



Asia-Australia distribution patterns among species of *Mystrothrips* (Thysanoptera, Phlaeothripinae), with two new species

LAURENCE A. MOUND¹ & DESLEY J. TREE²

¹Australian National Insect Collection CSIRO, PO Box 1700, Canberra, ACT 2601. E-mail: laurence.mound@csiro.au

²Queensland Primary Industries Insect Collection (QDPC), Department of Agriculture and Fisheries, Queensland, Ecosciences Precinct, GPO Box 267, Brisbane, Qld, 4001.

Abstract

The genus *Mystrothrips* now comprises 10 species, of which one is from Brazil but the others from Asia and Australia, including *M. brachystylis* sp.n. and *M. nomadus* sp.n. from eastern Australia. Variation among specimens of *M. dammermanni* from sites in Southeast Asia and Queensland is discussed. *Mystrothrips reteanum* described from Korea and known from southern China, is here recorded from Fiji and eastern Australia, and moreover is newly recognized as a senior synonym of *M. flavidus* from Japan.

Key words: new synonym, new species, Asian distribution patterns

Introduction

The main objective of this study is to further emphasize the relationships among certain elements of the thrips fauna between northern Australia and southern Asia (Zhang *et al.* 2018). Thrips species with such distributions, apart from pest species, are mainly fungus-feeders that breed in leaf-litter, but also include phytophagous species that breed on grass foliage. Such thrips seem to exhibit only a limited host-specificity, and their widespread distributions are probably natural. Similar widespread distributions are known in several other fungus-feeding Phlaeothripinae, including *Ecacanthothrips tibialis* (Ashmead) between East Africa, Japan and northern Australia (Palmer & Mound 1978), and *Tylothrips osborni* (Hinds) between eastern USA, Panama and Spain (Goldarazena & Mound 1997). These distributions of generalist fungivorous species contrast with the narrow ranges of many phytophagous species, such as Australian thrips that are associated only with particular native plants. However, the extensive planting across Southeast Asia of *Eucalyptus* species from Australia seems likely to provide opportunities for some taxa of litter-living Phlaeothripinae, such as members of the genus *Psolidothrips* Priesner, to expand their range northwards out of Australia (Zhao *et al.* 2018). The thrips considered in this paper are members of the genus *Mystrothrips* Priesner. These are mycophagous and live in leaf litter, with seven of the eight previously described species being from Southeast Asia. Here we record from Australia two species known previously only from Southeast Asia, and describe two new species from Queensland.

Acknowledgements, abbreviations and depositories. We are particularly grateful to Lee Gwan-Seok, National Institute of Agricultural Sciences, Wanju, Republic of Korea, and Masami Masumoto, Yokohama Plant Protection Station, Japan, for the loan of type specimens, and to Tong Xiaoli for provision of Figure 28. Also to Paul Brown, Natural History Museum London, and Andrea Hastenpflug-Vesmanis, Senckenberg Museum, Frankfurt, for their unfailing support of our studies on thrips. The holotype of one new species described below is in the Queensland Museum, Brisbane, and the holotype of the second new species is in the Australian National Insect Collection, Canberra. The following abbreviations are used below to refer to particular setae: S1, S2 and S3 setae on tergite IX, of which pair S1 are closest to the midline of the body; pronotal setae - aa anteroangular, am anteromarginal, ml midlateral, epim epimeral, pa posteroangular.

***Mystrothrips* Priesner**

Mystrothrips Priesner, 1949: 117. Type species *Sagenothrips dammermanni* Priesner 1933, by monotypy.

Diagnosis: Body and legs strongly reticulate; head with eyes globular or reduced to few facets, cheeks parallel or weakly constricted to base but sharply constricted behind eyes; postocular setae with apices expanded; paired postocellar and mid-dorsal setae present; maxillary stylets wide apart. Antennae 8-segmented, VIII constricted at base; III with 3, 2 or 0 sense cones, IV with 3 sense cones. Pronotum with 5 pairs of major setae, all capitate and usually short. Paired prosternal basantra usually weak or absent, ferna well-developed; mesopresternum varying, complete, reduced to two triangles, or absent; metathoracic sternopleural sutures absent (in all specimens studied here). Usually micropterous; if wings present then duplicated cilia absent. Pelta variable among species, usually transversely oval but sometimes with short lateral wings; tergites II–VII with 2 pairs of sigmoid wing-retaining setae present or absent; posteromarginal setal pair and posteroangular pair with apices broadly expanded; tergite IX setae S1 and S2 about 0.7 as long as tube with apices capitate; tube shorter than head, anal setae short. Male sternite VIII without pore plate.

Relationships: This genus belongs to a group of tropical litter-living Phlaeothripinae, often referred to as the Glyptothripini. However, that Tribe is inadequately diagnosed and is based essentially on the presence of surface reticulation (Stannard 1955), a character state that is not constant within some included genera (Mound 1976). There is great diversity amongst species of this group in the New World (Mound 1977), but few species have been described from the Old World. The type species of *Paramystrothrips* Bournier, from Angola and Gabon, was described as having four sense cones on antennal segment IV, and also as having the prosternal basantra absent. This genus may well be a synonym of *Iniothrips* John, a genus based on a single female from East Africa that is lost (Mound 1977). Three further species have been placed in *Paramystrothrips*, but these all have three sense cones on antennal segments IV, and they are here transferred to *Mystrothrips*. The original generic position of each of them was presumably determined by use of the key to genera provided by Mound (1977). However, that key was based on New World species, and distinguished *Mystrothrips* from *Paramystrothrips* by the presence of well-developed prosternal basantra. In contrast, all of the Old World species of *Mystrothrips* have basantra weak or absent. A further related genus is the monobasic *Sagenothrips*, based on a single female from Sumatra with longer antennae than *Mystrothrips* species but with the postocular setae unusually short. The generic relationships of *Mystrothrips clavatoris* from southern Brazil remain uncertain. As indicated below this species differs from the Asian members of the genus in several character states.

