A NEW INQUILINE SILVERFISH (ZYGENTOMA: NICOLETIIDAE: ATELURINAE) FROM AUSTRALIA

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Summary

Ausallatelura ordoarmata gen. nov. sp. nov. is described from mounds of the termite *Amitermes vitiosus* (Hill, 1935) near Townsville, Qld.

Keywords: silverfish, inquiline

INTRODUCTION

Silverfish from the subfamily Atelurinae are generally collected in association with ants or termites. They are usually tear-drop or sub-ovoid in body shape, light yellow in colour, scaled and eyeless. The subfamily is morphologically diverse with some 140 described species worldwide in about 60 genera; more than half the genera being monotypic. The phylogeny of the subfamily is not yet well defined.

All seven known species of Australian Atelurinae were described by Silvestri 60 - 100 years ago. Most specimens were collected by the Michaelsen-Hartmeyer expedition to SW Australia in 1905 (Silvestri 1908) and later from the Northern Territory and Tasmania (Silvestri 1947 and 1949 respectively). One of these species (*Atelura similata*) was tentatively transferred to *Atelurodes* Silvestri, 1916 (Wygodzinsky 1963), however this arrangement has been reasonably questioned by Mendes (2003). Mendes (1995) erected the genus *Australiatelura* for the four species previously included by Silvestri under *Atopatelura*. This genus and *Allatelura* Silvestri 1947 are endemic to Australia.

Mendes (2003) reviewed *Gastrotheus* Casey, 1890, splitting the genus into three genera *Gastrotheus s.str*. Casey, 1890, with a single species from Panama, *Lasiotheus* (subgenus of Paclt, 1963) with two species from the Afrotropical and Oriental regions as well as the Pacific Islands and *Pseudogastrotheus* Mendes, 2003 with twenty-two species from the Afrotropical, Neotropical, Oriental and Australian regions including *Atelura disjuncta* Silvestri, 1908 from south-western Western Australia.

This paper describes a new and distinct species associated with termites in Queensland. A new genus is created as the species cannot readily be placed within the genera defined by Mendes (2003) nor within *Allatelura*, however this arrangement may need to be reviewed as knowledge of the subfamily improves.

MATERIALS AND METHODS

The following abbreviations are used in this paper: ACT: Australian Capital Territory, Australia; ANIC: Australian National Insect Collection, CSIRO, Canberra, ACT; CSIRO: Commonwealth Scientific and Industrial Research Organisation; CZ: Zoology Unit of the Instituto de Investigação Científica Tropical, Lisbon, Portugal; GBS: G.B. Smith private collection, Narraweena, NSW; NSW: New South Wales, Australia.

Measurements of all specimens in alcohol were conducted as follows; head and body length: from anterior edge of head between antennae to base of apical macrochaetae on urotergite X; head: width between postero-laterial corners where it meets the prothorax; thorax: width between widest points of metathorax, length along midline from back of head to posterior margin of metathoracic tergite; antennae from base of scape to tip; cerci and medium dorsal appendages from proximal end of first segment to tip; palp segments: length between ends of each segment, width across widest part of segment; tibia: length along dorsal edge between joints, ignoring the overlap of the bifurcated spines, width at widest point when oriented to maximise this measurement; tarsus: length ventrally from joint with tibia to base of claws; ovipositor: length of anterior gonapophysis from to its tip to the posterior edge of urosternite VII.

SYSTEMATICS

Ausallatelura gen. nov.

Type species: *Ausallatelura ordoarmata* sp. nov.

Diagnosis: Small, elongate, thorax wider than abdomen, the latter tapering caudad, light yellow in colour although devoid of hypodermal pigment, densely clothed in scales except for head, ovipositor, subgenital plate and appendages with exception of a few scales present on coxa of meso- and meta-thoracic legs; scales with numerous rays extending well beyond the margins. Macrochaetae thin, simple, although some with minute apical bifurcation.

Head exposed, not rounded, setose. Mandibles with strong teeth but only a very small molar area. Maxillae with lacinia slightly longer than galea with simple pointed apex, pectinate prostheca extending well beyond tip of lacinia. Galea lacking distinct apical conule. Labium typical for subfamily. Labial and maxillae palps with usual apical sensillae.

