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Exploring meristic characteristics of Australian parasitengone mites (Acari: Trombidiformes)

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ABSTRACT. The meristic data of the following species of terrestrial Parasitengona (Acari: Trombidiformes) from Australia are given: *Paratrombium australe* Southcott, 1997, *P. anemone* Southcott, 1997, *P. curculionis* Southcott, 1997, *Eutrombidium trigonum* (Walsh, 1866), *E. orientale* Southcott, 1993, *Hexathrombium willisi* Southcott, 1993, *Verdunella lockleii* (Welbourn & Young, 1988), *Buandikia anneae* Southcott, 1994, *Willungella willungae* (Hirst, 1931), *Workandella virgata* Southcott, 1994, *Thormicrella janeae* Southcott, 1994, *Yurebilla gracilis* Southcott, 1996, *Abrolophus tonsor* (Southcott, 1996), *Harpagella moxonae* Southcott, 1996, *Callidosoma tindalei* Southcott, 1972, *C. rostratum* Southcott, 1972, *C. tiki* Southcott, 1972, *C. dasypodiae* (Womersley, 1934), and *C. susanae* Clark, 2014. The type specimens were deposited in the South Australian Museum, Adelaide, Australia (SAM). A key to *hermanni* species subgroup is also included.

Keywords: Identification key, leg segments, setal formula, South Australian museum, species subgroup, type specimens

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INTRODUCTION

There are seven superfamilies of terrestrial parasitengone mites: Allotanaupodoidea Zhang & Fan, 2007 contains family Allotanaupodidae Zhang & Fan, 2007; Amphotrombidoidea Zhang, 1998 with family Amphotrombiidae Zhang, 1998; Calyptostomatoidea Oudemans, 1923 with family Calyptostomatidae Oudemans, 1923, Erythraeoidea Robineau-Desvoidy, 1828 contains two families Erythraeidae Robineau-Desvoidy, 1828 and Smaridídae Vitzthum, 1929, Tanaupodoidea Thor, 1935 with family Tanaupodidae Thor, 1935, Trombidioidea Leach, 1815 with three epifamilies Trombelloidae Thor, 1935 with familes Audyanidae Southcott, 1987, Chyzeriidae Womersley, 1954, Johnstonianidae Thor, 1935, Neotrombidiidae Feider, 1955 and Trombellidae Thor, 1935; Trombiculoidae Ewing, 1929 (= Trombiculoidea sensu Wen 1999) with family Trombiculidae Ewing, 1929 and Trombidioidae Leach, 1815 with families Achaemenothrombiidae Saboori, Wohltmann & Hakimitabar, 2010, Microtrombidiidae Thor, 1935, Neothrombiidae Feider, 1959, Podothrombiidae Thor, 1935 and Trombidiidae Leach, 1815 and Yurebilloidea Southcott, 1996 with family Yurebillidae Southcott, 1996 (Costa et al., 2024).

There are seven subfamilies in the family Erythraeidae Robineau-Desvoidy, 1828, namely, Abrolophinae Witte, 1995; Balaustiinae Grandjean, 1947; Callidosomatinae Southcott, 1957; Erythraeinae Robineau-Desvoidy, 1828; Leptinae Billberg, 1820; Myrmicotrombiinae Southcott, 1957 and Phanolophinae Southcott, 1946 (Witte, 1995). Family Microtrombidiidae Thor, 1935 is a large family of parasitengone mites (Acari: Trombidiformes). It includes three subfamilies, namely Eutrombidiinae

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Thor, 1935; Microtrombidiinae Thor, 1935; Valgothrombiinae Gabryś, 1999 (Gabryś, 1999), but 11 genera remained microtrombidiids *incertae sedis* (Mąkol & Wohltmann, 2012). The subfamily Microtrombidiinae has the greatest number of genera (about 90 genera described from larval and post-larval stages) (Mąkol & Wohltmann, 2012; Hakimitabar & Saboori, 2024).

In this paper, we correct/complete some morphological data of some species of parasitengone mites belonging to subfamilies Paratrombiinae, Eutrombidiinae, Microtrombidiinae, Erythraeinae, Abrolophinae, Callidosomatinae and family Yurebillidae based on the examination of type materials.

