

**NEW SPECIES AND NEW RECORDS OF ECTOPSOCIDAE (INSECTA:
PSOCOPTERA) FROM THE MOUNT ROYAL AREA, HUNTER VALLEY,
NEW SOUTH WALES.**

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Summary

Two new species, *Ectopsocus hartleyi* sp. n. and *E. aldretei* sp. n., and ten described species of *Ectopsocus* McLachlan are recorded from the Mount Royal area in the Hunter Valley, New South Wales.

Introduction

This paper is based on study of more than 700 specimens of the Ectopsocidae (Psocoptera) collected during a faunal survey of Tuglo Wildlife Refuge (34°14'N, 151°16'E) near Mount Royal, Hunter Valley, New South Wales. The survey is intended to provide an inventory of species in the area as a precursor to more detailed biological and ecological studies. Twelve species of *Ectopsocus* McLachlan are present of which two are new (*Ectopsocus hartleyi* sp.n. and *E. aldretei* sp.n.). Ectopsocids are mainly inhabitants of dried leaves and leaf litter, where they may be found in large numbers. *E. briggsi* McLachlan, *E. californicus* (Banks) and *E. australis* Schmidt and Thornton sometimes occur together. Some species are found in dead flower heads such as those of the Asteraceae. *E. pteridii* Smithers is associated mainly with ferns but is not restricted to them and *E. albiceps* Smithers is usually found in rain forest and wet sclerophyll forests. Material of other families of Psocoptera collected during the survey have been dealt with elsewhere (Smithers 1989, 1993b, 1994a, 1994b). Survey locality and collecting methods have been briefly described by Smithers (1993a).

Species of *Ectopsocus* known from Tuglo Wildlife Refuge

(Months of capture in brackets after species name)

Ectopsocus albiceps Smithers (January, July, October, December)

Ectopsocus australis Schmidt and Thornton (Every month of year)

Ectopsocus briggsi McLachlan (January, April, May, June, August, October, December)

Ectopsocus brunneus (Edwards) (July)

Ectopsocus californicus (Banks) (June, October, December)

Ectopsocus edwardsi New (April)

Ectopsocus perplexus Smithers (January)

Ectopsocus pilosoides Smithers (January, April, May, October)

Ectopsocus pteridii Smithers (February, May to December)

Ectopsocus punctatus Thornton and Wong (May, August, November)

Ectopsocus hartleyi sp. n.

FEMALE

Coloration (in alcohol). Head pale brown with brown marks. A double row of irregular spots on either side of epicranial suture and adjacent to compound eyes. Irregular mark between anterior ocellus and epistomial suture. Rest of frons pale. Postclypeus with

four or five striae almost meeting in midline, the angle between those of each side greater than usual so that the striae are almost transverse. Anterior border of postclypeus with narrow brown band. Base of antennae circled narrowly with brown. A spot between eye and antenna base. Anteclypeus pale. Labrum dark brown. Gena pale with two small brown spots below eye and a larger, elongate spot nearer base of mandible. Antennae pale. Antedorsum of mesothorax brown, sutures very dark brown, narrowly bordered with pale brown. Pale median stripe runs from anterior part of antedorsum back through scutellum. Pleura brown with interrupted darker, longitudinal stripe. Femora dark brown except for short, pale, distal band. Tibiae and tarsi pale brown. Fore wings (fig. 1) hyaline with finely reticulate pattern in dark brown. Hind wing hyaline, tinged with pale grey-brown which is a little darker adjacent to anterior margin, behind M+Cu1 and behind Cu2. Abdomen pale. Sclerotised parts of terminal structures brown.

Morphology. Length of body: 1.6 mm. Median epicranial suture distinct, ending between lateral ocelli. Anterior arms absent. Head, even on genae, strongly setose, setae mostly symmetrically arranged. A row of long, fine setae along anterior margin of postclypeus. Length of flagellar segments: f1: 0.16 mm.; f2: 0.1 mm. Antennae about as long as fore wing. Eyes fairly small, not reaching level of vertex when viewed from side. IO/D: 2.8; PO: 0.6.