Thoracic tergites with distinct row of long thin simple macrochaetae well back from hind margin. Legs armed with stout deeply bifurcated spines distally on tibia; pretarsi with three simple claws lacking pulvilli.

Abdominal urotergites densely covered in scales, urotergites I-IX with single row of long, thin simple macrochaetae set well back from posterior margin. Urotergite X subtrapezoidal with slightly concave posterior margin and just 1+1 larger macrochaetae apically. Urosternite I without macrochaetae; remaining urosternites with long, very thin 1+1 submedial and 1+1 postero-lateral macrochaetae. Small vesicles present on urosternite VI with small setae on each vesicle and even smaller glabrous pseudovesicles on urosternite VII. Small urostylets on urosternites VI-VIII, urostylets on IX about twice the size of the others, urostylets with very small apical spine. Cerci short and tapering. Medium dorsal appendage thinner and about twice as long as cerci. Subgenital plate rounded, not large; ovipositor bulbous spindle-shaped.

DISCUSSION

Ausallatelura has similar features to the Australian genus *Allatelura* Silvestri, 1949 in overall body and head shape, the row of long, thin macrochaetae well back from the border of the tergites and the armature of deeply bifurcated spines on the tibia. It differs however, in the presence of vesicles on urosternite VI and the lack of membranous pulvilli between the claws.

Several genera have stylets on urosternites VI-IX plus vesicles on urosternites VI and VII, however *Ausallatelura* is clearly distinct from these. It differs from *Gastrotheus* Casey *sensu* Mendes, 2003 by the lack of scales on the exposed head, the position of the tergal row of macrochaetae well back from the margins and the presence of setae on vesicles of urosternite VI. It differs from *Lasiotheus* Paclt *sensu* Mendes, 2003 by the elongate tear-dropped body shape; the non-rounded shape of the head, the lack of scales on the head, presence of only a single well defined row of macrochaetae on the thoracic tergites, the slightly concave posterior margin of urotergite X and the setae on the eversible vesicles VI. It differs from *Pseudogastrotheus* Mendes, 2003 by the shape of the head, the lack of flattened bifurcated macrochaetae on the terga, the location of very long, thin macrochaetae well back from the posterior tergal margins, and the slightly concave posterior margin of urotergite X. *Olarthroceroides* Mendes, 2002 from Angola lacks the dorsal rows of macrochaetae, has two distinct conules on the galea, has large eversible vesicles on urosternite VI which lack setae, stylets with large apical spines, pretarsi with denticulated lateral claws with delicate empodia, a truncate subgenital plate and a shortened ovipositor. *Luratea* Mendes, 1988 from São Tomé has a similar shaped exposed head which lacks scales, but it has a conule on the galea, the pectinate process of the maxilla does not extend beyond the apex of the lacinia and it lacks macrochetae on the posterior tergal margins.

Ausallatelura shares with the African genus *Ecnomatelura* Wygodzinsky, 1961 the submarginal rows of simple setae, shape of the ultimate maxillae palp segment, the simple claws, and the strong series of deeply bifurcated spines on the tibia but differs in the typical position of the vesicles VI (not laterally displaced), the much longer prostheca and the presence of abdominal stylets on segments VI-IX (three pairs only in *Ecnomatelura*). It differs from the African *Rasthegotus* Mendes, 2001 by the presence of stylets on urosternite VI, the absence of a distinct conule on the galea, the shallow curve on the posterior margin of urotergite X and the complete and similar chaetotaxy on the nota and urotergites.

The most commonly collected Australian genus *Australiatelura* Mendes, 1995 differs from the new genus by, among other dissimilarities, the presence of seven pairs of urostylets on abdominal segments III-IX.

Etymology. The genus name derives from superficial resemblance to *Allatelura* and its Australian distribution.

