

New Records of Aphelinidae (Hymenoptera) from Taiwan¹

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Abstract : Three species of *Aphelinus* and 11 species of *Encarsia* from Taiwan are recorded for the first time in this paper. All of these species were reared from their aphid or whitefly hosts.

Key words: *Aphelinus*, *Encarsia*, Aphidoidea, Aleyrodidae, Taiwan.

INTRODUCTION

The species of the genus *Aphelinus* Dalman are parasitoids of aphids. It contains about 50 species worldwide, including 1 species, *A. mali* (Haldeman), in Taiwan. However, this species was misidentified by Tao & Chiu⁽⁵⁾, Chiu & Liu⁽¹⁾ and Liu⁽⁴⁾. This species must be corrected as *A. gossypii* Timberlake. The species of the genus *Encarsia* Foerster are parasitoids of whiteflies, scale insects and aphids^(2,3). It contains about 230 species worldwide, including 10 species in Taiwan. In this paper 3 *Aphelinus* species and 11 *Encarsia* species are added to the aphelinid fauna of Taiwan. All of these species were reared from their hosts. The material, unless otherwise stated, was collected by the senior author. The specimens used in this study are deposited in the Insect Collection of the Taiwan Agricultural Research Institute, Taichung, Taiwan, ROC.

Genus APHELINUS Dalman

Aphelinus (*Aphelinus*) *albipodus* Hayat & Fatima

Aphelinus albipodus Hayat & Fatima, 1992. Entomon. 17:103.

Aphelinus sp.: Tao & Chiu, 1971. Taiwan Agr. Res. Inst. Spec. Publ. 10:18.

Material examined: TAICHUNG: Wufeng, 3♀, III-1995, ex *A. gossypii*, L. Y. Chou.

Distribution: Chad Republic, India, Pakistan, Paraguay and Taiwan (new record).

Host: *Aphis gossypii* (Aphididae).

Aphelinus (*Aphelinus*) *gossypii* Timberlake

Aphelinus gossypii Timberlake, 1924. Proc. Hawaii ent. Soc. 5:408. - Hayat & Fatima, 1992. Entomon. 17:103.

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Aphelinus mali (Haldeman): Chiu & Liu, 1969. Taiwan Agr. Res. Inst. Spec. Publ. 9:3. - Tao & Chiu, 1971. Taiwan Agr. Res. Inst. Spec. Publ. 10:18. - Liu, 1975. J. Agr. Res. China 24:67. (misidentification).

Aphelinus kashmiriensis Hayat, 1972. Entomophaga 17:50.

Material examined: TAICHUNG: Wufeng, 3 ♀, III-1995, ex *A. gossypii*, L. Y. Chou.

Distribution: Guadeloupe, India, Reunion Island and Taiwan (new record).

Host: *Aphis gossypii* (Aphididae).

Aphelinus (*Indaphelinus*) *ancer* Hayat

Aphelinus (*Indaphelinus*) *ancer* Hayat, 1990. Oriental Ins. 24:253.

Material examined: CHIAI: Chiai, 1 ♀, 26-III-1993, ex *Greenidea mangiferae* on *Litchi chinensis*, L. Y. Chou and C. Y. Wong.

Distribution: India and Taiwan (new record).

Host: *Greenidea mangiferae* (Greenideidae).

Genus *ENCARSIA* Foerster

Encarsia albiscutellum longipalpa Hayat

Encarsia albiscutellum longipalpa Hayat, 1989. Oriental Ins. 23:34.

Material examined: NANTOU: Hoshe, 1 ♀, 12-IV-1995, ex *R. maesae* on *Ardisia cornudentata*; Meifeng, 1 ♀ 1 ♂, 14-X-1994, ex *Aleurolobus* sp. on *Rubus* sp.

Distribution: India and Taiwan (new record).

Hosts: *Aleurolobus* sp. and *Rhachisphora maesae* (Aleyrodidae).