MATERIAL AND METHODS

We examined 19 type species of the subfamilies Paratrombiinae, Eutrombidiinae, Microtrombidiinae, Erythraeinae, Abrolophinae, Callidosomatinae in the South Australian Museum (SAM). The terminology and abbreviations are adapted from Wohltmann et al. (2006) and Saboori et al. (2009). We used Mąkol & Wohltmann (2012, 2013) for species distributions and papers published after 2013.

RESULTS

Taxonomic hierarchy

Class Arachnida Lamarck, 1801

Order Trombidiformes Reuter, 1909

Family Trombidiidae Leach, 1815

Subfamily Paratrombiinae Feider, 1959

Genus *Paratrombium* Bruyant, 1910

Type species. *Paratrombium egregium* Bruyant, 1910:350, by original designation.

Remarks. Southcott (1997) described four species of *Paratrombium*. We re-examined three species as follows and presented the leg setal formula.

***Paratrombium australe* Southcott, 1997**

Distribution. Australia

Specimen examined. ACB294L3 (Paratype)

Leg setal formula. Leg I: Ta – 1ω, 1ε, 2ζ, 17n; Ti – 2φ, 1κ, 5n; Ge – 2σ, 1κ, 4n; Fe – 5n; Tr – 1n; Cx – 2n. Leg II: Ta – 1ω, 1ε, 14n; Ti – 2φ, 5n; Ge – 1σ, 1κ, 3n; Fe – 4n; Tr – 1n; Cx – 1n. Leg III: Ta – 13n; Ti – 5n; Ge – 1σ, 3n; Fe – 4n; Tr – 1n; Cx – 1n.

***Paratrombium anemone* Southcott, 1997**

Distribution. Papua New Guinea

Specimens examined. ACB267 (Holotype)

Leg setal formula. Leg I: Ta – 1ω, 1ε, 2ζ, 17n; Ti – 2φ, 1κ, 5n; Ge – 2σ, 1κ, 4n; Fe – 5n; Tr – 1n; Cx – 2n. Leg II: Ta – 1ω, 1ε, 14n; Ti – 2φ, 5n; Ge – 1σ, 1κ, 3n; Fe – 4n; Tr – 1n; Cx – 1n. Leg III: Ta – 13n; Ti – 5n; Ge – 1σ, 3n; Fe – 4n; Tr – 1n; Cx – 1n.

***Paratrombium curculionis* Southcott, 1997**

Distribution. Australia

Specimens examined. ACB1303 (Holotype)

Leg setal formula. Leg I: Ta – 1ω, 1ε, 2ζ, 17n; Ti – 2φ, 1κ, 5n; Ge – 2σ, 1κ, 4n; Fe – 5n; Tr – 1n; Cx – 2n. Leg II: Ta – 1ω, 1ε, 14n; Ti – 2φ, 5n; Ge – 1σ, 1κ, 3n; Fe – 4n; Tr – 1n; Cx – 1n. Leg III: Ta – 13n; Ti – 5n; Ge – 1σ, 3n; Fe – 4n; Tr – 1n; Cx – 1n.

Family Microtrombidiidae Thor, 1935

Subfamily Eutrombidiinae Thor, 1935

Genus *Eutrombidium* Verdun, 1909

Type species. *Trombidium trigonum* Hermann, 1804, by subsequent designation (Oudemans, 1909:16).
Eutrombidium Verdun, 1909:245.
Eutrombidium: Southcott, 1993:893.

Eutrombidium trigonum (Hermann, 1804)

Distribution. Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Great Britain, Italy, Norway, Poland, Romania, Serbia, Switzerland, and The Netherlands (Mąkol & Wohltmann, 2012); Montenegro (Saboori & Pešić, 2006); Canada, Mexico, USA (see *E. locustarum*); Greece (Rhodes), Turkey.

Specimens examined. ACB644 (Specimen identified as *E. occidentale*).