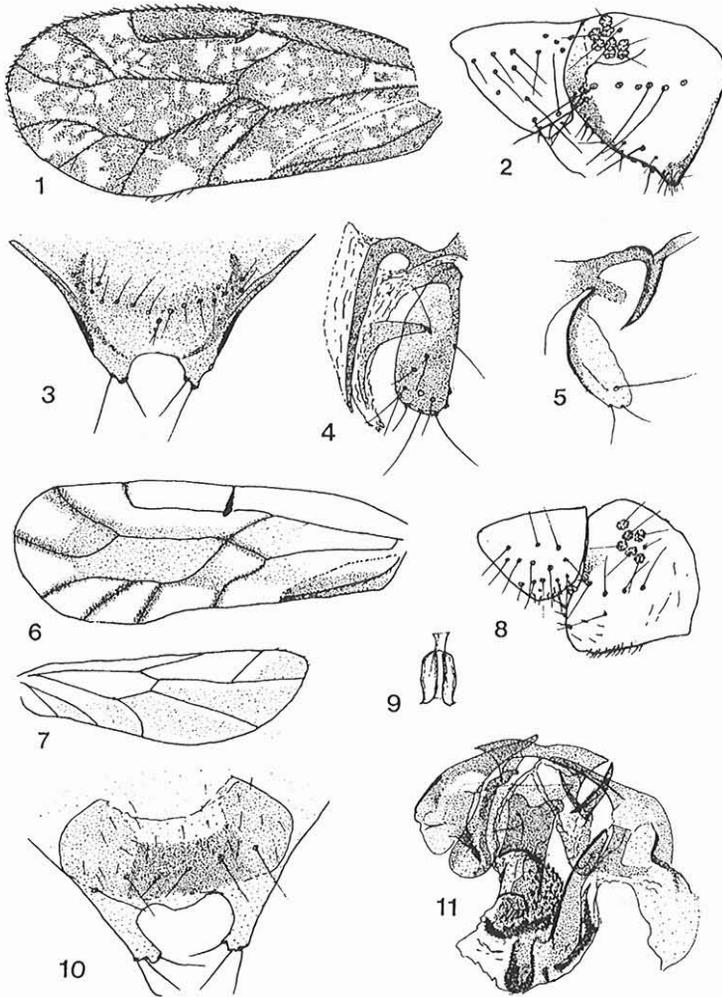
Ocelli fairly large. Lacinia narrow, divided at the apex, the outer apical tooth a little wider than the inner. Measurement of hind leg: F: 0.3 mm.; T: 0.5 mm.; t1: 0.2 mm.; t2: 0.09 mm.; rt: 2.2:1; ct: 11,0. Fore wing length: 1.2 mm.; width: 0.5 mm. Fore wing (fig. 1) with Rs and M joined by crossvein. Pterostigma very slightly widened distally, glabrous. Wing margin with extra row of setae from base of pterostigma to R4+5. Veins, except Cu2, setose, the setae short, stout and dark. Hind wing glabrous. R2+3 slightly recurved. R1 ends in membrane just basad of junction of R2+3 with wing margin. Epiproct (fig. 2) with scattered, well developed setae, a row of short fine setae near posterior margin and one small median marginal seta. Paraproct (fig. 2) with sclerotised dorsal and ventral margins, latter ending in a posteroventral, setose lobe bearing a small spur. Median transverse row of six strong setae and two finer setae at dorsal end of row, smaller setae near posterior margin. Field of eight trichobothria and one seta without basal "rosette". Subgenital plate (fig. 3) bilobed, with three strong setae at end of each lobe and one preapical seta on outer side of lobe (some lost and represented by alveoli in holotype). Plate with sclerotised lateral margin basad of lobes and with sclerotised curved band just mesad of margin on each side. Gonapophyses (fig. 4). Ventral valve long and finely pointed with ventral, membranous flange which is basally broad, tapered distally. Dorsal valve membranous, broad-based, tapered distally, with spicules at distal end. External valve well sclerotised, with thirteen well developed setae.

MALE

Unknown.