Encarsia azimi Hayat

Trichaporus indicus Azim & Shafee, 1980. J. Bombay Nat. Hist. Soc. 76:335.

Encarsia azimi Hayat, 1986. Oriental Ins. 20:160. - Hayat, 1989. Oriental Ins. 23:62.

Material examined: NANTOU: Wushe, 1 ♀, 24-XI-1993, ex *A. rhododendri* on *Rhododendron formosanum*; TAICHUNG: Wufeng, 1 ♀, 8-XII-1993, ex *D. fici* on *Bischofia javanica*; 7 ♀, 29-VIII-1994, ex *D. piperis* on *Piper kadsura*. HSINCHU: Wufeng, 13 ♀, 16-XII-1993, ex *O. rhododendri* on *R. formosanum*; TAIPEI: Hsintien, 1 ♀, 18-VI-1994, ex *P. myricae* on *Morus alba*.

Distribution: India and Taiwan (new record).

Hosts: *Aleurolobus rhododendri*, *Dialeurodes fici*, *Odontaleyrodes rhododendri*, *Parabemisia myricae* (Aleyrodidae).

Encarsia bifasciafacies Hayat

Encarsia bifasciafacies Hayat, 1989. Oriental Ins. 23:58.

Material examined: PINGTUNG: Kentingkunyen, 1♀, 2-III-1994, ex *A. marlatti* on *Murraya paniculata*.

Distribution: India, Pakistan and Taiwan (new record).

Host: *Aleurolobus marlatti* (Aleyrodidae).

Encarsia cerataphivora Evans

Encarsia cerataphivora Evans, 1995. Oriental Ins. 29:37.

Material examined: TAIPEI: 32♀ 1♂, 30-I-1994, ex *Reticulaphis distylis fici* on *Ficus* spp.

Distribution: Taiwan (new record) and Thailand.

Hosts: *Reticulaphis distylis fici* (Hormaphididae).

Encarsia duorunga Hayat

Encarsia duorunga Hayat, 1989. Oriental Ins. 23:40.

Material examined: CHIAI: Fenchifu, 3♀, 28-VII-1994, ex *A. malloti* on *Polygonum thunbergii*; 2♀1♂, 12-IV-1995, ex *A. elatostemae* on *Elatostema edule*; 4♀, 11-IV-1995, ex *A. caerulescens* on *Alocasia macrorrhiza* and *Thladiantha nudiflora*; 1♀2♂, 11-IV-1995, ex *A. elatostemae* on *Elatostema lineolatum*; 1♀, 11-IV-1995, ex *Aleurotrachelus* sp. on *Pilea*. ILAN: Fushan, 6♀1♂, 3-VI-1994, ex *A. elatostemae* on *E. lineolatum*; 3♀, 4-VI-1994, ex *Parabemisia* sp. on *E. lineolatum*. NANTOU: Fenghuangku, 1♀, 18-IV-1995, ex *A. elatostemae* on *E. lineolatum*; Lienhuachih, 3♀, 2-V-1994, ex *A. micheliae* on *Begonia taiwaniana*; Lushan, 1♀, 1-XII-1994, ex *P. polygoni* on *Boehmeria nivea*; Meifeng, 1♀, 23-VI-1994, ex *P. rubi* on *P. thunbergii*; 2♀, 7-XII-1994, ex *P. rubi* on *Rubus* sp. TAICHUNG: Anmashan, 4♂, 21-VII-1994, ex *A. caerulescens* on *P. chinense*; Lishan, 1♂, 22-VII-1994, ex *A. multipori* on *Viburnum taiwanianum*; Wufeng, 2♀1♂, 20-V-1994, ex *Aleurotrachelus* sp. on *R. taiwanianus*. TAIPEI: Hsintien, 1♀, 18-VI-1994, ex *Aleurotrachelus* sp. on *R. taiwanianus*; Shihting, 1♀, 28-III-1995, ex *A. rubi* on *R. taiwanianus*; 1♂, 28-X-1994, ex *A. elatostemae* on *E. lineolatum*; Wulai, 6♀6♂, 31-XII-1994, ex *A. elatostemae* and *Parabemisia* sp. on *E. lineolatum*; 3♀, 20-I-1995, ex *Aleurotrachelus* sp. on *B. nivea*.