Remarks. Southcott (1993) described *E. occidentale* from the USA. It was synonymized by Husband and Wohltmann (2011). They stated the number of setae on legs I–III. We re-examined species identified as *E. occidentale* deposited in SAM and presented the leg setal formula. The number of setae that account was different from those in Husband and Wohltmann's paper, such as the number of normal setae on Ta I (18 vs. 15) & III (13 vs. 12). Also, Haitlinger (2015) synonymized *E. locustarum* with *E.trigonum*.

Leg setal formula. Leg I: Ta – 1ω, 1ε, 2ζ, 18n; Ti – 2φ, 1κ, 6n; Ge – 2σ, 1κ, 4n; Fe – 6n; Tr – 1n; Cx – 2n. Leg II: Ta – 1ω, 1ε, 1ζ, 14n; Ti – 2φ, 5n; Ge – 1σ, 1κ, 2n; Fe – 5n; Tr – 1n; Cx – 1n. Leg III: Ta – 13n; Ti – 5n; Ge – 1σ, 2n; Fe – 4n; Tr – 1n; Cx – 1n.

Eutrombidium orientale Southcott, 1993

Distribution. Canada, USA.

Specimens examined. ACB1199 (Paratype).

Remarks. We re-examined the species and presented the leg setal formula as follows because there is no data in the original paper.

Leg setal formula. Leg I: Ta – 1ω, 1ε, 2ζ, 17n; Ti – 2φ, 1κ, 6n; Ge – 2σ, 1κ, 4n; Fe – 6n; Tr – 1n; Cx – 2n. Leg II: Ta – 1ω, 1ε, 1ζ, 14n; Ti – 2φ, 5n; Ge – 2σ, 1κ, 2n; Fe – 5n; Tr – 1n; Cx – 1n. Leg III: Ta – 13n; Ti – 5n; Ge – 1σ, 2n; Fe – 4n; Tr – 1n; Cx – 1n.

Genus *Hexathrombium* Cooreman, 1944

Type species. *Hexathrombium spatuliferum* Cooreman, 1944, by original designation.
Hexathrombium Cooreman, 1944:1.
Beronium Haitlinger, 1994:48 [part.].

Hexathrombium willisi Southcott, 1993

Distribution. USA

Specimens examined. ACB846B (Paratype).

Remarks. Southcott (1993) described this species based on two specimens collected from *Eunota circumpicta* (LaFerté-Sénectère, 1841) [Syn.: *Cicindela circumpicta* LaFerté-Sénectère, 1841 and *Habroscelimorpha circumpicta* (LaFerté-Sénectère, 1841)] (Col. Cicindelidae) but he ignored the number of normal setae on Leg I–III and stated just specialized setae. Mąkol et al. (2021) calculated the leg chaetotaxy of this species) (see table 2) from Southcott`s paper (1993), so we re-examined species and presented the leg setal formula as follows:

Leg setal formula. Leg I: Ta – 1ω, 1ε, 2ζ, 17n; Ti – 2φ, 1κ, 6n; Ge – 2σ, 1κ, 4n; Fe – 6n; Tr – 1n; Cx – 2n. Leg II: Ta – 1ω, 1ε, 1 ζ, 14n; Ti – 2φ, 5n; Ge – 1σ, 2n; Fe – 5n; Tr – 1n; Cx – 1n. Leg III: Ta – 13n; Ti – 5n; Ge – 1σ, 2n; Fe – 4n; Tr – 1n; Cx – 1n. Also, setae AL and PL minutely barbed and AM nude.

Genus *Verdunella* Southcott, 1993

Type species. *Eutrombidium lockleii* Welbourn & Young, 1988, by original designation.
Verdunella Southcott, 1993:942.
Verdunella lockleii (Welbourn & Young, 1988)

Distribution. USA

Specimens examined. N1990271 and N1990272 (Paratypes).