Key to *Mystrothrips* species

[* based on description]

1. Prosternal basantra well-developed (Fig. 8); antennal segment IV with 4 sense cones; antennal segments I–IV with one or more capitate setae *clavatoris*
- Prosternal basantra weak or absent (Figs 2, 11); antennal segment IV with 3 sense cones; antennal segments I–IV with apical setae all acute 2
2. Antennal segment III with 3 sense cones 3
- Antennal segment III with 2 or 0 sense cones. 4
3. Postocellar setae with apices broadly expanded (Fig. 16) *dilatatus*
- Postocellar setae finely acute *dammermanni* group
4. Antennal segment III with 0 sense cones; compound eye with 3 facets (Fig. 22); maxillary stylets about 0.3 of head with apart; inner apex of fore tarsus with minute recurved tooth in both sexes *nomadus* sp.n.
- Antennal segment III with 2 sense cones; compound eye of microptera with at least 7 facets (Fig. 1); maxillary stylets about 0.5 of head width apart; female without, male with or without fore tarsal tooth 5
5. Head smooth medially, without strong reticulate sculpture (Fig. 28) *levis**
- Head with well-developed reticulate sculpture 6
6. Maxillary stylets scarcely retracted anterior to occipital ridge (Fig. 1); meso and metanotal reticulate lines with many small tubercles (Fig. 4); male without fore tarsal tooth *brachystylis* sp.n.
- Maxillary stylets retracted almost to postocular setae; meso and metanotal reticulate sculpture lines smooth (Figs 20, 21); male with small fore tarsal tooth *reteanum*

***Mystrothrips brachystylis* sp.n.**

(Figs 1–6)

Female microptera. Body and legs pale brownish yellow, distal antennal segments slightly darker. Head without ocelli, strongly reticulate, relatively broad (Fig. 1); compound eyes small and bulbous with about 12 facets; cheeks convex and sharply constricted behind eyes; postocular setae extending to eyes, apices capitate and fringed; mid-dorsal setae small and acute; maxillary stylets wide apart, scarcely retracted anterior to postoccipital ridge; mouth cone short and rounded. Antennae 8-segmented with reticulate surfaces; segment III with 2 small slender sense cones, IV with 2 larger thickened sense cones and 1 small one more ventrally; III–VIII all narrowed at base to slender pedicel, VIII particularly slender (Fig. 6). Pronotum reticulate on anterior half but sculpture tuberculate laterally and on posterior half; 5 pairs of major setae with apices capitate and fringed; notopleural sutures not quite complete. Mesonotum transverse, sculpture lines with small tubercles, lateral setal pair long with capitate, fringed apices. Metanotum reticulate, sculpture lines bearing small tubercles, median setae small and bluntly pointed. Fore tarsus with minute curved tooth at inner apex. Fore wing lobes not extending to posterior margin of metathorax, each with 3 large capitate, fringed setae. Prosternal basantra not sclerotized, ferna broad with median margins parallel and close together (Fig. 2); mesopresternum not sclerotized, but with 4 small setae in transverse row. Pelta transversely oval, reticulate; tergites II–VIII transversely reticulate with sculpture lines bearing numerous dentate microtrichia, each with one pair of capitate major setae on posterior margin and one pair on posterior angles (Fig. 5); sternites sculptured similarly to tergites, each with about 15 small discal setae in a transverse row; tergite IX setae S1 broadly capitate, S2 weakly capitate, S3 acute, intermediate setae acute and almost as long as S1 and S2; tube shorter than head, anal setae shorter than tube.

Measurements (holotype female in microns). Body length 1450. Head, length 160; maximum width 155; postocular setae 40; mid-dorsal setae 10. Pronotum, length 100; maximum width 210; major setae - am 35, aa 35, ml 30, epim 40, pa 40. Mesonotal lateral setae 30. Metanotal median setae 15. Fore wing length 85, setae 30. Tergite IX setae, S1 75, intermediate seta 60, S2 65. Tube length 110. Antennal segments III–VIII length 38, 40, 40, 35, 25, 40.

Male microptera. Very similar to female but a little smaller; chaetotaxy of tergite IX as in female; sternite VIII without pore plate.

Measurements (paratype male in microns). Body length 1330. Head length 150. Pronotum length 90. Tube length 90.

Specimens examined. Holotype female microptera, **Australia, Queensland**, Carnarvon Station, Piebald Spring Road, from *Acacia harpophylla* leaf litter, 13.x.2014 (Wright SG), in Queensland Museum, Brisbane.

Paratypes: one female, one male micropterae collected with holotype (female in ANIC).

Comments. The prosternal ferna of *brachystylis* (Fig. 2) are similar in shape to those of *dammermanni* (Fig. 11), but this new species is remarkable for the very short maxillary stylets. In most characters it is closely similar to the other Australian species, *nomadus*. Both of them have the mesopresternum undeveloped, but in *brachystylis* the metanotal sculpture lines bear many small tubercles, and in *nomadus* tergite IX setae S2 are finely acute not capitate.

