TAXONOMY

Order Ephemeroptera, Family Leptophlebiidae, Subfamily Atalophlebiinae

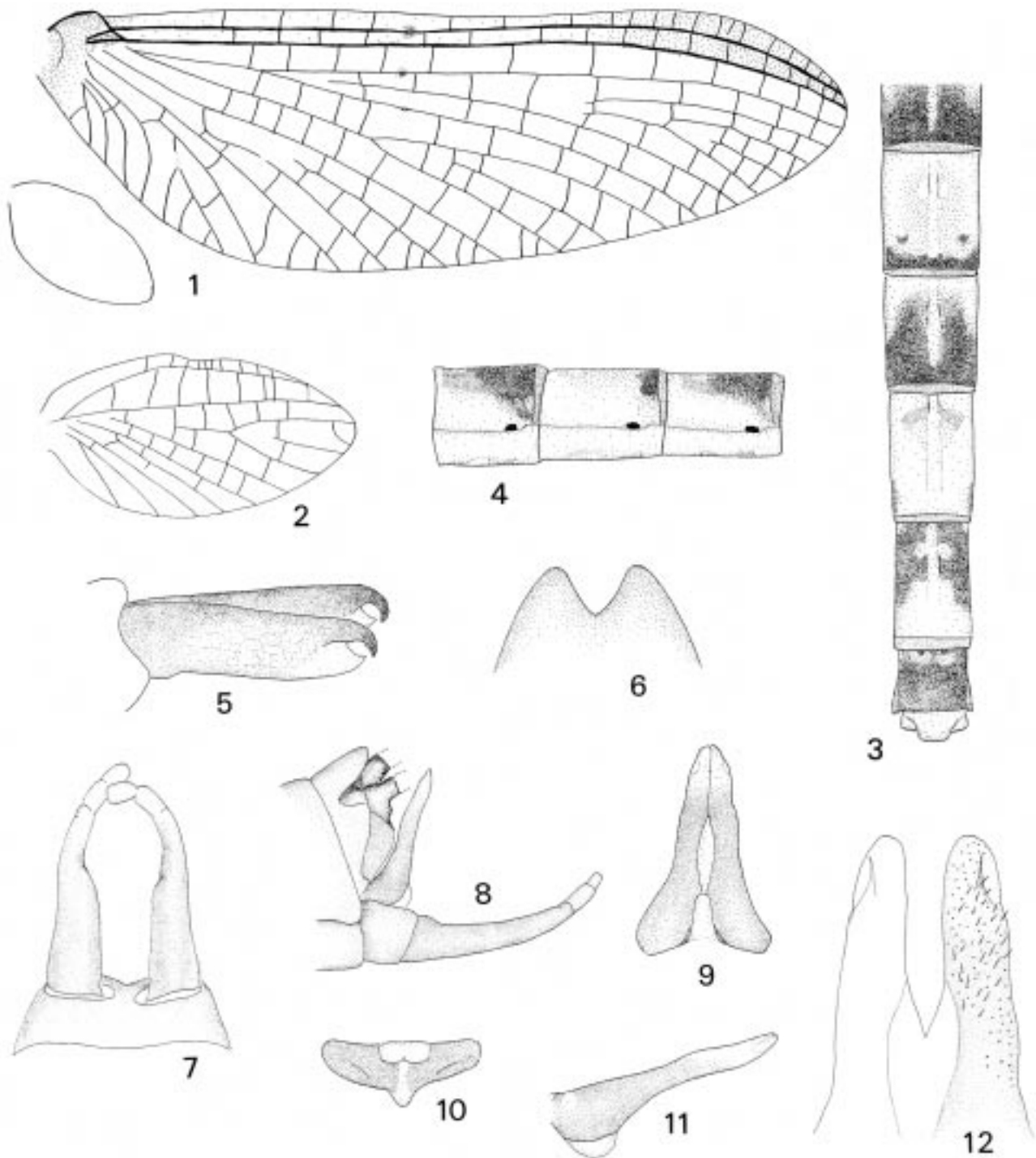
***Loamaggalangta* gen. n.**

Type species. *Loamaggalangta pedderensis* sp. n., here designated.