Remarks. Southcott (1993) established the genus *Verdunella*. He transferred the species *Eutrombidium lockleii* to the genus *Verdunella*. The species was described from 56 larvae taken ectoparasitic on two species of North American spiders. The number of normal setae on Leg I–III was not stated in the original paper written by Welbourn and Young (1988) and Southcott (1993), so we re-examined species and presented the leg setal formula as follows:

Leg setal formula. Leg I: Ta – 1ω, 1ε, 2ζ, 17n; Ti – 2φ, 1κ, 6n; Ge – 2σ, 1κ, 4n; Fe – 6n; Tr – 1n; Cx – 2n. Leg II: Ta – 1ω, 1ε, 14n; Ti – 2φ, 5n; Ge – 1σ, 1κ, 2n; Fe – 5n; Tr – 1n; Cx – 2n. Leg III: Ta – 13n; Ti – 5n; Ge – 1σ, 2n; Fe – 4n; Tr – 1n; Cx – 1n.

Subfamily Microtrombidiinae Thor, 1935

Genus *Buandikia* Southcott, 1994

Type species. *Buandikia anneae* Southcott, 1994, by original designation.

Buandikia Southcott, 1994:17.

Buandikia anneae Southcott, 1994

Distribution. Australia

Specimens examined. ACB891 (holotype)

Remarks. Southcott (1994) established this genus based on only one species. Like other descriptions in his paper (1994), he did not write the number of normal setae on legs. We studied this species again and present the leg setal formula as follows:

Leg setal formula. Leg I: Ta – 1ω, 1ε, 2ζ, 18n; Ti – 2φ, 1κ, 6n; Ge – 2σ, 1κ, 4n; Fe – 6n; Tr – 1n; Cx – 2n. Leg II: Ta – 1ω, 1ε, 1ζ, 14n; Ti – 2φ, 5n; Ge – 1σ, 1κ, 2n; Fe – 5n; Tr – 1n; Cx – 1n. Leg III: Ta – 13n; Ti – 5n; Ge – 1σ, 2n; Fe – 4n; Tr – 1n; Cx – 1n. Famulus on Ta I placed proximal to the most proximal normal seta.

Genus *Willungella* Southcott, 1994

Type species. *Microtrombidium willungae* Hirst, 1931, by original designation.
Willungella Southcott, 1994:91.
Willungella: Gabryś, 1999:85.

Willungella willungae (Hirst, 1931)

Distribution. Australia

Specimens examined. Additional specimens originating from Workanda Creek, South Australia.

Remarks. Southcott (1994) established the genus *Willungella* based on larval and post-larval stages and transferred three species *Microtrombidium willungae* Hirst, 1931; *Ettmuelleria obscura* Womersley, 1936 and *Ettmuelleria australis* Womersley, 1936 to the genus *Willungella*. Also, he described *Willungella leei* Southcott, 1994 and redescribed the larva and postlarva of *W. willungae*. In his paper, he ignored the number of normal setae on Leg I–III and stated just specialized setae, so we re-examined the species and presented the leg setal formula as follows:

Leg setal formula. Leg I: Ta – 1ω, 1ε, 2ζ, 18n; Ti – 2φ, 1κ, 6n; Ge – 2σ, 1κ, 4n; Fe – 6n; Tr – 1n; Cx – 2n. Leg II: Ta – 1ω, 1ε, 1ζ, 14n; Ti – 2φ, 5n; Ge – 1σ, 2n; Fe – 5n; Tr – 1n; Cx – 1n. Leg III: Ta – 13n; Ti – 5n; Ge – 1σ, 2n; Fe – 4n; Tr – 1n; Cx – 1n. Famulus on Ta I placed proximal to the most proximal normal seta.

Genus *Workandella* Southcott, 1994

Type species. *Workandella virgata* Southcott, 1994, by original designation.
Workandella Southcott, 1994:8.

Workandella virgata Southcott, 1994

Distribution. Australia

Specimens examined. ACB359L6 (Holotype)

Remarks. Southcott (1994) described this species from Workanda Creek, National Park, Belair, and holotype larva (ACB359L6) obtained from adult (ACB359A) collected in soil under stones and other objects, under *Exocarpos cupressiformis* Labill. (Santalaceae) and 20 larvae (ACB359L2-5, 7-21), obtained from eggs laid by the female. He ignored the number of normal setae on Leg I–III and stated just specialized setae, so we re-examined species and presented the leg setal formula as follows:

Leg setal formula. Leg I: Ta – 1ω, 1ε, 2ζ, 18n; Ti – 2φ, 1κ, 6n; Ge – 2σ, 1κ, 4n; Fe – 6n; Tr – 1n; Cx – 2n. Leg II: Ta – 1ω, 1ε, 1ζ, 14n; Ti – 2φ, 5n; Ge – 1σ, 1κ, 2n; Fe – 5n; Tr – 1n; Cx – 2n. Leg III: Ta – 13n; Ti – 5n; Ge – 1σ, 2n; Fe – 4n; Tr – 1n; Cx – 1n. Famulus on Ta I placed proximal to the solenidion but after the normal setae. Hypostomala minute with 3 digits. Ta III without lophotrix.