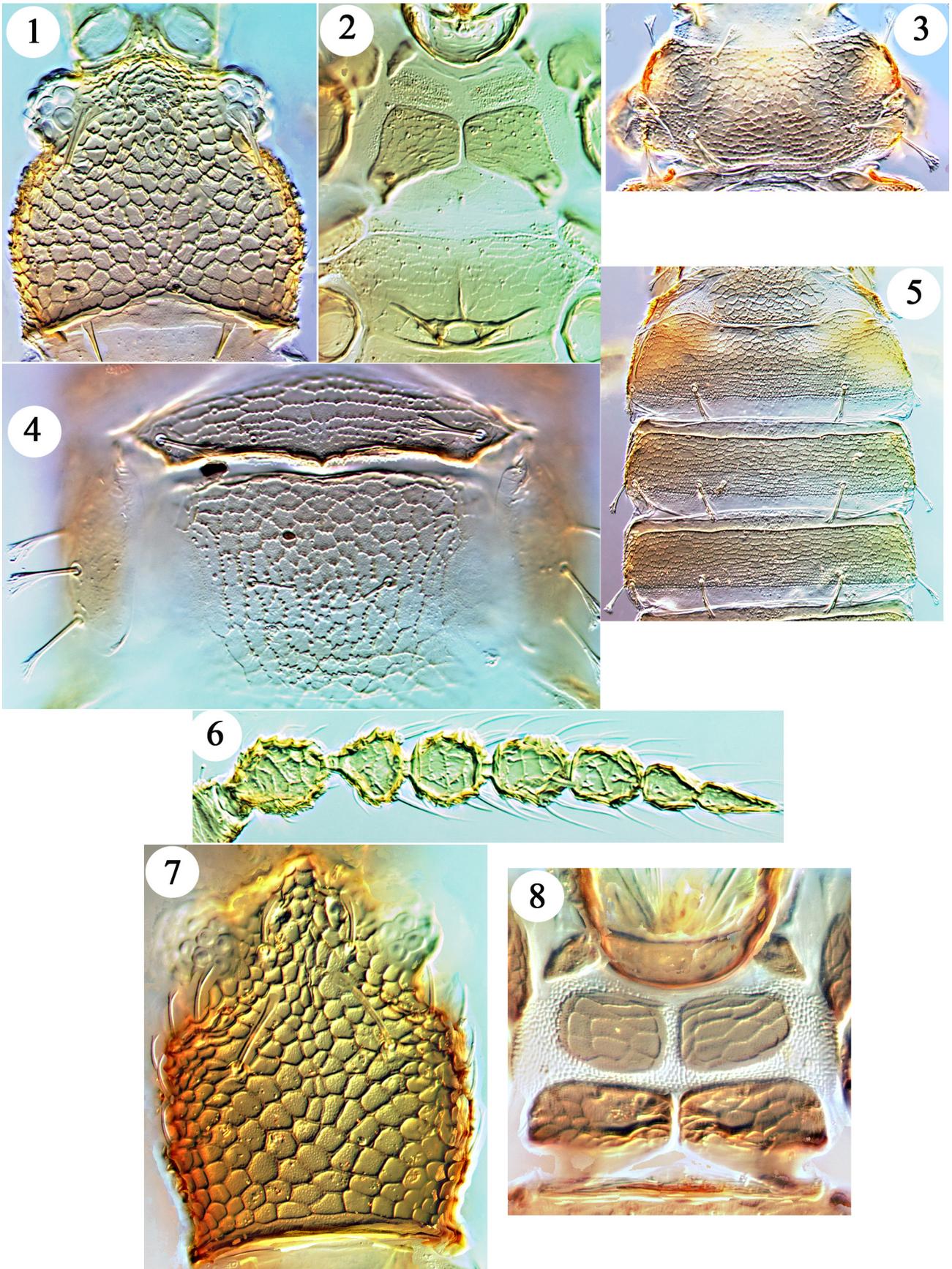
***Mystrothrips clavatoris* Hood**

(Figs 7–8)

Mystrothrips clavatoris Hood, 1954: 32

This species shares with some specimens of *dammermanni*, the type species of the genus, the presence on the head of a pair of capitate mid-dorsal setae that are equal in size to the postocular setae (Fig. 7). At present, *clavatoris* is distinguished from the other members of the genus by the presence of well-developed prosternal basantra (Fig. 8), four sense cones on antennal segment IV, paired slender capitate setae on antennal segments I–IV, and a series of smaller capitate setae laterally on the head (Fig. 7).

Specimens examined. Female microptera, **Brazil**, Santa Catarina, Nova Teutonia, from fallen leaves, vii.1955 (F. Plaumann), in BMNH.



FIGURES 1–8. *Mystrothrips* species. *M. brachystylis* 1–6: (1) head; (2) prosternites; (3) pronotum; (4) meso & metanota; (5) tergites I–IV; (6) antenna. *M. clavatoris* 7–8: (7) head; (8) prosternites.

***Mystrothrips dammermanni* (Priesner)**

(Figs 9–15)

Sagenothrips dammermanni Priesner, 1933: 75

This species was described from an unspecified number of micropterous females from Java, but judging from the material listed below *dammermanni* is possibly more variable than has been considered by previous authors. There are five further species that are here considered as comprising the *dammermanni* species-group:

Mystrothrips nipponicus Okajima, 2006: 488;

Mystrothrips longantennus Wang *et al.* 2008: 367.

