



## Checklist of Mite Families Ascidae and Blattisociidae (Acari: Mesostigmata) of Taiwan

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### ABSTRACT

Mite families Ascidae, Blattisociidae and Melicharidae have long been considered members of a single family, Ascidae *sensu lato* (*s.l.*). Some mite species in these families are considered natural enemies of mite and insect pests; however, the diversity and biology of these mites remains unclear. This study reports a checklist containing the two families from Taiwan, Ascidae *sensu stricto* (*s.s.*) (2 genera, 13 species) and Blattisociidae (3 genera, 18 species), and provides all known synonyms and information on type depository, type locality, type habitat, and distribution for each included species.

**Key words:** Ascidae, Blattisociidae, species checklist, Taiwan

### Introduction

Ascidae *sensu lato* (*s.l.*) species are receiving attention gradually because of their application potential in biological control of damaging mites and insects, particularly in agriculture (Moraes *et al.*, 2015a). These species are commonly observed in soil, litter, and stored grains; on flowers or leaves; and under tree barks (Halliday, 1998; Lin, 2003; Moraes *et al.*, 2015a; Tseng, 1982). Lindquist *et al.* (2009) proposed that the previous Ascidae (*s.l.*) is a paraphyletic group, which can be divided into 3 groups: Ascidae *sensu stricto* (*s.s.*), Blattisociidae, and Melicharidae. Famah Sourassou *et al.* (2015) proposed the phylogeny of Ascidae (*s.l.*) and the related groups on the basis of molecular data;

their results supported the previous classification by Lindquist *et al.* (2009).

These species have been identified in a wide range of countries and habitats, and 3 online databases have recorded 381, 392, and 217 valid species in the Ascidae (*s.s.*), Blattisociidae, and Melicharidae families, respectively (Santos *et al.*, 2020a, b, c). Tseng (1982) recorded 2 species of Melicharidae from Taiwan; however, the existence of these species remains unverified because of questionable identification. Therefore, this study presents the checklist for 2 families from Taiwan: Ascidae (*s.s.*), including 2 genera and 13 species, and Blattisociidae, including 3 genera and 18 species; Melicharidae will be studied in a future article. For each species, synonyms and information on type depository,

type locality, type habitat, and distribution are also provided.

## Materials and Methods

The study followed the taxonomic treatment of Moraes *et al.* (2016). Type locality names were provided in the original articles, and current names were translated using the Geographic Name Information System of the Department of Land Administration of the Ministry of the Interior (Taiwan) (<http://gn.moi.gov.tw/geonames/Translation/Translation.aspx>). The museums and organizations mentioned in the original papers as type specimen depositories are listed below, with abbreviations checked by the authors.

BCIQ, Tainan Branch, Bureau of Commodity Inspection and Quarantine, Tainan, Taiwan. [BCIQ no longer possess specimens (Liao *et al.*, 2017)].

BMNH, British Museum (Natural History), London, England.

CNC, Canadian National Collection, Belleville, Canada.

De Leon's personal collection.

EPHE, Laboratoire d'Acarologie, l'Ecole Pratique des Hautes Études, Paris, France.

GIABR (Guangdong Institute of Applied Biological Resources, Guangzhou, China) (former GEI, Guangdong Entomological Institute).

HUM, Hokkaido University Museum, Hokkaido, Japan. (former Zoological Institute, Faculty of Science, Hokkaido University, Japan).

MSJC, Biological Laboratory, Matsuyama Shinonome Junior College, Matsuyama, Japan.

NMI, National Museum of Ireland, (cited as Irish National Museum), Dublin, Ireland;

NRC, National Research Centre, Dokki, Cairo, Egypt.

NYSM, New York State Museum, Albany, New York, U.S.A.

PU, Institute for Zoological Research, Potchefstroom University, Potchefstroom, South Africa.

SYAU, Department of Entomology, College of Plant Protection, Shenyang Agricultural University, Liaoning, China.

Tseng's personal collection [Liao *et al.* (2017) reported all specimens are currently missing].

USNMNH, Smithsonian National Museum of Natural History, Washington, U.S.A. (former USNM, United States National Museum, Washington DC, USA.).

ZSI, Zoological Survey of India, Calcutta, India.

## Results

### Family ASCIDAE Voigts and Oudemans, 1905 (囊蟎科)

Gamasidae Leach, 1815: 396.–Hirschmann, 1962: 38 (in part).

Ascainae Voigts and Oudemans, 1905: 237.

Ascaidae Oudemans, 1905 (sic).–Baker and Wharton, 1952: 63 (in part); Bernhard, 1963: 33 (in part).

Ascaidae.–Vitzthum, 1931a: 143.

Podocinini Berlese, 1916: 33 (Laelapidae) (in part).

Phytoseiinae Berlese, 1916: 33 (Phytoseiidae).–Baker and Wharton, 1952: 88 (in part).

Podocininae Berlese, 1916: 33 (Phytoseiidae).

Podocininae.–Vitzthum, 1941: 765 (in part); Baker and Wharton, 1952: 89 (in part); Hirschmann, 1962: 38 (in part).

Vitzthumiidae Thor, 1930: 114.–Bregotova, 1977b: 244.

Allolaelaptidae Oudemans, 1939: 23 (in part).

Laelapidae, Hyletastinae Vitzthum, 1941: 765 (in part).

Laelapidae, Hyletastinae.–Baker and Wharton, 1952: 93 (in part).

Laelapidae, Hypoaspidinae Vitzthum, 1941: 762 (in part).

Laelapidae, Hypoaspidinae.–Baker and Wharton, 1952: 93 (in part).

Aceosejidae Baker and Wharton, 1952: 58.–Athias-Henriot, 1957: 326 (in part); Evans, 1957: 224 (in part); Baker *et al.*, 1958: 28 (in part); Hughes, 1961: 224 (in part); Bregotova, 1977a: 169 (in part).

Aceosejinae.–Evans, 1957: 226 (in part); Karg, 1962: 35 (in part).

Platyseiinae Evans, 1957: 225 (in part).–Evans and Hyatt, 1960: 33; Evans, 1963: 302 (in part).

Melicharinae Hirschmann, 1962: 38 (Gamasidae) (in part).