Genus *Thormicrella* Southcott, 1994

Type species. *Thormicrella janeae* Southcott, 1994, by original designation.
Thormicrella Southcott, 1994:87.

Thormicrella janeae Southcott, 1994

Distribution. Australia

Specimens examined. ACB317 (Holotype)

Remarks. Southcott (1994) described this species based on one larva collected from moss, obtained by Berlese funnel extraction, but he ignored the number of normal setae on Leg I–III and stated just specialized setae, so we re-examined species and presented the leg setal formula as follow:

Leg setal formula. Leg I: Ta – 1ω, 1ε, 2ζ, 17n; Ti – 2φ, 1κ, 6n; Ge – 2σ, 1κ, 4n; Fe – 6n; Tr – 1n; Cx – 2n. Leg II: Ta – 1ω, 1ζ, 14n; Ti – 2φ, 5n; Ge – 1σ, 2n; Fe – 5n; Tr – 1n; Cx – 1n. Leg III: Ta – 11n; Ti – 5n; Ge – 1σ, 2n; Fe – 4n; Tr – 1n; Cx – 1n. Famulus on Ta I placed proximal to the most proximal normal seta. There are two solenidia on each Ti I & II, with one solenidion located in the middle half and the other one located in the distal half.

Family Yurebillidae Southcott, 1996

Genus *Yurebilla* Southcott, 1996

Type species. *Yurebilla gracilis* Southcott, 1996, by original designation.
Yurebilla Southcott, 1996b:56.

Yurebilla gracilis Southcott, 1996

Distribution. Australia

Specimens examined. ACB1122A (Paratype)

Remarks. Southcott (1996b) established the family Yurebillidae. He described *Yurebilla gracilis* which was collected from the Mount Lofty Ranges, South Australia, from among soil and leaf litter, free-living. In the original paper, he ignored the number of normal setae on legs I–III and just stated specialized setae, so we re-examined species and presented the leg setal formula as follows:

Leg setal formula. Leg I: Ta – 1ω, 1ε, 2ζ, 17n; Ti – 2φ, 1κ, 5n; Ge – 1σ, 1κ, 3n; Fe – 5n; Tr – 1n; Cx – 2n. Leg II: Ta – 1ω, 1ε, 12n; Ti – 2φ, 5n; Ge – 1σ, 3n; Fe – 4n; Tr – 1n; Cx – 1n. Leg III: Ta – 11n; Ti – 5n; Ge – 1σ, 3n; Fe – 4n; Tr – 1n; Cx – 1n.

Family Erythraeidae Robineau-Desvoidy, 1828

Subfamily Abrolophinae Witte, 1995

Genus *Abrolophus* Berlese, 1891

Type species. *Trombidium quisquiliarum* Hermann, 1804, by original designation.
Abrolophus Berlese, 1891:fasc. 59, No. 1.
Hauptmannia Oudemans, 1910:48.
Balaustoides Southcott, 1989:173.
Rudaemannia Haitlinger, 2000:386.
Abrolophus: Wohltmann & Mąkol, 2012:70.

