A NEW SPECIES OF *FOERSTERELLA* DALLA TORRE (HYMENOPTERA: TETRACAMPIDAE) FROM AUSTRALIA

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The first Australian representative of *Foersterella* Dalla Torre, *F. australis* sp. nov. (Tetracampidae) is described and distinguished from the similar *F. scaposa* Bouček from Papua New Guinea. The males of both species are the only known tetracampids with a five-segmented antennal funicle. Like other species of *Foersterella*, *F. australis* is a solitary egg-parasitoid of a tortoise beetle (Chrysomelidae: Hispinae), parasitising *Cassida compuncta* (Boheman). □ *Hymenoptera, Tetracampidae, Foersterella, Cassida, Australia.*

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During the course of a study on the parasitoids of some tortoise beetles, Chrysomelidae: Hispinae (Cassidinae of some authors), from south-east Queensland (SEQ), an undescribed species of *Foersterella* Dalla Torre (Chalcidoidea: Tetracampidae) was reared from the eggs of *Cassida compuncta* (Boheman). *Cassida compuncta* lays its eggs singly on the underside of leaves of *Ipomoea cairica* (L.) (Convolvulaceae) and a large series of the *Foersterella* sp. was obtained by sweeping the foliage of *I. cairica* at Long Pocket, Brisbane.

Species of *Foersterella* are known from Europe, Africa, India, Papua New Guinea (PNG) and Australia and as far as known are all endoparasitoids of the eggs of tortoise beetles (Bouček, 1988). There are no described species of *Foersterella* known from Australia although Bouček (1988) recorded one female specimen of an undescribed species from Western Australia (WA) in ANIC. This paper gives the first description of an Australian species of *Foersterella*.

Morphological terminology follows Bouček (1988). Acronyms for collections are as follows: ANIC, Australian National Insect Collection, Canberra; BMNH, Natural History Museum, London; QM, Queensland Museum, Brisbane; UQIC, University of Queensland Insect Collection, Brisbane; USNM, United States National Museum, Washington.

Order Hymenoptera
Family Tetracampidae
Foersterella Dalla Torre

Foersterella contains *F. reptans* (Nees) and *F. erdoesi* Bouček from Europe and *F. scaposa* Bouček from PNG. Bouček (1988) noted undescribed species in Africa, India and Australia. *Foersterella flavipes* Förster (listed as the type species by most authors) is a junior synonym of *F. reptans* (Bouček, 1992).

In Australia, *Foersterella* can be recognised using Bouček's (1988) key to the genera of Australasian Tetracampidae. *Foersterella* closely resembles *Tetracampe* Förster but can easily be separated by the greatly widened scapes of the males. In addition, the pilosity on the pronotum and mesonotum in *Foersterella* is sparse and includes pairs of outstanding setae on the pronotum, median lobe of the mesoscutum and axillae (Bouček, 1988). In contrast, the pronotum and mesonotum in *Tetracampe* are regularly and rather densely pilose, without outstanding pairs of setae (Bouček, 1988).

Both *F. reptans* and *F. erdoesi* are endoparasitoids of the eggs in *Cassida* Linnaeus (Bouček & Askew, 1968). The biology of *F. scaposa* is unknown (Bouček, 1988).

Further information on *Foersterella*, including a redescription, synonymies and biological and distributional information, is given by Bouček (1958), Bouček & Askew (1968) and Bouček (1988).

Foersterella australis sp. nov.
(Figs 1, 2)

MATERIAL. Holotype ♀ (QMT41404), Long Pocket, Brisbane, 27°31'S 153°00'E, 12.xi.1994, C.J. Burwell. PARATYPES: (175) Queensland: St Lucia, Brisbane, 27°30'S 153°01'E, 1♀, 13.ii.1993, C.J. Burwell, ex egg *Cassida compuncta* (Boheman) (Hispinae) on *Ipomoea cairica*; same data as holotype except 1♀ (9.vi.1991), 2♂ (29.x.1994), 21♂, 14♀ (30.x.1994), 17♂, 6♀ (12.xi.1994) (all UQIC); same data as holo-