Diagnostic features. Imago: Forewing with membrane hyaline (Fig. 1); cells in apical third of wing translucent, whitish. Length/width ratio a little less than 3.0. Four or five costal crossveins basal to the bulla, 13–16 distal to the bulla. MA forked at about 0.4 wing length. MP₂ attached by crossvein to MP₁ at about 0.2 wing length. ICu₁ linked to CuA-CuP crossvein; ICu₁ and ICu₂ subparallel as wing margin approached. Hindwing about 0.2 length of forewing; length/width ratio about 1.9. Costal margin with shallow concavity at about midlength, costal space relatively broad both basal and distal to the concavity (Fig. 2). Vein Sc joining costal margin at about 0.8 wing length. Hindwing with about 10 costal crossveins and seven to eight subcostal crossveins. All legs with tarsal claws similar, each claw with an apical hook and opposing ventral flange (Fig. 5). Forelegs of male with ratios of segment lengths 0.78; 1.00 (3.9 mm); 0.04; 0.34; 0.38; 0.27; 0.11. Male genitalia with claspers three-segmented, narrowing abruptly at about midlength (Fig. 7). Penes relatively slender, narrowing to apex, fused along whole length; without conspicuous spines or projections, but with a moderately dense covering of minute spines over surface of apical half (Fig. 12). Ninth sternum of female with apical margin deeply excised (Fig. 6).

Subimago: Wings uniformly pale, membrane off-white to pale brown/golden.

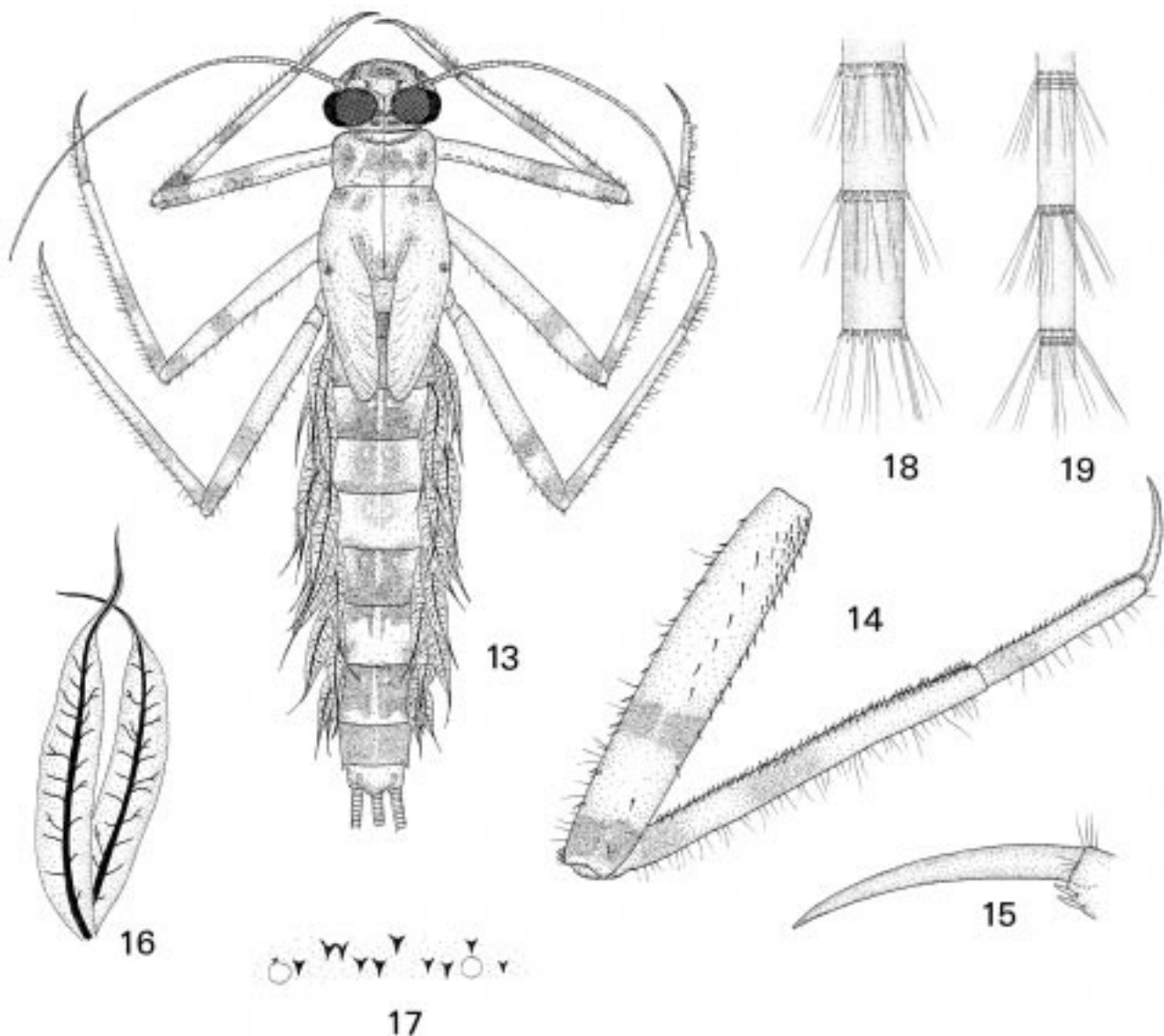
Mature nymph: Head prognathous, antennae long, at least half total body length. Mouthparts as in Figs 20–26. Clypeus with lateral margins subparallel. Labrum from a little narrower to a little broader than clypeus; width about 1.7 times maximum length; narrow band of setae close to frontal edge of labrum, width of band equivalent to about three rows of setae; subapical setal fringe consisting of a single row set back from anterior margin at about 0.75 labrum length. Mandibles with outer margin rounded, tuft of setae at mid-length, and series of finer setae basally; incisors slender, protheca strongly developed. Lingua of hypopharynx with