Abrolophus tonsor (Southcott, 1996)

Distribution. Australia

Specimens examined. ACA2696 (Holotype)

Remarks. Southcott (1996a) described this species as *Hauptmannia tonsor* based on one larva collected from soil debris. When the genus *Hauptmannia* was synonymized with *Abrolophus*, this species transferred to *Abrolophus,* and it belongs to the group with a comb-like seta on palpal tarsus. Like most of his papers, he did not write about the number of normal setae on leg I–III, so we re-examined species and presented the leg setal formula as follows:

Leg setal formula. Leg I: Ta – 1ω, 1ε, 2ζ, 1z, 24n; Ti – 2φ, 1κ, 13n; Ge 1σ, 1κ, 11n; TFe – 8n; BFe – 4n; Tr – 2n; Cx – 1n. Leg II: Ta – 1ω, 2ζ, 19n; Ti – 2φ, 13n; Ge – 1σ, 1κ, 9n; TFe – 5n; BFe – 4n; Tr – 2n; Cx – 1n. Leg III: Ta – 1ζ, 18n; Ti – 1φ, 13n; Ge – 1σ, 9n; TFe – 5n; BFe – 4n; Tr – 2n; Cx – 1n.

Genus *Harpagella* Southcott, 1996

Type species. *Harpagella moxonae* Southcott, 1996, by original designation.
Harpagella Southcott, 1996a:257.

Harpagella moxonae Southcott, 1996

Distribution. Australia

Specimens examined. ACA1983A (Paratype)

Remarks. Southcott (1996a) established the monotypic genus *Harpagella* based on the larval stage. He ignored the number of normal setae on legs I–III and stated just specialized setae in the original description, so we re-examined species and presented the leg setal formula as follows:

Leg setal formula. Leg I: Ta – 1ω, 1ε, 2ζ, 1z, 24n; Ti – 2φ, 1κ, 15n; Ge – 1σ, 1κ, 9n; TFe – 9n; BFe – 4n; Tr – 2n; Cx – 1n. Leg II: Ta – 1ω, 2ζ, 1z, 21n; Ti – 2φ, 15n; Ge – 1σ, 1κ, 9n; TFe – 8n; BFe – 4n; Tr – 2n; Cx – 2n. Leg III: Ta – 2ζ, 21n; Ti – 1φ, 15n; Ge – 1σ, 9n; TFe – 8n; BFe – 4n; Tr – 2n; Cx – 2n.

Subfamily Callidosomatinae Southcott, 1957

Genus *Callidosoma* Womersley, 1936

Type species. *Callidosoma ripicola* Womersley, 1934, by original designation.
Callidosoma Womersley, 1936:120.

Remarks. There are 24 species in this genus. Among those species, 19 are known from larvae, and four are known from both larvae and post-larval stages. *Callidosoma ripicolum* (Womerseley 1934) is described only as adults (Clark, 2014, Costa et al., 2017). Southcott (1972) described three species of *Callidosoma* stated some metric data, and wrote just specialized setae for them. We re-examined species and presented the leg setal formula.

Callidosoma tindalei Southcott, 1972

Distribution. Australia

Specimens examined. ACA1838A (Holotype)

Leg setal formula. Leg I: Ta – 1ω, 1ε, 2ζ, 1z, 29n; Ti – 2φ, 1z, 1κ, 18n; Ge 1σ, 1κ, 12n; TFe – 5n; BFe – 4n; Tr – 1n; Cx – 1n. Leg II: Ta – 1ω, 1ζ, 30n; Ti – 2φ, 19n; Ge –1κ, 12n; TFe – 5n; BFe – 4n; Tr – 1n; Cx – 2n. Leg III: Ta – 1ζ, 30n; Ti – 1φ, 19n; Ge – 12n; TFe – 5n; BFe – 2n; Tr – 1n; Cx – 2n. Solenidion placed on distal half of Ge I and it is distal to the most distal normal setae. Anterior hypostomalae nude, posterior one barbed, and galealae nude. Palpal tarsus with seven setae, including five normal setae, a solenidion, and one eupathidium.

Callidosoma rostratum Southcott, 1972

Distribution. Australia

Specimens examined. ACA1847 (Holotype)

Leg setal formula. The setae on some segments of the legs were not clear, so we stated just the number of setae that were clear. Leg I: Ta – 29n; Ge – 1σ, 1κ, 12n; TFe – 5n; BFe – 4n; Tr – 1n; Cx – 1n. Leg II: Ta – 30n; Ge –1κ, 12n; TFe – 5n; BFe – 4n; Tr – 1n; Cx – 2n. Leg III: Ta 30n; Ge – 12n; TFe – 5n; BFe – 2n; Tr – 1n; Cx – 2n.