Blattisociinae.—Chant, 1963: 243 (in part);  
Lindquist, 1964: 74 (in part).  
Arctoseiinae Evans, 1963: 303.  
Podocinidae.—Westerboer, 1963: 179 (in part).  
Blattisociidae.—Lindquist, 1964: 68 (in part).  
Ascaidae (Oudemans) (sic).—Karg, 1965: 285 (in part).  
Arctoseiinae.—Lindquist and Evans, 1965: 32.  
Ascidae.—Lindquist and Evans, 1965: 5 (in part);  
Athias-Henriot, 1968: 234; Athias-Henriot,  
1973: 227 (in part); Zaher, 1986: 39 (in part);  
Farrier and Hennessey, 1993: 22 (in part);  
Halliday *et al.*, 1998: 1 (in part); Kalúz and  
Fend'a, 2005: 39 (in part); Gwiazdowicz,  
2007: 31 (in part).  
Blattisociini.—Lindquist and Evans, 1965: 45 (in part).  
Antennoseiidae Karg, 1965: 289.—Athias-Henriot,  
1973: 227.  
Halolaelapidae.—Karg, 1971: 83; 1993: 285 (in part).  
Rhodacaridae.—Karg, 1971: 83; 1993: 329 (in part).  
Ascinae.—Lindquist and Evans, 1965: 38 (in part);  
Athias-Henriot, 1973: 228; Zaher, 1986: 49  
(in part); Gwiazdowicz, 2007: 50.  
Ascini.—Lindquist and Evans, 1965: 39.  
Rhodacarinae.—Karg, 1993: 329 (in part).

**Genus *Asca* von Heyden, 1826 (囊蝨屬)**

*Asca* von Heyden, 1826: 610. Type species:  
*Gamasus aphidioides*, Fab. (sic), 1805 (= *Acarus aphidioides* Linnaeus, 1758: 616), by original designation.

*Ceratozercon* Berlese, 1910: 246 (Synonymized by Vitzthum, 1929: 30). Type species: *Zercon bicornis*.—Berlese, 1887a (not *Gamasus* (*Seius*) *bicornis* Canestrini and Fanzago, 1877) (= *Acarus aphidioides* Linnaeus), by original designation.

*Ceratozercon*.—Berlese, 1913: 204.

*Asca*.—Vitzthum, 1929: 30.

*Asca* (*Ascoseius*) Karg, 1979: 257.

**1. *Asca aphidioides* (Linnaeus, 1758) (似蚜囊蝨)**

*Acarus aphidioides* Linnaeus, 1758: 616.

*Gamasus aphidioides*.—Fabricius, 1805: 361.

*Asca aphidioides*.—Vitzthum, 1929: 30.

*Asca* (*Asca*) *aphidioides*.—Karg, 1979: 259.

*Zercon bicornis* (Canestrini and Fanzago,

1877).—Berlese, 1887b: 8. Misidentification, according to Lindquist and Evans, 1965: 42.

**Type depository:** unknown.

**Type locality:** Europe.

**Type habitat:** unknown.

**Distribution:** Africa: Ethiopia (Genis *et al.*, 1969). Asia: Iran (Moradian *et al.*, 2011), Japan (Aoki, 1968), Malaysia (Ishikawa, 1976), South Korea (Kaczmarek and Lee, 2000), Taiwan (Tseng, 1981). Europe: Austria (Franz and Beier, 1948), Bulgaria (Deltshev *et al.*, 1998), Croatia (Kaczmarek and Marquardt, 2010), Czech Republic (Halaskova, 1959). Oceania: Australia (Beaulieu and Walter, 2007), New Zealand (Wood, 1965). North America: Canada (Hurlbutt, 1963), USA (Hurlbutt, 1963). Europe: not mentioned country (Linnaeus, 1758), Finland (Huhta *et al.*, 2010), Germany (Willmann, 1949a), Hungary (Kandil, 1983), Lativa (Salmane, 1999), Moldova (Călugăr, 2010), Poland (Seniczak *et al.*, 1997), Romania (Călugăr, 2013), Russia (Marchenko, 2002), Slovakia (Fenda and Schniererova, 2004), Spain (Moraza, 2006), Switzerland (Schweizer, 1961).

**Note:** Tseng (1981) reported collecting the species from Fenchihu, Taiwan at 2000 m above sea level (a.s.l.); however, the location is at approximately 1400 m a.s.l. Thus, the collection sites may have been close to Alishan, Taiwan; further confirmation is required.

**2. *Asca equalis* De Leon, 1967 (平等囊蝨)**

*Asca equalis* De Leon, 1967a: 7.

*Asca* (*Asca*) *equalis*.—Karg, 1979: 260.

**Type depository:** De Leon's personal collection.

**Type locality:** Saint Augustine, Trinidad and Tobago.

**Type habitat:** on dead leaves on *Thunbergia erecta* [Plantae: Acanthaceae].

**Distribution:** Asia: Taiwan (Tseng, 1981). North America: Puerto Rico (De Leon, 1967b). South America: Trinidad and Tobago (De Leon, 1967a).

**Note:** The species was only recorded in the Neotropical region except Taiwan based on Y. H. Tseng's identification. However, Tseng

(1981) only provided illustration of the dorsal shield without detailed descriptions or measurements. In addition, all specimens are missing (Liao *et al.*, 2017). The presence of this species requires further confirmation.

**3. *Asca flabellifera* Tseng, 1981 (扇葉囊蟎)**  
*Asca flabellifera* Tseng, 1981: 19.

**Type depository:** BCIQ

**Type locality:** Hoili, Taichung, Taiwan. (now Houli District, Taichung City, Taiwan).

**Type habitat:** *Acer* sp. (Aceraceae).

**Distribution:** Asia: Taiwan (Tseng, 1981).

**Note:** Although Tseng (1981) did not mention the etymology of *flabellifera*, this scientific epithet might be based on the dorsal setae *J4*, *J5*, *Z4*, *S4*, and *S5* being narrow leaf-shaped.

**4. *Asca garmani* Hurlbutt, 1963 (加曼囊蟎)**

*Asca garmani* Hurlbutt, 1963: 491.

*Asca (Asca) garmani*.—Karg, 1979: 260.

*Asca germani* (sic).—Sousa Saraiva *et al.*, 2014: 363.

*Asca germanicus* (sic).—Marticorena and Berrío, 2014: 218.

**Type depository:** USNMNH.

**Type locality:** Houston's apple orchard, Route 44A, Storrs, Connecticut, USA

**Type habitat:** in sod of an apple [*Malus domestica* (Rosaceae)] orchard.

**Distribution:** Asia: India (Bhattacharyya, 1966), Indonesia (Affandi, 2008), Philippines (De Leon-Facundo and Corpuz-Raros, 2004), South Korea (Kaczmarek and Lee, 2000), Taiwan (Tseng, 1981). Central America: Costa Rica (Hurlbutt, 1963), Panama (Hurlbutt, 1963). Oceania: Australia (Walter *et al.*, 1993), New Zealand (Wood, 1966). North America: Bahamas (Hurlbutt, 1963), Canada (Hurlbutt, 1963), Mexico (Hurlbutt, 1963), Puerto Rico (Hurlbutt, 1963), USA (Hurlbutt, 1963). South America: Brazil (Mineiro and Moraes, 2001), Peru (Marticorena and Berrío, 2014).

**Note:** Tseng (1981) provided only an illustration of the dorsal shield without detailed descriptions or measurements. Furthermore, all specimens are currently missing (Liao *et*

*al.*, 2017). The presence of this species in Taiwan needs further confirmation.

**5. *Asca garmanioides* De Leon, 1967 (似加曼囊蟎)**

*Asca garmanioides* De Leon, 1967a: 3.