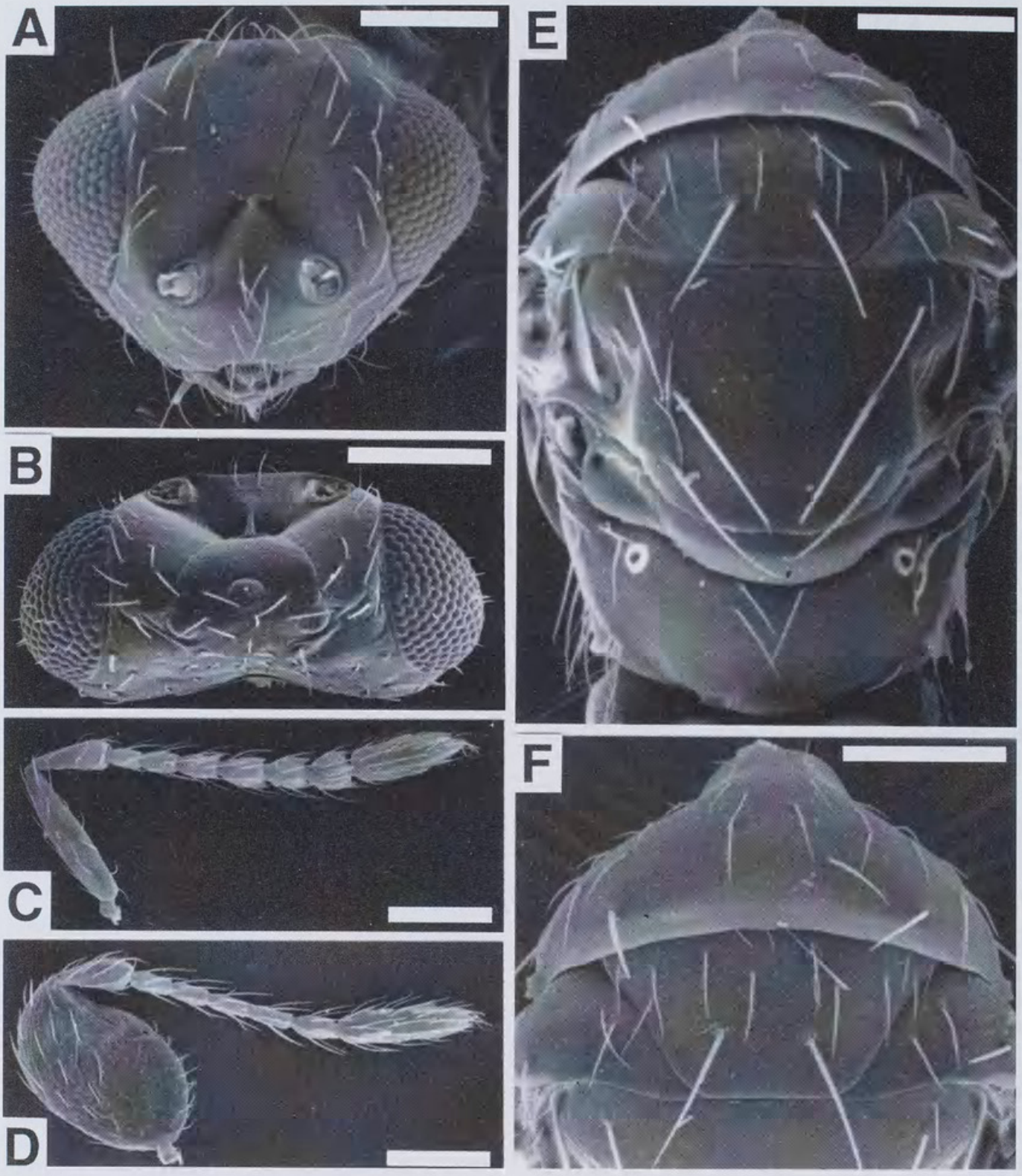

FIG. 1. *Foersterella australis* sp. nov. paratypes, Long Pocket, Brisbane, 12.xi.1994, C.J. Burwell (UQIC). A, ♀ head, anterior view. B, ♀ head, dorsal view. C, ♀ antenna. D, ♂ antenna. E, ♀ mesosoma, dorsal view. F, ♀ pronotum and mesonotum, dorsal view. Scalebars = 0.1mm.

type except ex egg *Cassida compuncta* (Boheman) on *Ipomoea cairica*, 1♀ (29.x.1994), 1♂, 1♀ (12.xi.1994) (all UQIC); same data as holotype except, 10.ii.1996, sweeping *Ipomoea cairica*, 5♂, 5♀ (ANIC), 5♂, 5♀ (BMNH), 5♂, 5♀(USNM), 61♂, 19♀ (QMT41324-41403).