Mystrothrips moundi (Bhatti, 1995: 106) **comb.n.** [*Paramystrothrips*]

Mystrothrips ophthalmus (Okajima, 2006: 400) **comb.n.** [*Paramystrothrips*]

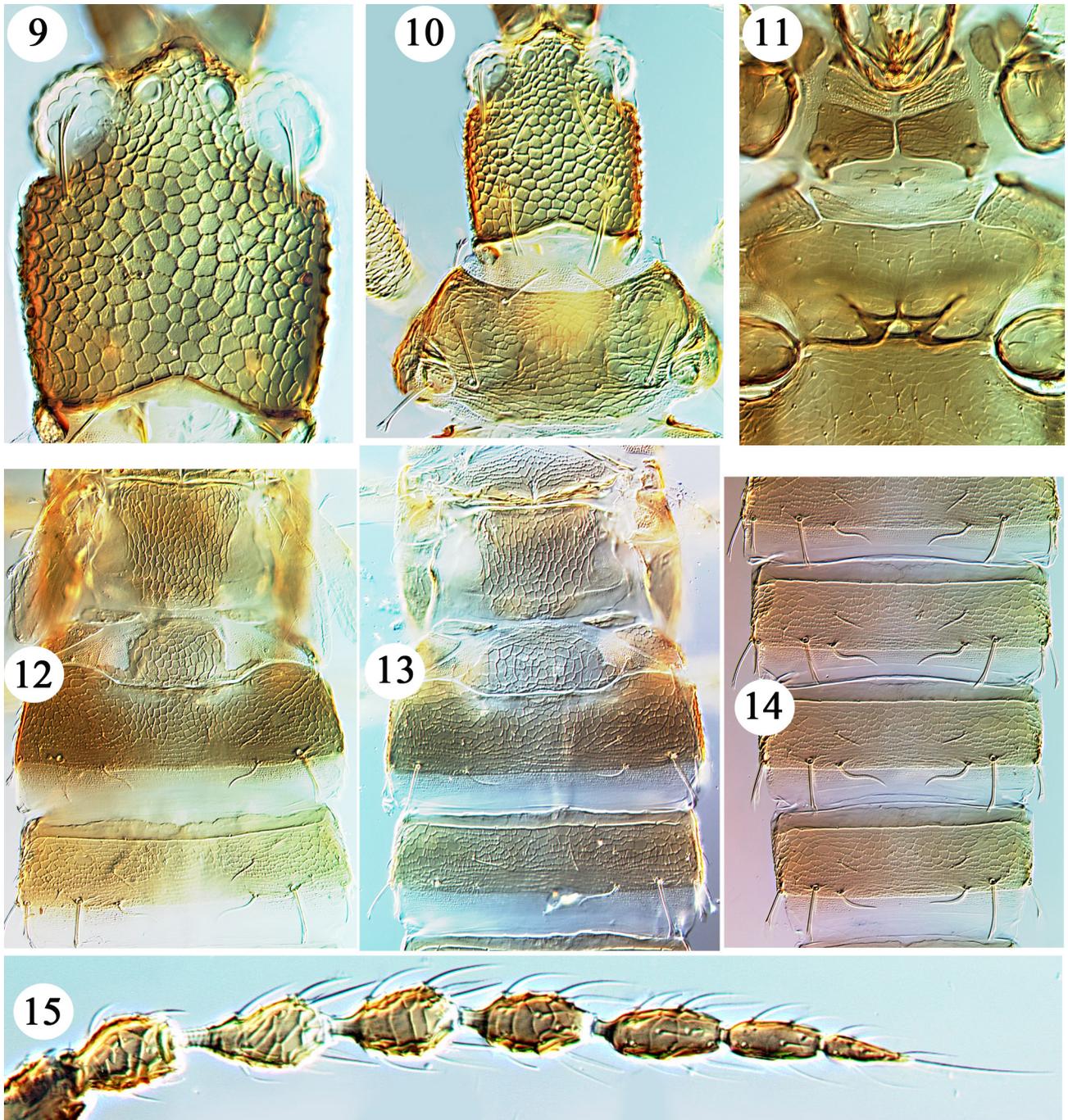
Mystrothrips orientalis (Okajima & Urushihara, 1992: 162) **comb.n.** [*Eurythrips*]

All five have the head relatively elongate, usually about 1.3 times as long as wide medially, and the antennae rather slender with three sense cones on segments III and IV. According to the original description and illustration, *nipponicus* has the postocular setae short, less than 25 microns long, and not extending to the posterior margin of the eyes. In contrast, *dammermanni* and the other four listed species have the postocular setae 40–60 microns long and extending beyond the posterior margin of the eyes. Okajima (2006) placed *ophthalmus* and *orientalis* in the genus *Paramystrothrips* on the grounds that the reticulate sculpture on the head is weak on the posteromedian area, and that metathoracic sternopleural sutures are present. In these two characters these two species are clearly distinct from *dammermanni*. However, *Mystrothrips levis* Zhao & Tong is described as having even weaker sculpture on the head. Bhatti (1995) described *moundi* from a single macropterous female, but provided no measurements other than body length. The published illustration indicates that the major setae on the pronotum are relatively short, but the description does not satisfactorily distinguish the species. The published differences between *dammermanni*, *nipponicus*, *longantennus*, and *moundi* could well be interpreted as variation between populations of a single species. The first one was described from Java, but has been recorded from Borneo (Stannard 1955), and is here recorded from Peninsular Malaysia and also northeastern Australia. Okajima described *nipponicus* from southern Japan (Kyushu) and also the Ryukyu Islands, *longantennus* is recorded widely in southern China (Yunnan and Guangdong Provinces), and *moundi* is known only from Delhi, India.

Three syntype females of *dammermanni* have been examined bearing the data “Buitenzorg, viii.1923, Dammerman”. One of these has subsequently been labelled “holotype” and the other two labelled “paratype”. All three are uncleaned, with two mounted ventral side uppermost. However, the third specimen, labelled “paratype”, is mounted dorsal side uppermost, and the paired mid-dorsal setae on the head are clearly short and acute. Among specimens collected in northeastern Australia the length and form of the apices of this pair of mid-dorsal cephalic setae are variable. Sometimes both setae are acute, but sometimes both setae are capitate and as long as the postoculars. The apices of these mid-dorsal setae vary from broadly expanded and fimbriate, to very weakly expanded, to clearly acute. Moreover, in several specimens this pair of setae is not bilaterally symmetrical in position, length, or form of the apex. Similar variation has been observed in specimens identified as *dammermanni* in the Senckenberg Museum, both from Nepal (Taplejung) and from India (Madras). The variation in this mid-dorsal pair of setae is not correlated with sex- or wing morph, and the variation has been found within individual populations. A further pattern of variation within some of the samples involves the wing length of micropterae. The wing lobe sometimes does not extend to the posterior margin of the pterothorax, but on other specimens it extends to the mid-point of the second abdominal tergite. The form of the pelta is correlated with wing length, macropterae and individuals with longer wing lobes have the pelta with characteristic lateral “wings” (Fig. 12) that are absent in micropterous individuals (Fig. 13). However, ocelli are present on the head of all available specimens, regardless of wing length, in contrast to the species *flavidus* discussed below.