*Asca (Asca) garmanioides*.—Karg, 1979: 260.

**Type depository:** De Leon's personal collection.

**Type locality:** Simla, Trinidad and Tobago.

**Type habitat:** *Clidemia rubra* (Melastomataceae).

**Distribution:** Asia: Philippines (Corpuz-Raros *et al.*, 2004; De Leon-Facundo and Corpuz-Raros, 2004), Taiwan (Tseng, 1981). North America: Puerto Rico (De Leon, 1967b). South America: Trinidad and Tobago (De Leon, 1967b).

**Note:** Tseng (1981) provided an illustration of the dorsal shield without detailed descriptions or measurements. However, all specimens are missing (Liao *et al.*, 2017), and the presence of this species requires further confirmation.

**6. *Asca inflata* Tseng, 1981 (膨脹囊蟎)**

*Asca inflata* Tseng, 1981: 19.

**Type depository:** BCIQ

**Type locality:** Tonpu, Nantou, Taiwan. (now Dongpu, Xinyi Township, Nantou County, Taiwan).

**Type habitat:** litter.

**Distribution:** Asia: Taiwan (Tseng, 1981).

**Note:** Tseng (1981) described the species but did not mention its etymology of specific epithet. We consider that *inflata* might refer to inflate.

**7. *Asca lacertosa* Tseng, 1981 (壯漢囊蟎)**

*Asca lacertosa* Tseng, 1981: 10.

*Asca lacertosa*.—De Leon-Facundo and Corpuz-Raros, 2004: 222.

**Type depository:** BCIQ

**Type locality:** Shandiman, Pingtung, Taiwan. (now Sandimen Township, Pingtung County, Taiwan)

**Type habitat:** in bird nest.

**Distribution:** Asia: Indonesia: (Affandi, 2008), Philippines (De Leon-Facundo and Corpuz-Raros, 2004), Taiwan (Tseng, 1981).

**Note:** Tseng (1981) described the species but did not mention its etymology. We consider that *lacertosa* may refer to *lacertosus*, which means muscular.

**8. *Asca malathina* Tseng, 1981 (長毛囊蝨)**  
*Asca malathina* Tseng, 1981: 16.

**Type depository:** BCIQ

**Type locality:** Yilan, Taiwan. (now Yilan County, Taiwan).

**Type habitat:** on weeds.

**Distribution:** Asia: Taiwan: (Tseng, 1981).

**Note:** Tseng (1981) described the species but did not mention the etymology of its specific epithet. We could not deduce how the name was derived. Therefore, the Chinese name of this species was likely based on the long *J5* seta.

**9. *Asca microplumosa* Tseng, 1981 (微羽囊蝨)**  
*Asca microplumosa* Tseng, 1981: 8.

**Type depository:** BCIQ.

**Type locality:** Kuanshan, Taitung, Taiwan. (now Guanshan Township, Taitung County, Taiwan).

**Type habitat:** lichen.

**Distribution:** Asia: Taiwan (Tseng, 1981).

**Note:** Tseng (1981) described the species but did not mention the etymology of its epithet. We consider the term *microplumosa* a combination of “micro,” which means “minute”, and “plumose,” meaning “feather”.

**10. *Asca ramosa* Tseng, 1981 (多枝囊蝨)**  
*Asca ramosa* Tseng, 1981: 10.

**Type depository:** BCIQ.

**Type locality:** Kuanshan, Taitung, Taiwan. (now Guanshan Township, Taitung County, Taiwan).

**Type habitat:** on lichen.

**Distribution:** Asia: Taiwan (Tseng, 1981).

**Note:** Tseng (1981) described the species but did not mention the etymology of its epithet. We consider that *ramosa* refers to “ramose,” which means “having branches.”

**11. *Asca spicata* Hurlbutt, 1963 (帶釘囊蝨)**  
*Asca spicata* Hurlbutt, 1963: 514.  
*Asca (Asca) spicata*.—Karg, 1979: 260.

**Type depository:** USNMNH.

**Type locality:** Hawaii volcanic area.

**Type habitat:** *Metrosideros collina* (Myrtaceae).

**Distribution:** Asia: Indonesia (Affandi, 2008), Philippines (De Leon-Facundo and Corpuz-Raros, 2004), Taiwan (Tseng, 1981). Oceania: Hawaii (Hurlbutt, 1963).

**Note:** We consider *spicata* to denote “being furnished with spikes.”

**12. *Asca tricornicula* Tseng, 1981 (三角囊蝨)**  
*Asca tricornicula* Tseng, 1981: 14.

**Type depository:** BCIQ.

**Type locality:** Fushin, Taoyuan, Taiwan. (now Fuxing District, Taoyuan City, Taiwan).

**Type habitat:** on unidentified plant.

**Distribution:** Asia: Taiwan (Tseng, 1981).

**Note:** Tseng (1981) described the species but did not mention the etymology of its epithet. We consider *tricornicula* a combination of “tri-” and “cornicula,” derived from the tectum of the species.

**Genus *Gamasellodes* Athias-Henriot, 1961 (革鞍蝨屬)**

*Gamasellodes* Athias-Henriot, 1961: 480. Type species: *Gamasellodes vulgator* Athias-Henriot, by original designation.

*Gamasellodes*.—Lindquist and Evans, 1965: 42.

**13. *Gamasellodes lentiformis* (Tseng, 1989) (豆狀革鞍蝨)**

*Gamasellodes lentiformis* Tseng, 1989: 20.

**Type depository:** Tseng’s personal collection.

**Type locality:** Zhanghua, Taiwan. (now Changhua County, Taiwan)

**Type habitat:** *Thvarea involuta* (sic) (Poaceae).

**Distribution:** Asia: Taiwan (Tseng, 1989).

**Note:** The scientific name of the type habitat, “*Thvarea involuta*,” is a misspelling of *Thuarea involute*. Tseng (1989) described the species but did not mention the etymology of its specific epithet. We consider that *lentiformis* refers to “lentiform.”