DIAGNOSIS. Male with antennal funicle composed of 5 segments. Median lobe of mesonotum with pair of outstanding, diverging setae and 5-19, but usually 16 or fewer, additional short setae. Lateral lobe of mesonotum with 3-5 short setae and a longer, posterolateral seta directed medially.

Female. Length 0.75-1.05mm, mean 0.91mm (n=24). Head, mesosoma and gaster black with green or brassy-green, metallic reflections. Scape and legs light yellow with apical tarsomeres brown. Pedicel and flagellum dark brown, first funicle segment often conspicuously lighter. Wings hyaline, veins light brown.

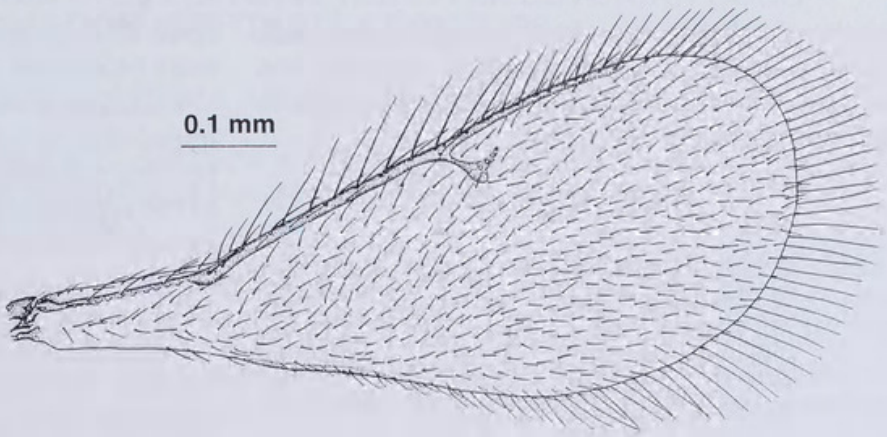

FIG. 2. *Foersterella australis* sp. nov. paratype ♀, Long Pocket Brisbane, 12.xi.1994, C.J. Burwell (UQIC). Forewing.

Head (Fig. 1A, B) 1.2-1.35 × as wide as high and 1.5-1.55 wider than frontovertex. Eye height about 0.6 × head height. Malar space 0.5-0.6 × eye height. Lateral ocelli closer to eye than each other. Lower ocular line bisecting antennal toruli. Eye with sparse setae a little longer than diameter of facets. Face and frontovertex delicately engraved reticulate, scrobal grooves smooth.

Antenna (Fig. 1C) with scape about 4 × longer than wide and combined length of pedicel and flagellum 1.25-1.35 × head width. Pedicel equal to or a little longer than combined length of first and second funicle segments. Funicle 6-segmented, increasing in width apically. Antenna weakly clavate, club unsegmented, longer than pedicel, a little more than 2.5 × longer than wide.

Mesosoma (Figs 1E, F) 1.25-1.40 × longer than wide, dorsal surface, except on propodeum, delicately engraved reticulate with sparse setae on raised papillae. Pronotum bell-shaped, collar not delimited. Pronotum with sparse setae but bare posteromedially, posterolaterally with a pair of outstanding, weakly converging setae about as long as pedicel. Mesonotum 2.75-3.5 × wider than long. Median lobe with reticulation transversely elongated, usually 6-16 (19 in one specimen) short setae in anterior half to two thirds and medially to slightly posteromedially with a pair of outstanding, diverging setae about as long as those on pronotum. Lateral lobe with 3-5 but usually 4 short setae and a longer posterolateral seta directed medially. Axilla with a long seta on dorsal surface and 1-3 short setae. Scutellum 1.1-1.2 × wider than long, with reticulation longitudinally elongated, with 2 pairs of long, converging setae, the anterior pair about as long as antennal club and situated about medially. Scutellum slightly depressed just posteriad of posterior pair of setae, forming transverse line. Propodeum smooth with 2-8 short setae anteromedially, callus with numerous setae.