Specimens examined (micropterae except where stated). **Indonesia, Java**, Buitenzorg, viii.1923, 3 female syntypes in SMF. **Nepal**, Taplejung District, Limbudin, 1.ix.1983, 4 female micropterae, 1 female macroptera, 1 male microptera, in SMF. **India**, Madras, 2.iii.1968, 2 females in SMF. **Peninsular Malaysia**, Gombak near Kuala Lumpur, 2 females 1 male from leaf litter, ix.1973, in ANIC. **Australia, Queensland**: Cape Tribulation, 3 females 1 male from bark-spraying, 9.x.2012; Mt Spec, 1 female in pitfall trap, ii.1995; Carnarvon N.P., 1 female in pitfall

trap, 9.x.2014; Brisbane, Mt Glorious, 7 females (2 macropterae) in rainforest litter, 29.vi.2008, 1 female same data, 12.vii.2008; Brisbane Forest Park, in leaf litter, 1 female, 2.viii.2008, 1 female macroptera, 27.ii.2009; Brisbane, Indooroopilly, 1 female macroptera in malaise trap, iii.2009; Brisbane, Mt Nebo, 1 male in leaf litter, 12.vii.2008; Lamington N.P., O'Reilly's, in leaf litter, 2 females, 2 males, vii.2007, 2 females, 2 males, viii.2007, 1 female macroptera in trap, i.2008; in QDPC and ANIC.



FIGURES 9–15. *Mystrothrips dammermanni*. (9) head; (10) head & pronotum; (11) prosternites; (12) macroptera metanotum & tergites I–III; (13) microptera metanotum & tergites I–III; (14) macroptera tergites III–VI; (15) antenna.

***Mystrothrips dilatus* Mound**
(Figs 16–18)

Mystrothrips dilatus Mound, 1970: 100

Known only from a single micropterous female taken on the Solomon Islands, the body structure and sculpture of this species is closely similar to that of *dammermanni*. However, the post-ocellar setae are as broad and capitate as the postocular setae (Fig. 16), and the tergal lateral setae are unusually short (Figs 17, 18). The holotype was loaned from the Natural History Museum, London, to prepare in Canberra the images given here.

***Mystrothrips levis* Zhao & Tong**

(Fig. 28)

Mystrothrips levis Zhao & Tong, 2017: 2

Described from southern China, Guangzhou, on 14 females and 3 males, all apterae, this species is similar in appearance and chaetotaxy to *flavidus* and *reteanum* that are known only from micropterae. However, the head of the holotype (Fig. 28) lacks reticulate sculpture medially, and according to the description antennal segments I–II are brown instead of yellow, and antennal segment III is longer and more slender. Specimens of this species have not been studied, but the image of the head was kindly supplied by Professor Tong Xiaoli.

***Mystrothrips nomadus* sp.n.**

(Figs 22–27)

Female microptera. Body and legs pale brownish yellow, distal antennal segments slightly darker. Head without ocelli, projecting very slightly in front of eyes, strongly reticulate (Fig. 22); compound eyes with only 3 facets; cheeks convex and sharply constricted behind eyes; postocular setae not extending to eyes, apices capitate and fringed; mid-dorsal setae small and acute; maxillary stylets retracted to postocular setae and slightly less than one third of head width apart medially; mouth cone apex round to bluntly pointed. Antennae 8-segmented with reticulate surfaces; segment III with no sense cones, IV with 3 sense cones of which one is sometimes small; III–VIII all strongly pedicellate (Fig. 26). Pronotum reticulate on anterior half but sculpture tuberculate laterally and on posterior half (Fig. 23); 5 pairs of major setae with apices capitate and fringed; notopleural sutures not quite complete. Mesonotum transverse, sculpture lines with dentate microtrichia, lateral setal pair long with capitate, fringed apices. Metanotum reticulate, reticles formed of simple lines, median setae small and bluntly pointed. Fore tarsus apparently without tooth. Fore wing lobes not extending to posterior margin of metathorax, each with 2 large capitate, fringed setae. Prosternal basantra not sclerotized, ferna narrowing to blunt apices in midline (Fig. 24); mesopresternum not sclerotized. Pelta transversely oval, reticulate with small tubercles on sculpture lines; tergites II–VIII transversely reticulate with sculpture lines bearing numerous dentate microtrichia particularly on posterior half of each tergite, with one pair of capitate major setae on posterior margin and one pair on posterior angles; tergite IX setae S1 with apex spoon-shaped (Fig. 27), S2 and S3 finely acute, intermediate setae two-thirds as long as S1; tube shorter than head, anal setae shorter than tube. Sternites II–VII sculptured similarly to tergites, each with up to 24 small discal setae in a transverse row; sternite VIII with fewer and longer discal setae.

Measurements (holotype female in microns). Body length 1550. Head, length 165; maximum width 155; postocular setae 35; mid-dorsal setae 10. Pronotum, length 100; maximum width 230; major setae - am 25, aa 35, ml 30, epim 45, pa 25. Mesonotal lateral setae 25. Metanotal median setae 20. Fore wing length 80, sub-basal setae 25, 35. Tergite IX setae, S1 90, intermediate seta 60, S2 105. Tube length 125. Antennal segments III–VIII length 40, 43, 43, 40, 30, 30.