Distribution: India and Taiwan (new record).

Hosts: *Aleurotrachelus caerulescens*, *A. elatostemae*, *A. micheliae*, *A. rubi*, *A. spp.*, *Aleurotuberculatus malloti*, *A. multipori*, *Parabemisia* sp., *Pealius polygoni*, *P. rubi* (Aleyrodidae).

Encarsia lahorensis (Howard)

Prospaltella lahorensis Howard, 1911. J. Econ. Ent. 4:132

Encarsia lahorensis (Howard): Viggiani & Mazzone, 1979. Boll. Lab. Ent. Agr. "Filippo Silvestri" Portici 36:46. - Hayat, 1989. Oriental Ins. 23:73.

Material examined: PINGTUNG: Kentingkunyen, 1♀, 4-V-1995, ex *D. citri* on *Ardisia sieboldii*.

Distribution: Pakistan and Taiwan (new record).

Host: *Dialeurodes citri* (Aleyrodidae).

Encarsia longifasciata Subba Rao

Encarsia longifasciata Subba Rao, 1984. Proc. Indian Acad. Sci. (Anim. Sci.) 93:260. - Hayat, 1989. Oriental Ins. 23:29.

Material examined: NANTOU: Lienhuachih, 4♀, 21-I-1994, ex *A. rhododendri* on *Psidium guajava*.

Distribution: India and Taiwan (new record).

Host: *Aleurolobus rhododendri*, *A. setigerus* (Aleyrodidae).

Encarsia lutea (Masi)

Prospaltella lutea Masi, 1910. Boll. Lab. Zool. Gen. Agr. R. Scuola Agr. Portici 4:25.

Encarsia lutea (Masi): Viggiani & Mazzone, 1979. Boll. Lab. Ent. Agr. "Filippo Silvestri" Portici 36:46. - Hayat, 1989. Oriental Ins. 23:48. - Polaszek, Evans & Bennett, 1992. Bull. Entomol. Res. 82:384.

Material examined: CHIAI: Chuchih, 1♂, 16-IV-1994, ex *A. ficicola* on *Maesa japonica*. KAOHSIUNG: Fengshan, 1♀1♂, 22-XI-1993, ex *A. gordoniae* on *Cinnamomum camphora*. NANTOU: Chungshingsintsun, 1♂, 10-XI-1993, ex *A. cinnamoni* and 1♀2♂, 23-XI-1993, ex *A. gordoniae* on *C. camphora*; 1♂, ex *A. rhododendri* on *Bauhinia variegata*; Kuohsing, 1♂, 21-X-1993, ex *A. marlatti* on *Murraya paniculata*; Lienhuachih, 4♀3♂, 2-V-1994, ex *Aleurotrachelus* sp. on *Rubus piptopetalus*; 18♀, 21-I-1994, ex *A. melastomae* on *Melastoma candidum*; 1♀, 27-V-1994, ex *A. gordoniae* on *Liquidambar formosana*; 3♀3♂, 27-V-1994, ex *Aleurotrachelus* sp. on *R. piptopetalus*; Nantou, 1♀2♂, 28-X-1993, ex *A. psidii* on *Psidium guajava*; Shuangtung, 1♂, 24-VI-1994, ex *D. formosanensis* on *Boehmeria densiflora*; Sunmoonlake, 6♀, 18-XI-1993, ex *A. melastomae* on *M. candidum*; Tsaotun, 1♀, 11-XI-1994, ex *A. malloti* on *Mallotus japonicus*; 1♀1♂, 13-XI-1994, ex *A. gordoniae* on *C. camphora*; 1♂, 24-XI-1993, ex *A. marlatti* on *Citrus ponki*; Wushe, 1♀, 18-III-1994, ex *A. rhododendri* on *Rhododendron formosanum*. PINGTUNG: Nanjenhu, 4♀, 20-IV-1994, ex *A. melastomae* on *M. candidum*. TAICHUNG: Wufeng, 1♀1♂, 18-V-1994, ex *S. hibisci* on *Macaranga tanarius*; 1♀1♂, 6-XII-1993, ex *P. mori* on *Morus alba*; 1♂, 16-XII-1993, ex *A. gordoniae* on *Elaeocarpus sylvestris*; 1♀, 13-I-1994, ex *B. tabaci* on *Rhinacanthus nasutus*; 1♂, 17-I-1994, ex *B. porteri* on *B. variegata*; 3♀4♂, 2-II-1994, ex *A. gordoniae* on *C. camphora*; 2♀1♂, 12-IV-1994, ex *A. ficicola* on *M. alba*; 2♀, 9-V-1994, ex *T. meliosmae* on *Polygonum chinense*; 1♀1♂, 9-V-1984, ex *Pealius* sp. on *R. taiwanianus*; 5♀3♂, 17-V-1994, ex *P. rubi* on *R. taiwanianus*; 1♂, 18-V-1994, ex *A. setigerus* on *M. tanarius*; 2♂, 21-VI-1994, ex *Aleurolobus rhododendri* on *C. ponki*; 1♀, 20-VII-1994, ex *A. gordoniae* on *Magnolia*