Material examined

1 female (holotype), in Malaise trap, Tuglo Wildlife Refuge, 49 km North of Singleton, New South Wales, 11.iii.1989. Holotype in Australian Museum. This species is named for Hartley Smithers, in appreciation of his always willing assistance in my entomological work.



Figs. 1-4. *Ectopsocus hartleyi* sp.n. Female. 1. Fore wing. 2. Epiproct and paraproct. 3. Subgenital plate. 4. Gonapophyses. Figs. 5-11. *Ectopsocus aldretei* sp.n. 5. Gonapophyses. 6. Female fore wing. 7. Female hind wing. 8. Female epiproct and paraproct. 9. Sclerite on female ninth sternite. 10. Subgenital plate. 11. Phallosome.

Discussion

There are many species of *Ectopsocus* McLachlan in which the wings are hyaline with a strongly developed pattern of brown spots. Only in *E. stictus* Thornton and Wong (Philippines and West Malaysia) and *E. erosus* (Enderlein) (New Guinea) does it resemble that of the finely reticulate pattern of *E. hartleyi*. *E. stictus* differs in having two well defined hyaline spots on the pterostigma, neither of which is adjacent to the distal section of Sc, more extensive hyaline areas in cell 1A and distinct differences in detail of pigment pattern in most cells. In *E. erosus* there are distinct, round, hyaline spots which do not reach the margin in the distal part of cells R3, R5 and M1, there being a narrow brown

band between spot and margin. It also lacks the hyaline spot in the basal part of the pterostigma.

Ectopsocus aldretei sp. n.

FEMALE

Coloration (in alcohol). Head pale creamy yellow with pale brown marks. A patch across vertex extending forwards along each side of median epicranial suture and on either side adjacent to inner margins of compound eyes, a patch between eye and antennal base and a band across front of head at level of bottom of eyes. Postclypeus with a diffuse brownish area in basal half. Genae and labrum pale. Scape and pedicel dark brown, flagellum of antenna pale. Eyes black. Maxillary palps pale. Dorsum of thorax brown, parapsidal sutures very dark, fine. Scutellum a little darker. Irregular, interrupted lateral brown stripe from back of head to hind end of thorax. Fore wings (fig. 6) hyaline with pattern in various shades of brown. Junction of Rs and M and colour adjacent to R2+3, R4+5, M1, M2 and M3 and nodulus darker than elsewhere. Distal section of Sc (basal margin of pterostigma) exceptionally dark, almost black so that it stands out as a conspicuous, elongated spot about half way along wing. Veins pale brown. Hind wings (fig. 7) with some very faint, brownish areas. Legs pale. Abdomen pale.

Morphology. Length of body: 2.2 mm. Median epicranial suture distinct on vertex, becoming less so anteriorly. Vertex somewhat sharper than usual in the genus, front of head flattened so that epicranium, frons and basal part of postclypeus are all in same plane. Scale and pedicel broad, flagellar segments much narrower. Length of flagellar segments: f1: 0.43 mm.; f2: 0.25 mm. Eyes moderately small, not reaching level of vertex when viewed from side. IO/D: 2.3; PO: 0.71. Ocelli large, distance between lateral ocelli less than half their diameter. Measurements of hind leg: F: 0.44 mm.; T: 0.68 mm.; t1: 0.2 mm.; t2: 0.07 mm.; rt: 2.8:1; ct: 14, 0. Fore wing (fig. 6) somewhat elongate. Fore wing length: 2.3 mm; width: 0.8 mm. Pterostigma broad, glabrous, with R1 meeting wing margin at an acute angle. R2+3 somewhat sinuous. R4+5 curved. Rs and M meet in a point. Costal cell broad. Veins sparsely setose, about 20 setae on 1A. Hind wing (fig. 7) somewhat elongate, with Rs and M joined by a long crossvein. A few very short, fine marginal setae between R2+3 and R4+5. Epiproct (fig. 8) lightly sclerotised. Paraproct (fig. 8) lightly sclerotised except for a small area between trichobothrial field and middle of hind margin. Hind margin with small double cone. Subgenital plate (fig. 10) with two, slightly inwardly curving, elongate posterior lobes between the bases of which the margin of the plate is sinuous. Apex of lobes with three very well developed setae, the longest almost equal in length to lobe. Row of seven strong setae across plate near hind margin. A small rugose area medially on plate. Internal face of subgenital plate sclerotised with irregular U-shaped area, the arms of the U facing forwards. Gonapophyses (fig. 5) with strongly sclerotised, rod-like, slightly curved, tapering ventral valve. External valve lightly sclerotised except for a strongly sclerotised bar along one side. Apex of external valve with two setae near rounded apex and one much larger preapical seta. Dorsal valve absent, possibly represented by a small sclerotised area at base of external valve. Sclerification of spermathecal entrance well developed (fig. 9).