**Family BLATTISOCIIDAE Garman, 1948**

(蠃蟷科)

- Gamasidae Leach, 1815: 396.–Hirschmann, 1962: 38 (in part).
- Seiidae Berlese, 1913: 12 (not Berlese, 1885: 129) (in part) (based on *Sejus* Koch, 1843: 92, not Koch, 1836: 17).
- Seiini Berlese, 1913: 12 (in part).–Lindquist and Evans, 1965: 36.
- Ascaidae (Oudemans, 1905) (sic).–Bernhard, 1963: 33 (in part).
- Seiini Berlese, 1913: 12 (in part).–Lindquist and Evans, 1965: 36.
- Phytoseiinae Berlese, 1916: 33 (Phytoseiidae).–Nesbitt, 1951: 1 (in part); Baker and Wharton, 1952: 88 (in part).
- Podocinidae Berlese, 1916: 33.–Westerboer, 1963: 179 (in part); Karg, 1971: 100, 113 (in part); 1976: 508.
- Podocininae.–Vitzthum, 1941: 765 (in part); Baker and Wharton, 1952: 89.
- Blattisociinae Garman, 1948: 18.
- Laelapidae.–Nesbitt, 1951: 1 (in part).
- Aceosejidae Baker and Wharton, 1952: 58.
- Aceosejidae.–Athias-Henriot, 1957: 326 (in part); 1968: 232 (in part); Evans, 1957: 224 (in part); Baker *et al.*, 1958: 28 (in part); Hughes, 1961: 224 (in part); Krantz, 1962: 4 (in part); Bregetova, 1977a: 169 (in part).
- Platyseiinae Evans, 1957: 225 (in part).
- Aceosejinae.–Evans, 1957: 226 (in part); 1958: 177 (in part); 1963: 302 (in part); Karg, 1962: 35 (in part); Krantz, 1962: 4 (in part).
- Aceodrominae Muma, 1961: 273.
- Melicharinae Hirschmann, 1962: 38 (in part).
- Platyseiinae.–Krantz, 1962: 4; Lindquist, 1964: 72 (in part); 2003: 157; Lindquist and Evans, 1965: 36; Zaher, 1986: 47.
- Blattisociinae.–Chant, 1963: 243 (in part); Lindquist, 1964: 74 (in part); Karg, 1965: 307; 1993: 171.
- Blattisociidae.–Lindquist, 1964: 68 (in part); Athias-Henriot, 1973: 227 (in part); Lindquist *et al.*, 2009: 164; Lindquist and Moraza, 2010: 2.
- Ascaidae (Oudemans) (sic).–Karg, 1965: 285 (in part).
- Ascaidae.–Lindquist and Evans, 1965: 5 (in part); Zaher, 1986: 39 (in part); Farrier and Hennessey, 1993: 22 (in part); Halliday *et al.*, 1998: 1 (in part).

Ascaidae.–Lindquist and Evans, 1965: 38 (in part); Zaher, 1986: 49 (in part).

Blattisociini.–Lindquist and Evans, 1965: 45 (in part).

Blattisocinae (sic).–Karg, 1971: 81.

Ascaidae.–Karg, 1971: 81; Kalúz and Fend'a, 2005: 39 (in part).

Gnoriminae Chaudhri, 1975: 100 (Phytoseiidae).

Gnoriminae.–Chaudhri *et al.*, 1979: 7.

Phytoseiidae.–Karg, 1993: 171 (in part); Muma, 1961: 270 (in part).

**Genus *Cheiroseius* Berlese, 1916 (手綏蟷屬)**

*Sejus* Koch, 1843: 92 (not Koch, 1836: 17) (Synonymized by Lindquist and Evans, 1965: 37). Type species: *Sejus viduus* Koch, 1839 (see Lindquist and Evans, 1965: 37 for details).

*Lasioseius* (*Cheiroseius*) Berlese, 1916: 40. Type species: *Seius unguiculatus* Berlese, by original designation.

*Lasioseius* (*Cheiroseius*).–Vitzthum, 1941: 765.

*Episeius* Hull, 1918: 63 (Synonymized by Evans and Hyatt, 1960: 49). Type species: *Paraseius serratus* Halbert, 1915, by original designation.

*Episeiella* Willmann, 1938: 164 (Synonymized by Evans and Hyatt, 1960: 49). Type species: *Episeiella heteropoda* Willmann, 1938, by original designation.

*Episeiella*.–Vitzthum, 1941: 765.

*Seius*.–Vitzthum, 1941: 765.

*Sejus*.–Evans and Hyatt, 1960: 49.

*Cheiroseius*.–Lindquist and Evans, 1965: 37.

*Cheiroseius* (*Posttrematus*) Karg, 1981: 55 (Synonymized by Halliday *et al.*, 1998: 20).

Type species: *Hypoaspis necorniger* Oudemans, 1903, by original designation.

*Cheiroseius* (*Posttrematus*).–Karg, 1993: 256.

**1. *Cheiroseius curtipes* (Halbert, 1923) (短足手綏蟷)**

*Lasioseius* (*Episeius*) *glaber* var. *curtipes* Halbert, 1923: 370.

*Episeius curtipes*.–Willmann, 1949b: 120.

*Sejus curtipes*.–Evans and Hyatt, 1960: 59.

*Cheiroseius curtipes* (sic).–Pinchuk, 1976: 88.

*Cheiroseius curtipes*.–Bregetova, 1977a: 195.

*Cheiroseius* (*Posttrematus*) *curtipes*.–Karg, 1981: 59.

*Episeius ovaspini* Schweizer, 1949: 69

(Synonymized by Evans and Hyatt, 1960: 59).

*Platyseius ovaspini*.—Schweizer, 1961: 124.

*Cheiroseius ovaspini*.—Westerboer, 1963: 302.

*Platyseius (Cheiroseius) ovaspini*.—Westerboer, 1963: 321.

**Type depository:** *C. curtipes*: NMI; *E. ovaspini*: not stated.

**Type locality:** *C. curtipes*: Lambay Island, Dublin, Ireland; *E. ovaspini*: Praspöl (= Ova Spin), Punt Perif and Alp Casana, Swiss National Park, Switzerland.

**Type habitat:** *C. curtipes*: wet moss; *E. ovaspini*: moss.

**Distribution:** Africa: Algeria (Athias-Henriot, 1961). Asia: China (Bai, 2013), Iran (Shamsi *et al.*, 2008), Japan (Ishikawa, 1969), Kazakhstan (Chelebiev, 1988), South Korea (Kontschán *et al.*, 2015), Taiwan (Tseng, 1984). Europe: Austria (Franz and Beier, 1948), Bulgaria (Deltshev *et al.*, 1998), Finland (Huhta *et al.*, 2010), Hungary (Kandil, 1983), Latvia (Lapina, 1976), Southern Ireland (Halbert, 1923), Moldova (Pinchuk, 1976), Poland (Dziuba, 1972), Russia (Makarova, 2009), Slovakia (Fenda and Schniererova, 2005), Switzerland (Schweizer, 1949). North America: Canada (Majka *et al.*, 2007), Jamaica (Evans and Hyatt, 1960).

**Note:** The scientific name *curtipes* is a combination of “curtus” and “pes,” which mean “short foot.”

**2. *Cheiroseius fenghuangensis* Bei, Zhou et Chen, 2010 (鳳凰手綫蟎)**

*Cheiroseius fenghuangensis* Bei, Zhou et Chen, 2010: 262.

**Type depository:** SYAU.

**Type locality:** Fenghuang Mountain, Fengcheng, Liaoning, China,

**Type habitat:** soil.

**Distribution:** Asia: China (Bei *et al.*, 2010), Taiwan (Ma *et al.*, 2011).

**Note:** Moraes *et al.* (2016) considered the original description of the species to be too confusing to determine the genus status, warranting further confirmation. Ma *et al.* (2011) recorded this species on

Shaoshueshan Trail, Taiwan (2057 m a.s.l.).