denudata; 2♀, 1-VIII-1994, ex *S. hibisci* on *M. tanarius*; 1♂, 19-VIII-1994, ex *A. setigerus* on *Gardenia jasminoides*; 1♂, 9-IX-1994, ex *A. rhododendri* on *P. guajava*; 1♀, 16-XI-1994, ex *A. melastomae* on *M. candidum*; 3♂, 16-IX-1994, ex *T. vaporariorum* on *R. taiwanianus*; 2♀1♂, 1-V-1995, ex *A. rubi* on *R. taiwanianus*; 2♀, 20-VI-1995, ex *A. malloti* on *Ampelopsis brevipedunculata*; 3♀1♂, 17-V-1994, ex *Aleurotuberculatus* sp. on *P. chinense*. TAIPEI: Kungkuan, 1♂, 21-XI-1993, ex *D. fici* on *Bischofia javanica*; 1♀, 7-VIII-1994, ex *A. pectiniferus* on *Sapium sebiferum*; 1♂, 7-VIII-1994, ex *D. kirkaldyi* on *Jasminum sambac*; Shihting, 2♀, 28-X-1994, ex *A. melastomae* on *M. candidum*; Mucha, 3♀, 9-VIII-1994, ex *A. melastomae* on *M. candidum*; 1♀, 19-IX-1994, ex *Aleurotuberculatus malloti* on *M. japonicus*; 1♀, 7-I-1995, ex *A. jasmini* on *M. japonica*; Wulai, 2♀, 16-IV-1994, ex *A. melastomae* on *M. candidum*; 1♂, 2-XII-1994, ex *D. fici* on *B. zollingeriana*; Yangmingshan, 1♂, 27-I-1994, ex *A. pectiniferus* on *B. zollingeriana*.

Distribution: Brazil, India, Italy, Pakistan, Taiwan (new record), UK. and Zimbabwe.

Hosts: *Aleurocanthus cinnamoni*, *Aleurolobus marlatti*, *A. rhododendri*, *A. setigerus*, *Aleuroplatus pectiniferus*, *Aleurotrachelus rubi*, *Aleurotuberculatus ficicola*, *A. gordoniae*, *A. jasmini*, *A. malloti*, *A. melastomae*, *A. psidii*, *A. rhododendri*, *A. sp.*, *Bemisia porteri*, *B. tabaci*, *Dialeurodes fici*, *D. formosanensis*, *D. kirkaldyi*, *Pealius mori*, *P. rubi*, *P. sp.*, *Singhius hibisci*, *Taiwanaleyrodes meliosmae*, *Trialeurodes vaporariorum* (Aleyrodidae).