MALE

Coloration (in alcohol). As female.

Morphology. Length of body: 2.3 mm. Median epicranial suture distinct, anterior arms evanescent. Head profile similar to that of female. Length of flagellar segments: f1: 0.46 mm.; f2: 0.3 mm. Antennae with scape and pedicel much wider than basal flagellar segment as in female. Eyes large, reaching level of vertex when viewed from side. IO/D (Pearman's method): 1.6. Lateral ocelli very large, close to epicranial suture; anterior ocellus smaller. Measurements of hind leg: F: 0.48 mm.; T: 0.73 mm.; t1: 0.19 mm.; t2: 0.19 mm.; rt: 1.9:1; ct: 15,0. Fore wing venation and setae as in female. Fore wing length: 2.3 mm.; width: 0.84 mm. Posterior abdominal tergite with an anterior field of densely arranged, rounded papillae, similar to that of *E. australis* (Schmidt and Thornton 1992, fig. 77) but papillae not as pointed, being more in the shape of small domes. Hind margin of tergite with comb of about 27 teeth. Hypandrium simple. Phallosome (fig. 11). External paramere of one side slightly different from that of other side. Sclerification of penial bulb complex.

Material examined

1 female (holotype), Tuglo Wildlife Refuge, 49 km N. Singleton, New South Wales, 1.x.1977, A.S. Smithers. 1 male (allotype), same locality, 4.11.1990, A.N. Garcia Aldrete. 2 females, same locality, 13-14.vi.1976, M.S. Moulds. 1 female, same locality, 17.xii.1978, A.S. Smithers. 6 females, 7-13.v.1974, A.S. Smithers. Holotype and paratypes in Australian Museum. This species is named for Dr. A.N. Garcia Aldrete who collected the allotype specimen.

Discussion

The head pattern of this species is unusually striking and distinctive for a species of *Ectopsocus*. There are several species of *Ectopsocus* with wing pattern similar to that of *E. aldretei*, namely *E. nidicolus* Thornton and Wong, *E. fenestratus* Thornton and Wong, *E. spilotus* Thornton and Wong, *E. dialeptus* Thornton and Wong, *E. mexicanus* Garcia Aldrete, *E. thornstoni* Garcia Aldrete, *E. gracilis* Thornton and Wong and *E. strauchi* Enderlein. Except for *E. gracilis* all species of the genus with this type of wing pattern, of which the female is known, have a full set of gonapophyses, that is, the dorsal valve is present. They also have the posterior lobes of the subgenital plate short and triangular, except for those of *E. strauchi*. *E. gracilis* and *E. aldretei* are exceptional in the genus in lacking a dorsal valve. In most species listed above there is at least some obvious colour in the costal cell and in cell M as well as varying amounts of colour in other parts of the basal half of the wing. The pigment is lacking in the costal cell and in cell R in *E. strauchi*. The only species closely resembling *E. aldretei* is *E. gracilis* which also lacks the dorsal valve of the gonapophyses and shares with *E. aldretei* the well sclerotised, tapering ventral valve. The other species have a ventral valve consisting of a narrow, sclerotised bar with a membranous flange, as usual in the genus. *E. gracilis* differs from *E. aldretei*, in having more setae on the external valve and on the lobes of the subgenital plate. The wing pattern of *E. gracilis* is similar to that of *E. aldretei* but there is no hyaline area at all in cell R3, but there is some pigment in cell R. In the male the wing pattern differences between species (where males are known) are the same as for the females. The penial complex is distinctly different in details of sclerification.

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