Male microptera. Very similar to female but a little smaller; chaetotaxy of tergite IX as in female; sternite VIII without pore plate.

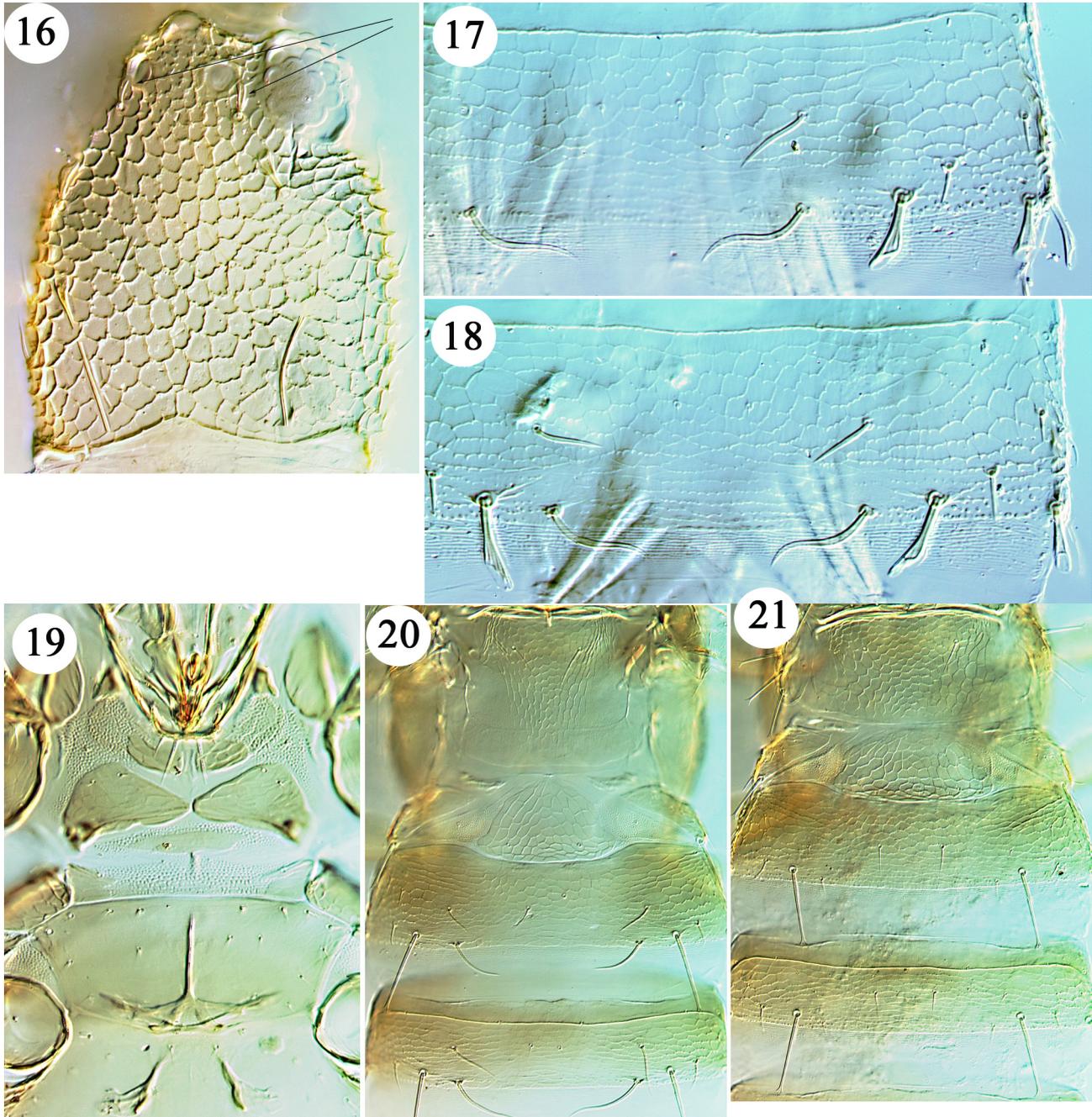
Measurements (paratype male in microns). Body length 1300. Head length 160. Pronotum length 90. Fore wing length 65. Tube length 100.

Specimens examined. Holotype female, **Australia, Queensland**, Brisbane, Mt Coot-tha, from leaf litter, 29.vi.2008 (Tree DJ), in ANIC.

Paratypes: 2 females taken with holotype; Brisbane, Gap Creek Reserve, in litter, 2 females 13.viii.2008, 1 female 24.xii.2008, 1 female 8.i.2009 (Tree DJ); Brisbane Forest Park, Centre Road, in dry sclerophyll litter, 4 females 2.viii.2008, 1 female 26.iii.2009 (Tree DJ); Brisbane Forest Park, Bellbird Grove, 3 females in *Eucalyptus*

litter, 6.ii.2009 (Tree DJ); Cape Tribulation, Sth Emmagen Creek, 3 females 2 males in leaf litter, 9.x.2012 (Tree DJ); in QDPC and ANIC.