Callidosoma tiki Southcott, 1972

Distribution. New Zealand.

Specimens examined. ACA1836 A (Holotype)

Leg setal formula. Leg I: Ta – 1ω, 1ε, 2ζ, 1z, 29n; Ti – 2φ, 1z, 1κ, 18n; Ge 1σ, 1κ, 12n; TFe – 5n; BFe – 4n; Tr – 1n; Cx – 1n. Leg II: Ta – 1ω, 1ζ, 30n; Ti – 2φ, 19n; Ge –1κ, 12n; TFe – 5n; BFe – 4n; Tr – 1n; Cx – 2n. Leg III: Ta – 1ζ, 30n; Ti – 1φ, 19n; Ge – 12n; TFe – 5n; BFe – 2n; Tr – 1n; Cx – 2n. Solenidion placed distal half of Ge I and it is proximal to the most distal normal setae. Anterior hypostomalae nude, posterior one barbed, and galealae nude. Palpal tarsus with seven setae, including five normal setae, a solenidion, and one eupathidium.

Callidosoma dasypodiae (Womersley, 1934)

Distribution. Australia

Specimens examined. ACA1761A (Holotype)

Remarks. Womersley (1934) described *Erythraeus dasypodiae* as a species that transferred to *Callidosoma*. Southcott (1966) redescribed this species. In the original paper, he stated all metric data but ignored the number of normal setae on leg I–III and wrote just specialized setae, so we re-examined species and presented the leg setal formula as follows:

Leg setal formula. Leg I: Ta – 1ω, 1ε, 2ζ, 1z, 29n; Ti – 2φ, 1z, 1κ, 18n; Ge – 1σ, 1κ, 12n; TFe – 5n; BFe – 4n; Tr – 1n; Cx – 1n. Leg II: Ta – 1ω, 1ζ, 30n; Ti – 2φ, 19n; Ge – 1κ, 12n; TFe – 5n; BFe – 4n; Tr – 1n; Cx – 2n. Leg III: Ta – 1ζ, 30n; Ti – 1φ, 19n; Ge – 12n; TFe – 5n; BFe – 2n; Tr – 1n; Cx – 2n.

Callidosoma susanae Clark, 2014

Distribution. New Zealand

Specimens examined. Paratype

Remarks. This species was described by Clark (2014). His description was complete and stated all meristic and metric data. We re-examined one paratype deposited in SAM. The meristic data extracted by us were matched with Clarks's paper exception of some data as follows: Number of normal setae on Ti I (18 in our study vs. 17); Ta I (29 vs. 28), Ta II (29 vs. 30) and Ti III (19 vs. 18). Solenidion (Sigma) placed on distal half of Ge I and it is proximal to the most distal normal setae, but in Figure 4A in Clarks' paper, there are two setae after solenidion, considering that position of solendion is important to identify species, the position of Sigma must be clear.

Note on *Abrolophus* Berlese, 1891. Çobanoğlu et al. (2023) prepared some meristic data of the genus *Abrolophus* without a comb–like seta on palptarsus in Table 4 but in their paper, the title of table stated by mistake, so the corrected title is "Table 4 Some meristic data of the genus *Abrolophus* without a comb–like seta on palptarsus".

Note on *Charletonia* Oudemans, 1910. Hakimitabar & Saboori (2022) prepared "A review of *Charletonia* Oudemans (Trombidiformes: Erythraeidae) based on the larval stage", the key to species of *hermanni* species subgroup was missed, so the key is presented here:

Key to species of *hermanni* species subgroup

1	fn Ge I–III 11-11-11, fn Ti I–III 13-14-14.	***C. ghanensis* Haitlinger, 2006** [Ghana]
—	fn Ge I–III & fn Ti I–III otherwise.	**2**
2	Ti III < 150, Ti III/AW < 2.	**3**
—	Ti III > 180, Ti III/AW > 2.6.	**4**
3	Ti III/AW 1.35, Ti III 119, W 116.	***C. hermanni* Southcott, 1966** [Australia]
—	Ti III/AW 1.97, Ti III 146, W 106.	***C. bojnordensis* Haitlinger & Saboori, 2008** [Iran]
4	Ti I < 155, Ti III < 205, ASens very close to AL than ML.	***C. postojnensis* Haitlinger, 2011** [Slovenia]
—	Ti I > 185, Ti III > 220, ASens close to ML than AL.	**5**
5	SD < 95, W < 110, Ti III/AW < 2.68, DS up to 45.	***C. lawrencei* Southcott, 1966** [South Africa]
—	SD > 100, W > 115, Ti III/AW > 2.70, longer DS ≥ 60.	**6**
6	Ti III ≥ 280, Ge III > 163, AW 96-98, fD 134-150.	***C. milenae* Haitlinger, 2007** [South Africa, Suazi]
—	Ti III < 275, Ge III < 159, AW < 92, fD < 100.	**7**
7	Ta III 153–167, Ta II 131–149, S 116-129.	***C. enghoffi* Southcott, 1991** [Spain]
—	Ta III 172–176, Ta II 152–170, S 82.	***C. adellae* Haitlinger, 2007** [Madagascar]

DISCUSSION

Saboori et al. (2020) and Hakimitabar & Saboori (2022), for species of *Leptus* and *Charletonia,* respectively, considered the number of normal setae on TFe–Ta in general as less valuable for taxonomic decisions. It seems to be common in *Callidosoma* species and even in most genera of Microtrombidiinae. So, we suggest using the metric data, especially ratios, as well as the shape of scutum and chelicerae, number and shape (barbed, nude, or spine-like) of subcapitular and *cs* setae, number of barbed and nude setae on palpal tarsus and tibia, number, position and length of solenidia as diagnostic and discriminatory ones.

AUTHOR'S CONTRIBUTION

The authors confirm their contribution to the paper as follows: M. Hakimitabar: Collecting data, Writing the original draft, editing and reviewing; A. Saboori: Collecting data, editing and reviewing. The authors read and approved the final version of the manuscript.

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AVAILABILITY OF DATA AND MATERIAL

The specimens listed in this study are deposited in the Acarological Collection, South Australian Museum (SAM), Adelaide, Australia, and are available from the curator upon request.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study only included arthropod material, and all required ethical guidelines for the treatment and use of animals were strictly adhered to in accordance with international, national, and institutional regulations. No human participants were involved in any studies conducted by the authors for this article.

CONSENT FOR PUBLICATION

Not applicable.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this paper.

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بررسی ویژگی‌های مریستیک چند گونه از کنه‌های پارازیتنگونای (Acari: Trombidiformes) استرالیا

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چکیـده: در این مقاله داده‌های مریستیک چند گونه از کنه‌های پارازیتنگونای خشکی‌زی که از کشور استرالیا توصیف شده بود آمده است. این گونه‌ها عبارتند از: *Paratrombium australe* Southcott, 1997، *P. anemone* Southcott, 1997، *P. curculionis* Southcott, 1997، *E. orientale* Southcott, 1993، *Hexathrombium willisi* (Welbourn & Young, 1988)، *Verdunella lockleii* Southcott, 1994، *Buandikia anneae* (Hirst, 1931)، *Willungella willungae* Southcott, 1994، *Workandella virgata* Southcott, 1994، *Thormicrella janeae* Southcott, 1996، *Yurebilla gracilis* (Southcott, 1996)، *Abrolophus tonsor* Southcott, 1996، *Harpagella moxonae* Southcott, 1972، *Callidosoma tindalei* Southcott, 1972، *C. rostratum* Southcott, 1972، *C. tiki* (Womersley, 1934)، *C. dasypodiae* و *C. susanae* Clark, 2014. نمونه‌های تایپ در موزه استرالیای جنوبی، شهر آدلاید استرالیا نگهداری می‌شوند. همچنین کلید شناسایی کنه‌های زیرگروه *hermanni* نیز آورده شده است

واژگـان کلیدی: کلید شناسایی، بندهای پاها، فرمول موها، موزه استرالیای جنوبی، زیرگروه گونه ای، نمونه های تایپ