Figs 1–12. *Loamaggalangta pedderensis*. Male imago: (1) wings; (2) hindwing, enlarged; (3) abdominal segments 4–10, dorsal; (4) abdominal segments 4–6, lateral; (5) tarsal claws; (7) claspers and styliger plate, ventral; (8) genitalia, lateral; (9) penes, ventral; (10) penes, apical; (11) penes, lateral; (12) penes, ventral (drawn from mounted specimen, hence apical separation of penes lobes). Female imago: (6) ninth sternum, ventral.

well-developed lateral processes, anterior margin with shallow incision; superlingua with dense setal fringe along anterior margin. Maxilla quadrate, subapical row of about 25 pectinate setae; palp moderately short, terminal segment about same length as middle segment, middle segment bearing simple setae only. Labium with glossae large, turned

under ventrally, bearing prominent pegs; palp three-segmented, terminal segment almost as long as middle segment and bearing a series of short stout spines along inner margin. Legs relatively long (Figs 13,14); all segments long and slender, tarsal claws smooth, without ventral teeth (Fig. 15). Abdominal segments without setae on lateral



Figs 13–19. *Loamaggalangta pedderensis* nymph: (13) whole nymph; (14) foreleg; (15) fore tarsal claw; (16) gill from abdominal segment four; (17) posterior spines, abdominal tergum 6; (18) cercus, 1/4 length; (19) cercus, half length.