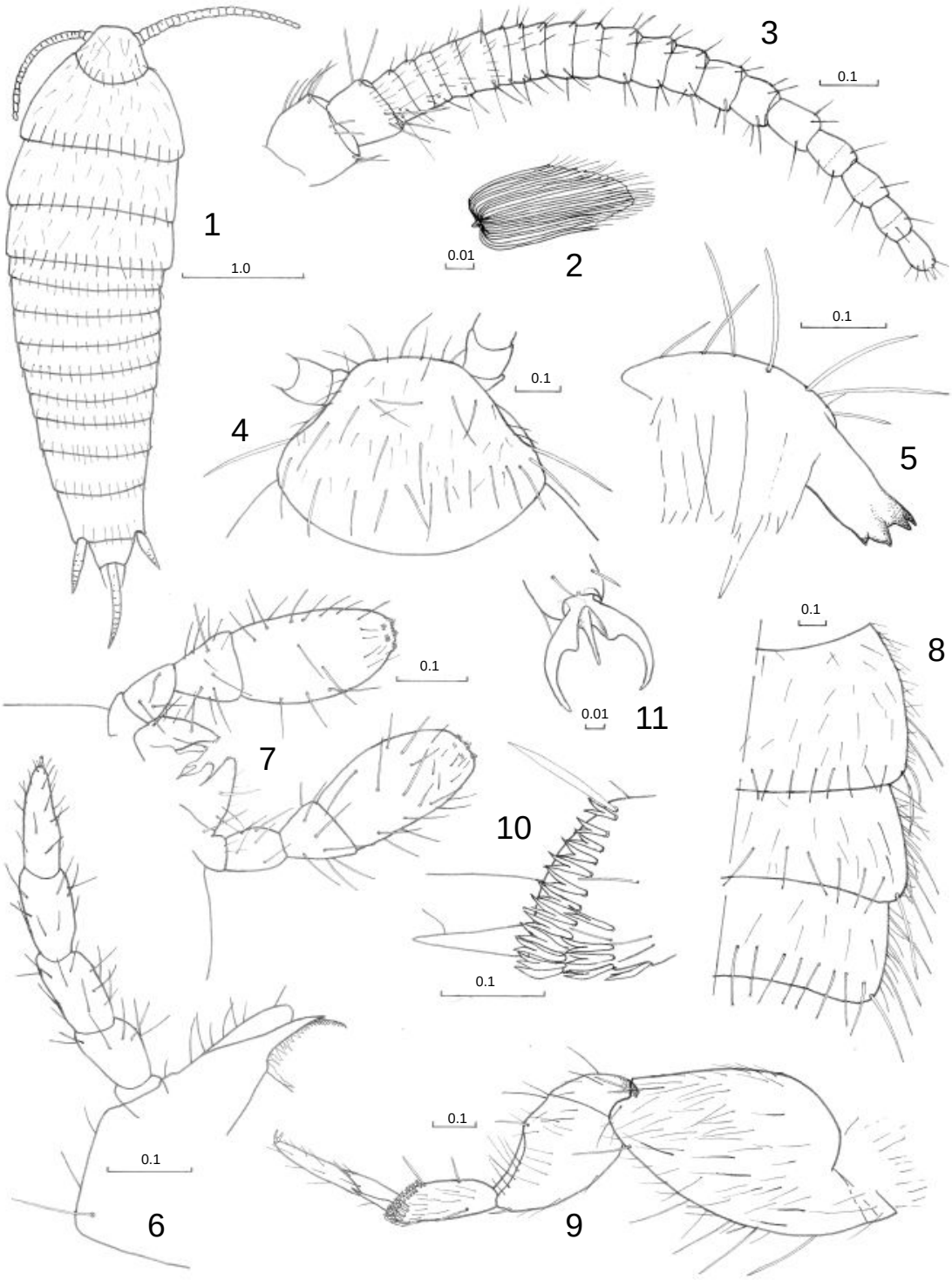
Ausallatelura ordoarmata, sp. nov.

(Figures 1-16)

Holotype: female, 57 mi SSW Townsville, Queensland, with *Amitermes vitiosus*; 29.vii.1965, F.J. Gay, (ANIC 10041).