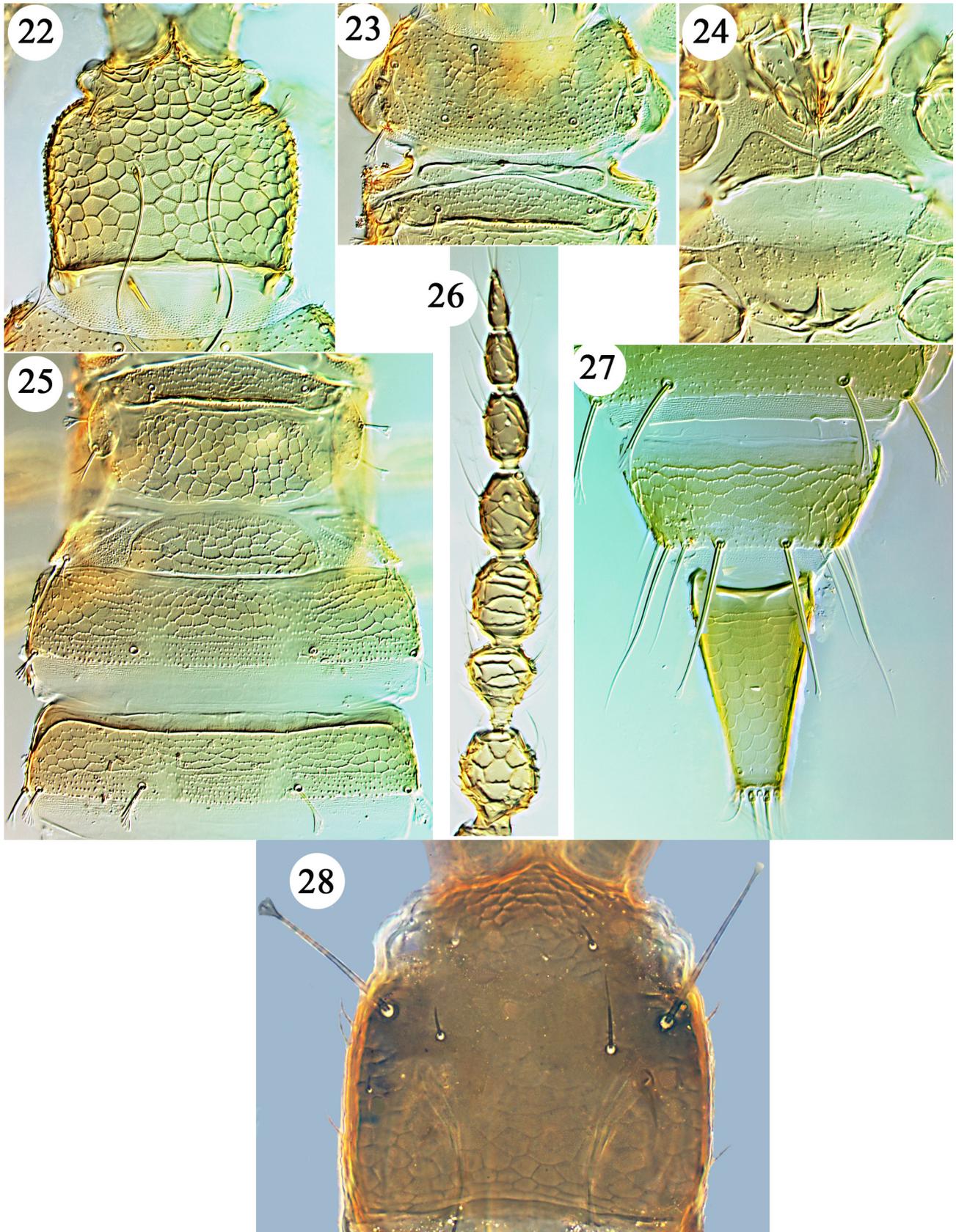
Comments. This species is very similar to *brachystylis* described above, but has the maxillary stylets long and deeply retracted into the head (Fig. 22), antennal segment III without any sense cones, the prosternal ferna bluntly pointed toward the mid line (Fig. 24), and the metanotal sculpture lines simple (Fig. 25).



FIGURES 16–21. *Mystrothrips* species. *M. dilatus* 16–18: (16) head; (17) tergite III; (18) tergite V. *M. reteanum* 19–21: (19) prosternites; (20) macroptera metanotum & tergites I–III; (21) microptera metanotum & tergites I–III.

***Mystrothrips reteanum* Shin & Woo**
(Figs 19–21)

Mystrothrips reteanum Shin & Woo, 1999: 111
Mystrothrips flavidus Okajima, 2006: 485. **Syn.n.**



FIGURES 22–28. *Mystrothrips* species. *M. nomadus* 22–27: (22) head; (23) pronotum & mesonotum; (24) prosternites; (25) meso & metanota & tergites I–III; (26) antenna; (27) tergites VIII, IX & tube. (28) *Mystrothrips levis* head of holotype.

This species was described from 20 females and 6 males, all micropterae but lacking ocelli, collected from leaf litter in Sangju, Kyungbuk, South Korea. The holotype and four other females from the original series have been examined in Canberra and compared with two paratypes of *flavidus*. The latter species was described from almost 200 females and 100 males, all micropterae and similarly lacking ocelli, that were collected on the Ogasawara group of islands (Bonin Islands) in the Pacific Ocean, 1000km south of Tokyo. The original description of *flavidus* refers to “three previously known species” of *Mystrothrips*, although by the year of that description, 2006, there were actually four described species. This wording suggests that the author of *flavidus* was not aware of the 1999 description of *reteanum* from Korea. The type specimens of *reteanum* are not as cleanly prepared as the paratypes of *flavidus* and the specimens from Australia listed below, but no significant differences have been observed between them.

Prosternal basantra are present but weak in all the available specimens listed below, as indicated in the original description of *flavidus*, and the mesopresternum is represented by two lateral triangles. Neither of these character states occurs in the two new species from Australia discussed here. Moreover, the fema of *reteanum* are bluntly triangular toward the mid-line (Fig. 19), in contrast to *dammermanni* and the two new species described here. Also, in contrast to *dammermanni*, the pelta of *reteanum* does not differ greatly in form between macropterae and micropterae (Figs 20, 21). However, the micropterae of *reteanum* differ from macropterae in having tergal setae S1 elongate (Figs 20, 21), and the micropterae lack ocelli (except for a single microptera from Tidbinbilla).