**3. *Cheiroseius nepalensis* (Evans and Hyatt, 1960) (尼泊爾手綫蟎)**

*Sejus nepalensis* Evans and Hyatt, 1960: 71.

*Cheiroseius nepalensis*.—Ishikawa, 1976: 237.

*Cheiroseius (Posttrematus) nepalensis*.—Karg, 1981: 60.

*Cheiroseius nepalensis* (sic).—Tseng, 1984: 772.

**Type depository:** BMNH.

**Type locality:** Siklis, Nepal

**Type habitat:** turf.

**Distribution:** Africa: Egypt (Zaher, 1986), United Arab Emirates (Negm, 2014). Asia: Azerbaijan (Alizadeh and Shirdel, 2012), India (Pramanik and Raychaudhuri, 1977), Iran (Khademi *et al.*, 2006), Japan (Ishikawa, 1969), Malaysia (Ishikawa, 1976), Nepal (Evans and Hyatt, 1960), South Korea (Kaczmarek and Lee, 2000), Taiwan (Tseng, 1989). Europe: Hungary (Salmane and Kontschán, 2005).

**Note:** Tseng (1984) recorded the species in Taiwan but did not provide the collecting locality. He mentioned only that the species always occurred with *C. serratus*, which can be found abundantly on weeds.

**4. *Cheiroseius politulus* Tseng, 1989 (光滑手綫蟎)**

*Cheiroseius politulus* Tseng, 1989: 9.

**Type depository:** Tseng’s personal collection.

**Type locality:** Huatan, Zhanghua, Taiwan (now Huatan Township, Changhua County, Taiwan).

**Type habitat:** roots of *Manscus cyperinus* (Cyperaceae).

**Distribution:** Asia: Taiwan (Tseng, 1989).

**Note:** The epithetic *politulus* was derived from “politus,” which means “polished.”

**5. *Cheiroseius privus* Tseng, 1989 (單模手綫蟎)**

*Cheiroseius pcivus* (sic) Tseng, 1989: 15.

**Type depository:** Tseng’s personal collection.

**Type locality:** Nanzhou, Pindong, Taiwan. (now Nanzhou Township, Pingtung County, Taiwan).

**Type habitat:** in *Eragrostis hiwahokori* (sic) (Poaceae).

**Distribution:** Asia: Taiwan (Tseng, 1989).

**Note:** Moraes *et al.* (2016) mentioned the spelling problems in the specific epithet provided by Tseng (1989). At the beginning of the description, the name was *Cheiroseius pcivus* but, thereafter, the spelling of the species name became *privus*, which appeared 5 times in the same article. Moraes *et al.* (2016) interpreted “*pcivus*” as a typographical error, with *privus* based on Article 32.5.1 (ICZN, 1999). Tseng (1989) also described a species based on a single female specimen from the root of *Eragrostis hiwahokori*. However, the name *hiwahokori* should be considered a typographical error. Such a plant name could not be confirmed because all the related specimens are currently missing (Liao *et al.*, 2017). We suspect the habitat plant to probably be *E. amabilis*, a common weed in Taiwan.

#### 6. *Cheiroseius quaestuosus* Tseng, 1989 (獲利手綏蟎)

*Cheiroseius quaestuosus* Tseng, 1989: 11.

**Type depository:** Tseng’s personal collection.

**Type locality:** Nanzhou, Pindong, Taiwan. (now Nanzhou Township, Pingtung County, Taiwan).

**Type habitat:** *Bacopa monniera* (sic) (Scrophulariaceae).

**Distribution:** Asia: Taiwan (Tseng, 1989).

**Note:** Tseng (1989) described the species but did not mention the etymology of its epithet. We consider that *quaestuosus* refers to “gainful” and “profitable.” In addition, in Figures 28- and 29 of Tseng (1989), the species name was erroneously presented as *quaetuosus*, and the habitat plant species *monniera* appears to be a typing error of *monnieri*.

#### 7. *Cheiroseius serratus* (Halbert, 1915) (鋸角手綏蟎)

*Paraseius serratus* Halbert, 1915: 78.

*Lasioseius (Lasioseius) serratus*.—Berlese, 1916: 33.

*Episeius serratus*.—Hull, 1918: 64.

*Platyseius serratus*.—Hirschmann, 1959: 17.

*Sejus serratus*.—Evans and Hyatt, 1960: 58.

*Cheiroseius serratus*.—Westerboer, 1963: 303.

*Platyseius (Cheiroseius) serratus*.—Westerboer, 1963: 315.

*Cheiroseius (Posttrematus) serratus*.—Karg, 1981: 61.

**Type depository:** NMI.

**Type locality:** Croaghpatrick, Ireland

**Type habitat:** *Sphagnum* sp. (Shpagnaceae)

**Distribution:** Asia: Iran (Shamsi *et al.*, 2008), Taiwan (Tseng, 1984). Europe: Austria (Willmann, 1954), Croatia (Kaczmarek and Marquardt, 2010), England (Evans and Hyatt, 1960), Italy (Rack, 1976), Latvia (Lapina, 1976), Moldova (Pinchuk, 1976), Poland (Dziuba, 1972), Romania (Konstschán and Suták, 2015), Russia (Makarova, 2009), Slovakia (Fenda, 1999), Southern Ireland (Halbert, 1915), Switzerland (Schweizer, 1922). North America: Canada (Evans and Hyatt, 1960).

**Note:** Tseng (1984) recorded this species in Taiwan but did not provide the collecting locality; he mentioned only that the species always occurs in abundance with *C. nepalensis* on weeds.

#### 8. *Cheiroseius subtropicus* Tseng, 1989 (亞熱手綏蟎)

*Cheiroseius subtropicus* Tseng, 1989: 7.

**Type depository:** Tseng’s personal collection.

**Type locality:** Tainan, Taiwan. (now Tainan City, Taiwan).

**Type habitat:** rice sheath [*Oryza* sp. (Poaceae)].

**Distribution:** Asia: Taiwan (Tseng, 1989).

**Note:** Tseng (1989) described the species based on a single female specimen, but the species warrants additional study because all the related specimens are currently missing (Liao *et al.*, 2017).

#### Genus *Lasioseius* Berlese, 1916 (毛綏蟎屬)

*Lasioseius* Berlese, 1916: 33. Type species: *Seius muricatus*.—Berlese, 1887a (not Koch, 1843: 92), by original designation.

*Aceoseius* Sellnick, 1941: 149 (Synonymized by Evans, 1958: 215). Type species: *Seius muricatus* Koch, 1839, by original designation.

*Aceosejus*.—Baker and Wharton, 1952: 5.