Paratypes: 13 females, 57 mi SSW Townsville, with *Amitermes vitiosus*, 29.vii.1965, F.J. Gay, including two specimens mounted on microscope slides (tip of abdomen and appendages on one slide; two antennae, labrum, two mandibles, labium and a maxilla on a second slide; two maxillae, an antenna, ovipositor including parts of urosternites VII and IX, three legs, and the mesothoracic tergite on a third slide (holotype and11 paratype specimens, including microscope slide preparations ANIC; one paratype CZ; one paratype GBS); six females, 57 mi W Townsville on Charters Towers road, with *Amitermes sp.*, 27.vii.1966, F.J. Gay

Figures 1-11. *Ausallatelura ordoarmata* sp. nov. ♀ 11. habitus, dorsal, 2. scale, 3. antenna, 4. head, dorsal, 5. mandible, 6. maxilla, 7. labium, 8. right side of thoracic tergites, dorsal, 9. metathoracic leg, 10. distal end of tibia of same, 11. pretarsus. (scale bars in mm).



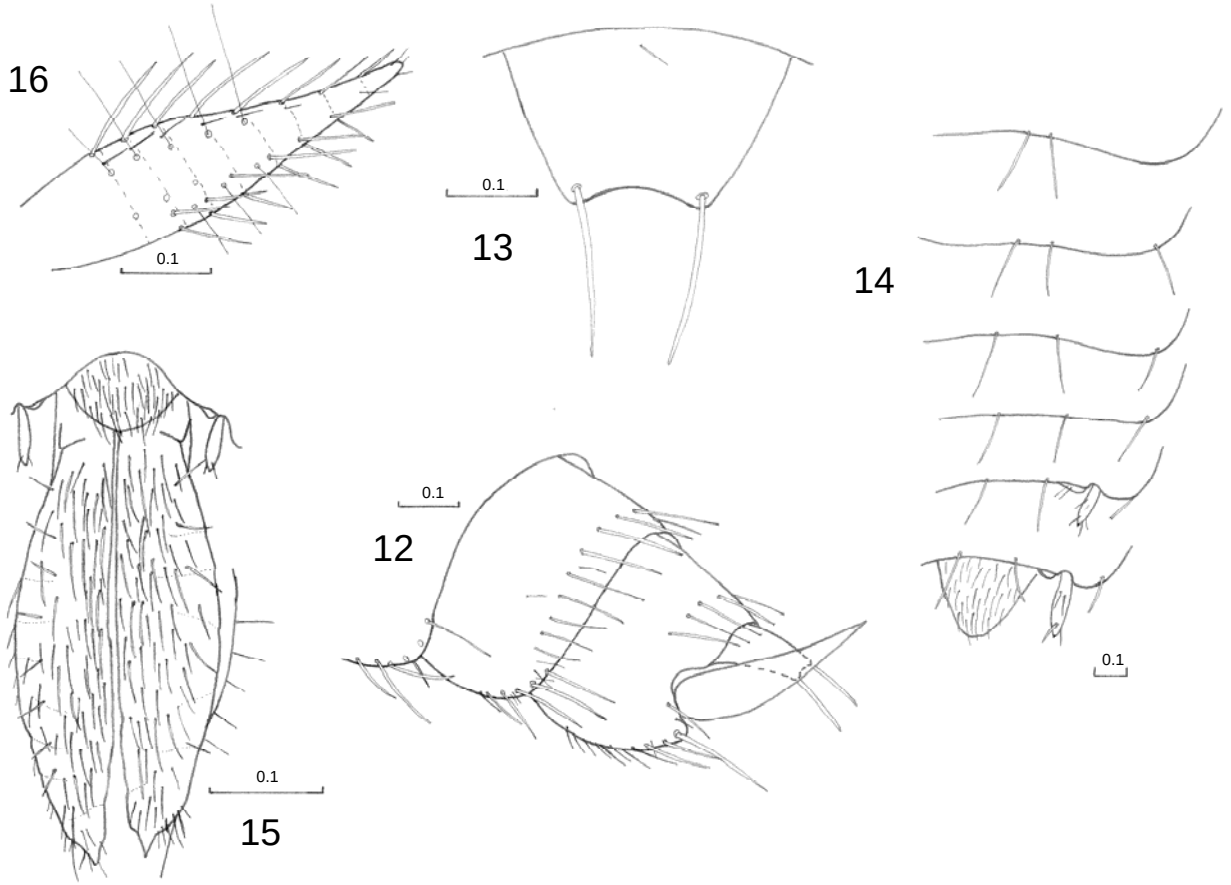
(5 paratypes ANIC; 1 paratype CZ); female, 29 mi S Charters Towers, in *Amitermes vitiosus* mound; 9.viii.1969; F.J. Gay (ANIC); a further specimen from this locality was examined by scanning electron microscopy.