Fore wing (Fig. 2) 2.6-2.8 × longer than wide. Submarginal vein with 4 setae on dorsal surface. Marginal vein 1.05-1.20, 5.0-5.5 and 1.15-1.35 × as long as costal cell, stigmal vein and postmarginal vein respectively.

Gaster ovate, slightly longer than mesosoma, 1.5-1.8 × longer than wide in critical point dried specimens.

Male. Length 0.74-1.02mm, mean 0.86mm (n=39). Similar to female except scape light brownish-yellow, brown dorsally. Pedicel, club and usually third funicle segment dark brown. Fourth and fifth funicle segments light brown, second segment light brownish-yellow, first segment light yellow. Head 1.25-1.35 × as wide as high, 1.55-1.65 × as wide as frontovertex. Antenna (Fig. 1D) with scape greatly widened, 1.55-1.67 × longer than wide. Combined length of pedicel and flagellum 1.3-1.4 × head width. Funicle 5-segmented, segments about subequal, except fifth a little wider. Antenna distinctly clavate, club about 3.5 × longer than wide. Mesosoma 1.20-1.45 × longer than wide. Mesonotum 3.05-3.55 × wider than long, with 5-16 short setae. Scutellum 1.05-1.15 × wider than long. Gaster about as long as mesosoma, 1.45-1.75 × longer than wide in critical point dried specimens.

BIOLOGY. *Foersterella australis* is a solitary endoparasitoid in the eggs of the tortoise beetle *Cassida compuncta* which feeds on several species of *Ipomoea* L. and *Polymeria calycina* R. Br. (Convolvulaceae) in SEQ. The beetle lays its eggs singly, within membranous cases, on the underside of leaves. Only eggs laid on *I. cairica* have been found parasitised by *F. australis*. A second species of tortoise beetle, *Cassida diomma*

Boisduval, shares two larval-pupal parasitoids with *C. compuncta* and although *F. australis* has not been found parasitising *C. diomma* eggs to date, it is probably also a host.

DISCUSSION

There is a single female *Foersterella* from WA (4km SW Mining Camp, Mitchell Plateau, 14°52'S 125°50'E, 13.v.1983, I.D. Naumann, J.C. Cardale, ANIC) which closely resembles the specimens from SEQ. However until I see additional material, particularly males, I am reluctant to assign the WA specimen to *F. australis*.

Foersterella australis is closely related to *F. scaposa* Bouček from PNG. The antennae of males of both species are very similar and have only five funicular segments (Fig. 1D), a synapomorphy. Males of *F. erdoesi* and *F. reptans* have a 6-segmented funicle as do males of all other known tetracampids (Bouček 1988).

Foersterella australis differs from *F. scaposa* by its less setose mesonotum. Each lateral lobe of the mesonotum of *F. australis* has at most 5 short setae and the median lobe at most 19 but usually 16 or less short setae (Fig. 1F). The unique holotype male of *F. scaposa* (in ANIC) has 14 short setae on the left lateral lobe and 25 short setae (one lost) on the median lobe of the mesonotum. The more densely setose mesonotum of *F. scaposa* is unlikely to be due to allometry as the body length of the holotype falls within the range of males of *F. australis*. In addition the mesonotal setae of *F. scaposa* are stronger and inserted on more prominent papillae than those of *F. australis*.

Variation in mesonotal setation of *F. scaposa* is impossible to assess until additional specimens become available. At such time a re-examination of the separate status of *F. scaposa* and *F. australis* may be necessary.

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LITERATURE CITED

BOUČEK, Z. 1958. Revision der europäischen Tetracampidae (Hym. Chalcidoidea) mit einem Katalog der Arten der Welt. Revise evropskych Tetracampidae s katalogem druhu celého sveta. Acta Entomologica Musei Nationalis Pragae 32: 353-404.

1988. Australasian Chalcidoidea (Hymenoptera). A biosystematic revision of genera of fourteen families, with a reclassification of species. (C.A.B. International: Wallingford).

1992. A correction to a recent publication (Hym., Pteromalidae). Entomologist's Monthly Magazine 128: 32.

BOUČEK, Z. & ASKEW, R.R. 1968. Index of world Tetracampidae. Pp. 3-19. In Delucchi, V. & Remaudière, G. (eds). Index of Entomophagous Insects 4. (Le Francois: Paris).