The distribution of this species as recorded here is remarkable. Described originally in Korea from well North of the Tropic of Cancer, and then from islands just north of that Tropic, it has also been found widely just south of Cancer in sub-tropical southern China, Guangdong Province (Wang *et al.* 2008). Moreover, a specimen is listed below that was taken on Fiji, a tropical island in the Pacific Ocean. More surprisingly, breeding populations have been found far south of the Tropic of Capricorn in southern Australia, around Canberra, in an area that experiences light snow falls in winter. Although collected in Canberra by extracting arthropods from leaf-litter using Berlese funnels, it is possible that the species was actually feeding on fungi living at the base of grasses.

Specimens examined (micropterae except where stated). **Korea**, Kyungbuk, Sangju, 5 females (including holotype), 8.vi.1998. **Japan**, Ogasawara Islands, Haha-jima Is., Nakanotaira, 1 female, 1 male from grass (paratypes), 7.iii.1988, in coll. Masumoto, Japan. **Fiji**, Viti Levu, near Sigatoka, 1 female from dead grass, 15.iv.1982. **Australia**, Australian Capital Territory: Canberra, National Botanic Gardens, in leaf litter, 1 female, 16.x.2011, 1 male, 19.v.2016; Tidbinbilla, 6 females, 4 males, 1 female macroptera in *Leptospermum* leaf litter, 26.iii.2017, 3 females, 6 males in *Eucalyptus* leaf litter, 24.iv.2017; in ANIC.

References

- Bhatti, J.S. (1995) Studies on some Phlaeothripidae (Insecta: Tubulifera). *Zoology (Journal of Pure and Applied Zoology)*, 5, 97–110.
- Goldarazena, A. & Mound, L.A. (1997) *Hindsiothrips* from Spain with the first record of *Tylothrips osborni* (Hinds) from Europe (Thysanoptera, Phlaeothripidae). *Entomological Monthly Magazine*, 134, 319–324.
- Hood, J.D. (1954) Brazilian Thysanoptera IV. *Proceedings of the Biological Society of Washington*, 67, 17–54.
- Mound, L.A. (1970) Thysanoptera from the Solomon Islands. *Bulletin of the British Museum (Natural History)*. *Entomology*, 24, 83–126.
- Mound, L.A. (1976) American leaf-litter Thysanoptera of the genera *Erkosothrips*, *Eurythrips* and *Terthrothrips* (Phlaeothripidae: Phlaeothripinae). *Bulletin of the British Museum (Natural History)*. *Entomology*, 35, 27–64.
- Mound, L.A. (1977) Species diversity and the systematics of some New World leaf-litter Thysanoptera (Phlaeothripinae; Glyptothripini). *Systematic Entomology*, 2, 225–244.
<https://doi.org/10.1111/j.1365-3113.1977.tb00371.x>
- Okajima, S. (2006) *The Suborder Tubulifera (Thysanoptera)*. In: *The Insects of Japan*. Vol. 2. The Entomological Society of Japan, Touka Shobo Co. Ltd., Fukuoka, pp. 1–720.
- Okajima, S. & Urushihara, H. (1992) Leaf-litter thrips found in Jinmuji Forest, the Miura Peninsula, Kanagawa Prefecture, Japan (Thysanoptera). *Japanese Journal of Entomology*, 60, 157–173.
- Palmer, J.M. & Mound, L.A. (1978) Nine genera of fungus-feeding Phlaeothripidae (Thysanoptera) from the Oriental Region. *Bulletin of the British Museum (Natural History)*. *Entomology*, 37, 153–215.
- Priesner, H. (1933) Indomalaysische Thysanopteren IV [Teil 2]. *Konowia*, 12, 69–85 + 307–318.
- Priesner, H. (1949) Genera Thysanopterorum. Keys for the identification of the genera of the order Thysanoptera. *Bulletin de la Société Royale Entomologique d’Egypte*, 33, 31–157.

- Shin, H.K. & Woo, K.S. (1999) Taxonomic notes of Phlaeothripinae (Thysanoptera, Phlaeothripidae) from Korea (1). *Insecta Koreana*, 16 (2), 103–118.
- Stannard, L.J. (1955) On some reticulate-headed genera of the tribe Glyptothripini Priesner (Thysanoptera: Phlaeothripidae). *Transactions of the American Entomological Society*, 81, 77–101.
- Wang, J., Tong, X.L. & Zhang, W.Q. (2008) A new species of *Mystrothrips* Priesner (Thysanoptera: Phlaeothripidae) from China. *Entomological News*, 119 (4), 366–370.
<https://doi.org/10.3157/0013-872X-119.4.366>
- Zhang, S.M., Wang, Z.H., Li, Y.J. & Mound, L.A. (2018) One new species, two generic synonyms and eight new records of Thripidae from China (Thysanoptera). *Zootaxa*, 4418 (4), 370–378.
<https://doi.org/10.11646/zootaxa.4418.4.3>
- Zhao, C. & Tong, X.L. (2017) Two new species and two new records of fungus-feeding Phlaeothripinae from China (Thysanoptera: Phlaeothripidae). *ZooKeys*, 694, 1–10.
<https://doi.org/10.3897/zookeys.694.14616>
- Zhao, C., Zhang, H.R. & Tong, X.L. (2018) Species of the fungivorous genus *Psalidothrips* Priesner from China, with five new species (Thysanoptera, Phlaeothripidae). *ZooKeys*, 746, 25–50.
<https://doi.org/10.3897/zookeys.746.22882>