Description: Body length: 4.5 mm in largest specimens available; thorax as wide as long, about one third of the combined head and body length (Figure 1). Scales (Figure 2) very pale yellowish; lacking on head and appendages, ovipositor and subgenital plate but a few scales present on coxa of meso- and meta-thoracic legs. Antennae one third to one half of combined head and body length with about 22 divisions (Figure 3). Pedicel and scape simple, approximately same length, without modifications. Median dorsal appendix about one quarter of combined head and body length; cerci about one eighth of combined head and body length.

Head slightly emarginate behind the antennae with several long thin macrochaetae especially towards posterior margin (Figure 4). Mandibles with strong teeth, molar area very small consisting of a few points on the last small tooth (Figure 5). Maxillae palp with ultimate segment about 1.2-1.7 times longer than penultimate segment but slightly narrower and distinctly narrowing apically (Figure 6) with apical feathered sensilla. Labium with ultimate segment of palp subrectangular about twice as long as wide, with apical papillae (Figure 7).

Thoracic tergites densely scaled, with distinct row of about 16-22 long thin macrochaetae set well back from edge extending over posterior margin with tips mostly simple but those nearer midline with very small bifurcation at tip. Other thinner macrochaetae present on surface of terga but not obviously in rows; single strong macrochaeta in each postero-lateral corner and several smaller macrochaetae along lateral margin of terga (Fig 8). Legs neither exceptionally elongated nor robust (Figure 9) covered in fine setae; tibia of metathoracic leg about three times longer than wide, tarsus of same about five to six times longer than wide; femur of all legs with one long deeply bifurcated spine plus several strong setae; tibia of all legs in addition to apical spur, laterally and distally armed with three rows of very stout deeply bifurcated spines (Figure 10), the proximal row with usually one or two stout bifurcated

Figures 12-16. *Ausallatalura ordoarmata* sp. nov. ♀ 12. urotergites VII-X, lateral 13. urotergite X, dorsal, 14. urosternites II-VII and subgenital plate, ventral, 15. ovipositor, ventral, 16. cerci, ventral. (scale bars in mm).



spines, median row with at least seven and distal submarginal row with 14+ that wrap around most of tibia except mediad portion, three stout macrochaetae one located subapically and ventrally, another ventrally about one third distance from the femur, and another more laterally at same level; pretarsi with two outer claws long and curved with medial claw quite short (Figure 11).

Urotergites I-IX with distinct row of long thin simple macrochaetae (about 18-20 on urotergites I-VI, about 14 on urotergites VII-VIII and about 6 urotergite IX) well back from hind margin, those near midline with small apical bifurcations; a few smaller isolated setae on face of each tergite. Hind margin of urotergite IX with strongly concave indentations laterally around base of cerci; at least one strong macrochaeta in posterior angle as well as additional macrochaetae both mediad and along lateral margins of urotergite (Figure 12). Urotergite X with two strong macrochaetae apically; lacking other setae (Figure 13).

Margins of urosternite I without macrochaetae; posterior margins of urosternites II-VII with 1+1 simple, long, thin submedial macrochetae and 1+1 simple long, thin lateral macrochetae; small stylets on urosternites VI-IX, those on urosternite IX much larger, twice as long as those on VI-VIII; stylets with very short apical processes, length less than half width of stylet and much smaller than adjacent setae. Eversible vesicles on urosternites VI with two small setae medially and small pseudovesicles on urosternite VII, both sets of vesicles small and sometimes difficult to see (Figure 14). Subgenital plate small and subsemicircular, ovipositor short but very bulbous with about ten divisions, both lack scales but are moderately covered with fine setae (Figure 15). Ovipositor up to 3.8 times head width, not quite reaching the end of urostylets IX.

Cerci (Figure 16) strongly tapering.

Males unknown.

Biology: Collected in nests of *Amitermes vitiosus* (Hill, 1935).

Etymology: The species name derives from the Latin for row (ordo) and armed (armata) referring to the conspicuous rows of stout deeply bifurcated spines on the tibia.

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