- Aceoseius*.—Bernhard, 1963: 31.  
*Borinquolaelaps* Fox, 1946: 450 (Synonymized by Athias-Henriot, 1957: 327). Type species: *Borinquolaelaps dentatus* Fox, 1946, by original designation.  
*Lasioseius (Lasioseius)*.—Garman, 1948: 6.  
*Lasioseius (Leiseius)* (sic).—Garman, 1948: 6.  
*Lasioseius (Zercoseius)*.—Garman, 1948: 6.  
*Hyatella* Krantz, 1962: 6 (Synonymized by Lindquist and Evans, 1965: 46). Type species: *Hyatella epicrioides* Krantz, 1962, by monotypy.  
*Gnorimus* Chaudhri, 1975: 100 (Phytoseiidae) (Synonymized by Walter and Lindquist, 1997: 526). Type species: *Gnorimus tabella* Chaudhri, 1975, by original designation.  
*Lasioseius (Crinidens)* Karg, 1980: 345 (Synonymization of *Borinquolaelaps* by Naeem *et al.*, 1985: 352; of *Lasioseius (Lasioseius)* by Moraza and Lindquist, 2011: 3). Type species: *Lasioseius corticeus* Lindquist, 1971, by original designation.  
*Lasioseius (Crinidens)*.—Christian and Karg, 2006: 106.  
*Indiraseius* Daneshvar, 1987: 32 (Synonymized by Walter and Lindquist, 1997: 526). Type species: *Lasioseius parberlesei* Bhattacharyya, 1968, by original designation.  
*Neolaspina* Halliday, 1995: 213 (Synonymized by Walter and Lindquist, 1997: 526). Type species: *Neolaspina rugosa* Halliday, 1995, by original designation.  
*Lasioseius (Borinquolaelaps)* Christian and Karg, 2006: 106 (Synonymization with *Lasioseius (Lasioseius)* by Moraza and Lindquist, 2011: 3). Type species: *Borinquolaelaps dentatus* Fox, 1946, by original designation.  
*Lasioseius (Cuspiacus)* Christian and Karg, 2006: 106 (Synonymization of *Lasioseius (Lasioseius)* by Moraza and Lindquist, 2011: 3). Type species: *Lasioseius helvetius* Chant, 1958, by original designation.  
*Lasioseius (Endopodalius)* Christian and Karg, 2006: 106. Type species: *Lasioseius (Zygoeius) alter* Vitzthum, 1925, by original designation.  
*Lasioseius (Endopodalius)*.—Moraza and Lindquist, 2011: 3.
- 9. *Lasioseius allii* Chant, 1958** (洋蔥毛綫蟎)  
*Lasioseius (Lasioseius) allii* Chant, 1958: 383.  
*Lasioseius bispinosus* Evans, 1958: 220 (Synonymization of *L. allii* by Lindquist, 1964: 252).  
*Lasioseius bispinosus*.—Athias-Henriot, 1959: 188.  
*Lasioseius (Criniacus) bispinosus*.—Karg, 1980: 363.  
*Lasioseius martini* Tjying, 1971: 1 (Synonymization of *L. allii* by Tseng, 1978: 126).
- Type depository:** *L. allii*: USNMNH; *L. bispinosus*: not stated; *L. martini*: BCIQ.  
**Type locality:** *L. allii*: intercepted at New York, USA; *L. bispinosus*: Glasgow, Scotland; *L. martini*: She-Cha, Taiwan.  
**Type habitat:** *L. allii* on onion (Amaryllidaceae) bulbs imported from South Africa; *L. bispinosus*: on imported mahogany (Meliaceae) logs; *L. martini*: from shallots (Amaryllidaceae).  
**Distribution:** Africa: Egypt (Zaher, 1986), South Africa (Chant, 1958). Asia: Taiwan (Tjying, 1971). Europe: Finland (Huhta *et al.*, 2010), Portugal (Chant, 1958), Scotland (Evans, 1958).  
**Note:** Tjying (1971) described *L. martini* in “She-Ca, Taiwan Hsien, Taiwan.” However, it should be “Tainan Hsien” rather than “Taiwan Hsien,” based on the paratype locality of *L. scilliticus* (Tseng, 1978). Moreover, She-Ca is now in Xuejia District, Tainan City, Taiwan.
- 10. *Lasioseius chaudhrii* (Wu and Wang, 1982)** (克德里毛綫蟎)  
*Gnorimus chaudhrii* Wu and Wang, 1982: 134.  
*Lasioseius chaudhrii*.—Zhang and Fan, 2010: 283.
- Type depository:** GIABR.  
**Type locality:** Fuzhou, Fujian, China  
**Type habitat:** on rice [*Oryza* sp. (Poaceae)].  
**Distribution:** Asia: China (Wu and Wang, 1982), Philippines (Moraes *et al.*, 2015b), Taiwan (Moraes *et al.*, 2015b). North America: Dominican Republic (Moraes *et al.*, 2015b).  
**Note:** Moraes *et al.* (2015b) suspected that *L. parberlesei* in Tseng (1989) was probably a misidentification of *L. chaudhrii*.

**11. *Lasioseius fenchihuensis* Tseng, 1978**  
(奮起湖毛綏蟎)

*Lasioseius fenchihuensis* Tseng, 1978: 126.

**Type depository:** BCIQ.

**Type locality:** Fendrihu, Chiayi, Taiwan. (now Fenqihu, Zhuqi Township, Chiayi County, Taiwan).

**Type habitat:** citurs (sic) [ (Moraes *et al.* (2016) considered as *Citrus* sp. (Rutaceae)].

**Distribution:** Asia: Taiwan (Tseng, 1978).

**Note:** Moraes *et al.* (2016) mentioned the difference in the spellings between the type locality, Fendrihu, and the name, *fenchihuensis*. The underlying reasons may be typographical errors by Tseng or differences in pronunciation of the locality name.

**12. *Lasioseius lindquisti* Tseng, 1978** (林德奎斯特毛綏蟎)

*Lasioseius lindquisti* Tseng, 1978: 127.

**Type depository:** BCIQ.

**Type locality:** Chioushi, Yilan, Taiwan. (now Jiaoxi Township, Yilan County).

**Type habitat:** form [Moraes *et al.* (2016) considered probably as fern].

**Distribution:** Africa: Egypt (Zaher, 1986), Saudi Arabia (Al-Atawi, 2011), Asia (Chinniah and Mohanasundaram, 1995), Taiwan (Tseng, 1978).

**Note:** Moraes *et al.* (2016) considered the type locality Chioushi to be Chikushi; however, Tseng (1978) reported that type locality of the species should be Jiaoxi Township, Yilan County, Taiwan.

**13. *Lasioseius parberlesei* Bhattacharyya, 1968** (擬伯氏毛綏蟎)

*Lasioseius parberlesei* Bhattacharyya, 1968: 532.

*Lasioseius parberlesi* (sic).—Tseng, 1984: 772.

*Indiraseius parberlesei*.—Daneshvar, 1987: 33.

*Lasioseius perberlesi* (sic).—Tseng, 1989: 22.

*Lasioseius parberlesei*.—Bhattacharyya *et al.*, 2000: 93.