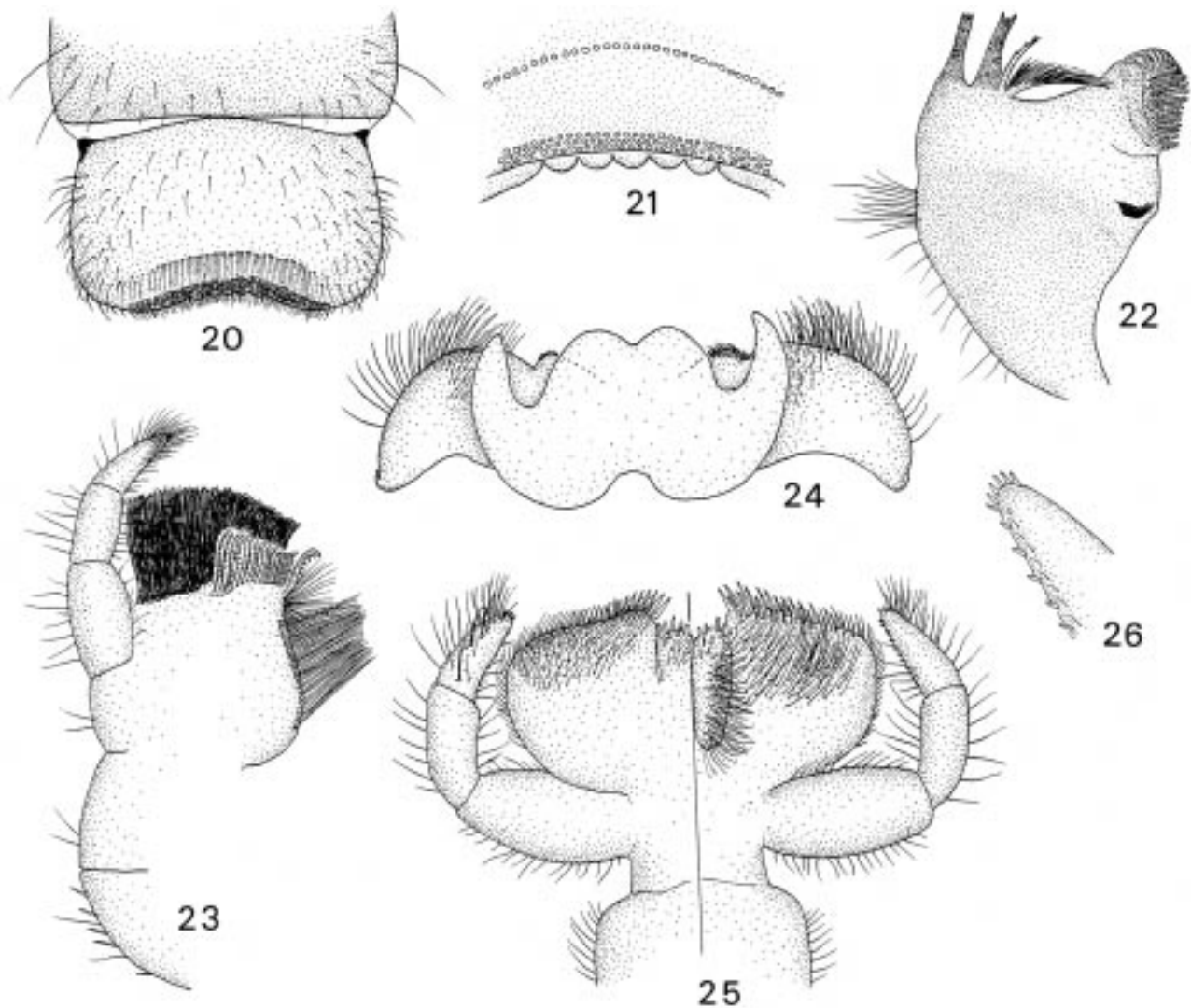
margins, postero-lateral spines on segments 8–9; posterior margins of abdominal terga with series of sparse, minute spines, usually single but occasionally in pairs (Fig. 17). Gills present on abdominal segments 1–7; each gill lanceolate and narrowing at about two-thirds length, upper and lower lamellae approximately equal, with moderately developed lateral tracheae (Fig. 16). Caudal filaments about twice body length; basal segments of each filament with apical whorls of both stout spines and fine setae, whorls of fine setae only at about midlength of each filament (Figs 18,19).

Etymology. The name of the genus is derived from the language of the Tasmanian Oyster Bay Tribe, and means ‘still’ or ‘deep water’. This refers to the restriction of species of the genus to lakes and probably also backwaters or pool areas of rivers.

Remarks. The genus *Loamaggalangta* can be distinguished from all other leptophlebiid genera by the following com-

bination of characters. Imago: (1) forewing with ICu_1 attached to $CuA-CuP$ crossvein; (2) ICu_1 and ICu_2 parallel as wing margin approached; (3) hindwing with costal margin smooth, with shallow concavity at about midlength, and Sc joining wing margin at about 0.8 wing length; (4) tarsal claws similar; (5) male genitalia with penes fused along whole length, steadily narrowing to apex, without large external spines or processes; nymph: (1) labrum about same width as clypeus, with band of setae near frontal margin; (2) width of labrum about $1.8 \times$ maximum length; (3) tarsal claws smooth; (4) gills lanceolate, relatively narrow; (5) posterior margins of abdominal terga with sparse, minute spines, usually single or occasionally in pairs.

The relationship of *Loamaggalangta* to other genera of Leptophlebiidae is uncertain. It does not fit readily into any of the lineages defined by Pescador and Peters (1980) or Towns and Peters (1980), and its closest relatives are probably here



Figs 20–26. *Loamaggalangta pedderensis* nymph: (20) labrum; (21) labrum, anterior margin enlarged and showing arrangement of setal bases; (22) left mandible, dorsal; (23) right maxilla, ventral; (24) hypopharynx; (25) labium, dorsal (left of midline) and ventral (right of midline); (26) terminal segment of labial palp, ventral.

in Australia. There are about 20 species of Australian leptophlebiids in which the nymphs have smooth tarsal claws and appear to be adapted to still waters. Almost half of these are undescribed, and generic placements have yet to be investigated. The described species have been placed in the genera *Atalomicria* Harker, *Neboissophlebia* Dean, *Loamaggalangta* Dean and *Bibulmena* Dean. Phylogenetic relationships of *Atalomicria* and *Neboissophlebia* have been briefly considered by Campbell and Peters (1993) and Dean (1988), respectively, and these two genera clearly belong in a different lineage to both *Loamaggalangta* and *Bibulmena*. However, the latter genera appear to be closely related. *Bibulmena* is distinguished from *Loamaggalangta* by the following features: (1) ICu_1 and ICu_2 strongly diverge as the forewing margin is approached; (2) each penes lobe with an acute ventro-lateral projection near the apex, and without minute spines on the surface of the lobe; (3) nymphal gills broad, inner margin of each lamella with small recess near

base of terminal filament; (4) nymph with posterior margins of abdominal terga bearing almost continuous row of moderate-size spines.

***Loamaggalangta pedderensis* sp. n. (Figs 1–26)**

Types. **Tasmania:** holotype, male imago, Lake Pedder, Trappes Bay, ii.1997, N. Forteath, (ANIC); paratypes: same location and collection data, two male imagos, two male subimagos, two female subimagos (ANIC), two male imagos (MV), one male imago (QVM).

Other material examined. **Tasmania:** two male imagos, two male subimagos, Lake Pedder, Trappes Bay, i.1997, N. Forteath; 13 nymphs, same location, ii.1997, N. Forteath; one male imago, Wedge River, 17.ii.1971, A. Neboiss; one male imago, Hogarth Falls, Strahan, 10.xii.1974, A. Neboiss.

Description. Imago: Length of male: body 10.0–10.5 mm, forewing 10.2–11.0 mm; length of female (subimago): body

11.5 mm, forewing 11.8 mm. Upper lobes of male eyes pale brown, in contact dorsally. Thorax medium brown, laterally with areas of black and white pigmentation. Legs with all segments yellow/pale brown, all femora with dark brown bands at apex and at two-thirds length. Forewings hyaline, veins medium brown, costal and subcostal cells in apical third of wing translucent, off-white (Fig. 1). Male abdomen with variable pattern; most segments with extensive dark brown pigmentation, segments 5, 7 and 10 strikingly paler yellow (Figs 3,4). Penes lobes narrowing steadily towards apex, fused along whole length; without large spines or processes in distal half; ventrally with a rounded medial lobe at base (Figs 9–11); microscopically each lobe with a thin sclerotised support near the opening of the gonopore, and with a moderately dense covering of minute spines over the surface of the apical half (Fig. 12).

Subimago: Wings uniformly pale, off-white in males and with pale brown tinge in females.

Mature nymph: Body length to about 10 mm. General colour yellow, with conspicuous pattern of dark brown pigmentation (Fig. 13); abdominal segments 5, 7 and 10 paler than remaining segments (as in imago); all legs with dark banding, especially conspicuous on femora. Antennae long, at least half total body length. Labrum (Figs 20,21) a little narrower than width of the clypeus; width about 1.7 times maximum length; narrow band of densely packed setae close to frontal edge of labrum; subapical setal fringe consisting of a single row set back from anterior margin at about 0.75 labrum length. Mandibles (Fig. 22) with outer margin rounded, tuft of setae at midlength, and series of finer setae basally; incisors slender, prostheca strongly developed. All legs long and slender (Figs 13,14); forelegs with length of femur five to six times width, outer margin of femur bearing short, inconspicuous spines; fore-tarsus with 40–45 ventral spines; tarsal claws smooth, without ventral teeth (Fig. 15). Posterolateral spines on abdominal segments 8–9 only; posterior margins of abdominal terga with series of sparse, minute spines, usually single but sometimes in pairs (Fig. 17). Gills lanceolate, narrowing at about 2/3 length, with moderately developed lateral tracheae (Fig. 16). Caudal filaments about twice body length; each segment with apical whorls of both stout spines and fine setae in basal half, but whorls of fine setae only at about midlength and beyond (Figs 18,19).

Habitat. Nymphs have only been recorded from Trappes Inlet in the impounded Lake Pedder, where they cling to submerged trees and other solid objects at a water depth greater than about 5 m. Subimagos have been collected in Trappes

Inlet between November and April, and upon emergence rapidly take flight and seek refuge among plants along the lake shore. It is not known whether *L. pedderensis* is restricted to Trappes Inlet; nymphs have not been collected elsewhere in the lake, and the few subimagos and imagos which have been captured elsewhere may have dispersed from the Trappes population. Records of adults from Wedge River and Hogarth Falls suggest that the species probably also occurs in deep, still pools of some rivers, and further work is being undertaken to elucidate the distribution and biology of the species.

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