*Lasioseius (Lasioseius) parberlesei*.—Christian and Karg, 2006: 120.

**Type depository:** ZSI.

**Type locality:** Sitala, Sonarpur, 24 Parganas,

West Bengal, India,

**Type habitat:** in damp grass litter.

**Distribution:** Africa: Egypt (Moraes *et al.*, 2015b), Saudi Arabia (Moraes *et al.*, 2015b). Asia: India (Bhattacharyya, 1968), Pakistan (Moraes *et al.*, 2015b), Philippines (De Leon-Facudo and Corpus-Raros, 2002), Syria (Barbar, 2016), Taiwan (Tseng, 1984).

**Note:** Tseng (1984, 1989) misspelled the specific epithet *parberlesei* as *perberlesi*. Moraes *et al.* (2015b) reported that the species described by Tseng (1989) should be *L. chaudhrii*, and the existence of this species in Taiwan warrants further research.

**14. *Lasioseius scilliticus* Tseng, 1978** (鱗莖毛綏蟎)

*Lasioseius scilliticus* Tseng, 1978: 119.

**Type depository:** BCIQ.

**Type locality:** Meishan, Chiayi, Taiwan. (now Meishan Township, Chiayi County).

**Type habitat:** *Spinolus murossi* (sic).

**Distribution:** Asia: Taiwan (Tseng, 1978).

**Note:** Tseng (1978) did not report the etymology of *scilliticus*; however, this name was probably modified from “scillia,” a kind of bulb plant. Moraes *et al.* (2016) considered the type habitat to probably be *Sapindus mukorossii*; however, confirming the actual type habitat plant is impossible because all the related specimens are currently missing (Liao *et al.*, 2017). In addition, the collection locality for the paratype BCIQTA-63 was reported to be Yuili, Hualiu Hsien; however, this was a misspelling of Hualien Hsien. “Sheca, Tainan,” the other paratype locality, is now Xuejia District, Tainan City, Taiwan.

**15. *Lasioseius sugawarai* Ehara, 1964** (菅原毛綏蟎)

*Lasioseius sugawarai* Ehara, 1964: 390.

*Lasioseius (Crinidens) sugawarai*.—Karg, 1980: 357.

*Lasioseius tridentatus* Baker *et al.*, 1976: 61 (Synonymized by Britto *et al.*, 2011: 13).

*Lasioseius tridentatus*.—Farrier and Hennessey, 1993: 39.

**Type depository:** *L. sugawarai*: HUM; *L.*

*tridentatus*: NYSM.

**Type locality:** *L. sugawarai*: Morioka, Iwate, Japan; *L. tridentatus*: Farmingdale, Long Island, New York, USA,

**Type habitat:** *L. sugawarai*: on strawberry [*Fragaria* × *ananassa* (Rosaceae)]; *L. tridentatus*: in bird nest.

**Distribution:** Asia: Iran (Hajizadeh *et al.*, 2009), Japan (Ehara, 1964), Malaysia (Ishikawa, 1976), South Korea (Lee and Lee, 1998), Taiwan (Tseng, 1978). North America: USA (Baker *et al.*, 1976).

**Note:** Tseng (1978) observed the predatory potential of mealybugs and acarid mites. We also observed that this species occurs in the commercial products of *Neoseiulus barkeri* in laboratory rearing of acarid mites (unpublished data). The biological control potential of the species needs further confirmation.

**16. *Lasioseius taiwanicus* Tseng, 1978 (臺灣毛綏蟎)**

*Lasioseius taiwanicus* Tseng, 1978: 121.

**Type depository:** BCIQ.

**Type locality:** Yuli, Hualien, Taiwan. (now Yuli Township, Hualien County).

**Type habitat:** on decaying material.

**Distribution:** Asia: Taiwan (Tseng, 1978).

**Note:** Liao *et al.* (2017) reported that all specimens provided by Tseng are currently missing; therefore, the description of the species requires further exploration.

**17. *Lasioseius youcefi* Athias-Henriot, 1959 (約瑟夫毛綏蟎)**

*Lasioseius youcefi* Athias-Henriot, 1959: 177.

*Lasioseius youcefi*.—Hirschmann, 1962: 30.

*Lasioseius (Criniacus) youcefi*.—Karg, 1980: 364.

*Lasioseius (Cuspiacus) youcefi*.—Christian and Karg, 2006: 219.

*Lasioseius mcgregori* Chant, 1963: 276 (Synonymization with *L. youcefi* by Walter and Lindquist, 1989: 2800).

*Lasioseius mcgregori*.—Lindquist, 1964: 242.

*Lasioseius (Criniacus) mcgregori*.—Karg, 1980: 362.

*Lasioseius (Lasioseius) paucisetosus* Westerboer, 1963: 274 (Synonymization with *L. youcefi* by Bregetova, 1977a: 178).

**Type depository:** *L. youcefi*: EPHE; *L. mcgregori*: CNC; *L. paucisetosus*: not stated; *L. (L.) proteae*: PU; *L. lasiodactyli*: MSJC; *L. peritremus*: NRC (according to Nasr and Abou-Awad, 1987: 31).

**Type locality:** *L. youcefi*: Rovigo, Algeri; *L. mcgregori*: Theeman Ranch, Modesto, California, USA; *L. paucisetosus*: Erlangen, Germany; *L. (L.) proteae*: Humansdorp, Cape, South Africa; *L. lasiodactyli*: Kuwabara, Matsuyama, Ehime, Japan; *L. peritremus*: Beni Suef, Upper Egypt, Egypt.

**Type habitat:** *L. youcefi*: in soil; *L. mcgregori*: on almond bark [*Prunus dulcis* (Rosaceae)]; *L. paucisetosus*: in rotten apples [*Malus domestica* (Rosaceae)], rotten thistle (Asteraceae), straw, meadow soil, grass and moss; *L. (L.) proteae*: on *Protea incompta* (Proteaceae); *L. lasiodactyli*: unstated substrate; *L. peritremus*: in debris under *Citrus* sp. (Rutaceae) (according to Zaher, 1986: 71); Ehnasia, Beni-Sewef, Egypt, in debris under *Citrus* spp. (according to Nasr and Abou-Awad, 1987: 31).

**Distribution:** Africa: Algeria (Athias-Henriot, 1959), Egypt (Nasr and Abou-Awad, 1987), South Africa (Ryke, 1964), United Arab Emirates (Moraes *et al.*, 2015b), Dubai (Negm, 2014). Asia: Azerbaijan (Alizadeh and Shirdel, 2012), China (Ma, 1988), Iran (Irani-Nejad *et al.*, 2003), Japan (Ishikawa, 1969), South Korea (Lee and Lee, 1998), Taiwan (Tseng, 1978). Europe: Austria (Wissuwa *et al.*, 2012), Bulgaria (Deltshev *et al.*, 1998), France (Moraes *et al.*, 2015b), Germany (Westerboer, 1963), Hungary (Kandil, 1983), Italy (Plumari, 2009), Latvia (Lapina, 1976), Moldova (Călugăr, 2010), Poland (Dziuba, 1972), Switzerland (Airolldi *et al.*, 1989). North America: USA (Chant, 1963).

**Note:** Tseng (1978) reported the presence of the species; however, we observed several critical differences between the reports of Tseng (1978) and Athias-Henriot (1959): (1) Athias-Henriot (1959) described 7 pairs of *R*-series setae but Tseng (1978) recorded only 4 pairs. (2) Tseng (1978) indicated the presence of seta *r*<sub>2</sub> but Athias-Henriot (1959) did not [Moraes *et al.* (2015b) also noted this confusion]. (3) The lengths of *J*-series setae

provided by Tseng (1978) differed from those of Athias-Henriot (1959). Liao *et al.* (2017) reported that all specimens provided by Tseng are currently missing; therefore, the description of the species requires further confirmation.

**Genus *Platyseius* Berlese, 1916 (扁綫蟎屬)**

*Paraseius* Trägårdh *sensu* Halbert, 1915: 74 (not Trägårdh, 1910). Type species: *Ameroseius italicus* Berlese, 1905, designated by Halbert, 1915: 74 (invalid designation, Lindquist and Evans, 1965: 37).

*Lasioseius* (*Platyseius*) Berlese, 1916: 42. Type species: *Lasioseius* (*Platyseius*) *capillatus* Berlese, 1916 (= *Acarus tendens* Schrank, 1803, = *Hypoaspis subglabra* Oudemans, 1903), by original designation.

*Platyseius*.–Vitzthum, 1941: 765.

*Plesiosejus* Evans and Hyatt, 1960: 42 (Synonymized by Lindquist and Evans, 1965: 37). Type species: *Ameroseius italicus* Berlese, 1905, by original designation.

*Platyseius* (*Episeius*).–Karg, 1962: 33.

*Plesiosejus*.–Krantz, 1962: 5.

*Plesioseius* (sic).–Kalúz and Fend'a, 2005: 41.

**18. *Platyseius jamaicensis* Evans and Hyatt, 1960 (牙買加扁綫蟎)**

*Platyseius jamaicensis* Evans and Hyatt, 1960: 39.

**Type depository:** BMNH.

**Type locality:** Fairy Glade, Saint Andrew, Jamaica.

**Type habitat:** *Lycopodium* sp. (Lycopodiaceae).

**Distribution:** Asia: Taiwan (Tseng, 1989). North America: USA (De Leon, 1964), Jamaica (Evans and Hyatt, 1960). South America: Argentina (Sheals, 1962).

**Note:** Tseng (1989) reported the species on weeds in rice fields; however, no detailed information could be obtained because the specimen was damaged.

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**Appendix I.** Species list of Ascidae and Blattisociidae in Taiwan.

Family **ASCIDAE** Voigts and Oudemans, 1905 (囊蟎科)

Genus *Asca* von Heyden, 1826 (囊蟎屬)

1. *Asca aphidioides* (Linnaeus, 1758) (似蚜囊蟎)
2. *Asca equalis* De Leon, 1967 (平等囊蟎)
3. *Asca flabellifera* Tseng, 1981 (扇葉囊蟎)
4. *Asca garmani* Hurlbutt, 1963 (加曼囊蟎)
5. *Asca garmanioides* De Leon, 1967 (似加曼囊蟎)
6. *Asca inflata* Tseng, 1981 (膨脹囊蟎)
7. *Asca lacertosa* Tseng, 1981 (壯漢囊蟎)
8. *Asca malathina* Tseng, 1981 (長毛囊蟎)
9. *Asca microplumosa* Tseng, 1981 (微羽囊蟎)
10. *Asca ramosa* Tseng, 1981 (多枝囊蟎)
11. *Asca spicata* Hurlbutt, 1963 (帶釘囊蟎)
12. *Asca tricornicula* Tseng, 1981 (三角囊蟎)

Genus *Gamasellodes* Athias-Henriot, 1961 (革鞍蟎屬)

13. *Gamasellodes lentiformis* (Tseng, 1989) (豆狀革鞍蟎)

Family **BLATTISOCIIDAE** Garman, 1948 (蠟蟎科)

Genus *Cheiroseius* Berlese, 1916 (手綏蟎屬)

1. *Cheiroseius curtipes* (Halbert, 1923) (短足手綏蟎)
2. *Cheiroseius fenghuangensis* Bei *et al.*, 2010 (鳳凰手綏蟎)
3. *Cheiroseius nepalensis* (Evans and Hyatt, 1960) (尼泊爾手綏蟎)
4. *Cheiroseius politulus* Tseng, 1989 (光滑手綏蟎)
5. *Cheiroseius privus* Tseng, 1989 (單模手綏蟎)
6. *Cheiroseius quaestuosus* Tseng, 1989 (獲利手綏蟎)
7. *Cheiroseius serratus* (Halbert, 1915) (鋸角手綏蟎)
8. *Cheiroseius subtropicus* Tseng, 1989 (亞熱手綏蟎)

Genus *Lasioseius* Berlese, 1916 (毛綏蟎屬)

9. *Lasioseius allii* Chant, 1958 (洋蔥毛綏蟎)
10. *Lasioseius chaudhrii* (Wu and Wang, 1982) (克德里毛綏蟎)
11. *Lasioseius fenchihuensis* Tseng, 1978 (奮起湖毛綏蟎)
12. *Lasioseius lindquisti* Tseng, 1978 (林德奎斯特毛綏蟎)
13. *Lasioseius parberlesei* Bhattacharyya, 1968 (擬伯氏毛綏蟎)
14. *Lasioseius scilliticus* Tseng, 1978 (鱗莖毛綏蟎)
15. *Lasioseius sugawarai* Ehara, 1964 (菅原毛綏蟎)
16. *Lasioseius taiwanicus* Tseng, 1978 (臺灣毛綏蟎)
17. *Lasioseius youcefi* Athias-Henriot, 1959 (約瑟夫毛綏蟎)

Genus *Platyseius* Berlese, 1916 (扁綏蟎屬)

18. *Platyseius jamaicensis* Evans and Hyatt, 1960 (牙買加扁綏蟎)

## 臺灣產囊蝟科與蠟蝟科（蠟蝟亞綱：中氣門目）名錄

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### 摘 要

囊蝟科、蠟蝟科與密卡蝟科長期被視為一廣義的囊蝟科。部分物種被認為是害蝟與小型害蟲之天敵，然而我們對於其多樣性與生物學仍有許多未知。本文重新修訂臺灣產囊蝟科與蠟蝟科名錄，其中包含 2 屬 13 種囊蝟科物種與 3 屬 18 種蠟蝟科物種。文中提供包括異名表、模式存放地、產地、棲息植物、分布與中文名等資料。

**關鍵詞：**囊蝟科、蠟蝟科、物種名錄、臺灣