***Encarsia mohyuddini* Shafee & Rizvi**

Encarsia mohyuddini Shafee & Rizvi, 1983. J. Ent. Res. 6:157. - Hayat, 1989. Oriental Ins. 23: 42. - Polaszek, Evans & Bennett, 1992. Bull. Entomol. Res. 82:386.

Material examined: NANTOU: Lienhuachih, 1♀, 6-I-1995, on *Crotalaria pallida*; Puli, 1♀, 19-VIII-1993, on *Euphorbia pulcherrima*; Shuili, 1♀, 5-I-1995, on *Trema orientalis*. TAICHUNG: Wufeng, 8♀7♂, 26-I-1994, on *Rhinacanthus nasutus*; 1♀, 13-IV-1994, on *Ipomoea batatas*; 1♀2♂, 15-VIII-1994, on *Fragaria chiloensis*; 1♀, 4-X-1994, on *Salvia plebeia*; 1♀, 23-XI-1994, on *Lycopersicon esculentum*; 4♀, 25-IV-1995, on *Dumasia bicolor*; 2♀1♂, 26-VII-1995, on *Arachis hypogea*. TAIPEI: Kungkuan, 1♀, 26-XI-1994, on Compositae; Mucha, 1♂, 3-X-1993, on *E. pulcherrima*; Sanhsia, 1♂, 11-XI-1994, on *Rubus* sp. All ex *B. tabaci*.

Distribution: Pakistan and Taiwan (new record).

Host: *Bemisia tabaci* (Aleyrodidae).

***Encarsia perflava* Hayat**

Encarsia perflava Hayat, 1989. Oriental Ins. 23:43.

Material examined: CHIAI: Chuchih, 1♂, 20-X-1994, ex *A. rubi* on *Boehmeria densiflora*; Fenchifu, 1♀, 11-IV-1995, ex *A. caerulescens* on *Alocasia macrorrhiza*. ILAN: Fushan, 2♀, 3-VI-1994, ex *P. myricae* on *Engelhardtia roxburghiana* and *Magnolia denudata*. NANTOU: Aowanta, 1♂, 28-XI-1994, ex *A. malloti* on *Ficus erecta*; Chitou, 1♂, 20-X-1994,

ex *A. jasmini* on *Sambucus formosana*; Chungshingsintun, 12-XI-1994, ex *A. micheliae* on *Osmanthus fragrans*; Hueihsun forest, 2♀, 31-III-1994, ex *A. caerulescens* on *Myrica rubra*; Kuohsing, 1♀, 21-X-1993, ex *A. micheliae* on *O. fragrans*; Lienhuachih, 2♀, 21-I-1994, ex *D. formosanensis* on *Schefflera octophylla*; 1♀, 2-V-1994, ex *A. micheliae* on *Begonia taiwaniana*; 1♂, 2-V-1994, ex *B. tabaci* on *Elatostema edule*; 1♀, 6-I-1995, ex *A. caerulescens* on *Ardisia sieoldii*; Liyushan, 1♂, 16-II-1995, ex *D. fici* on *Bischofia javanica*; Shuili, 1♀1♂, 5-I-1995, ex *A. ficicola* on *Maesa japonica*; Tungpu, 1♀, 4-VIII-1994, ex *Aleurotrachelus* sp. on *B. nivea*; Nanshanchi, 1♀, 21-III-1995, ex *P. kankoensis* on *Cyclobalanopsis globosa*. PINGTUNG: Kentingkunyaen, 1♀, 5-V-1995, ex *A. malloti* on *Koelreuteria formosana*. TAICHUNG: Wufeng, 1♀, 16-XII-1993, ex *O. rhododendri* on *Rhododendron formosanum*; 2♀1♂, 12-IV-1994, ex *P. mori* on *M. alba*; 3♀, 18-IV-1994, ex *Aleurotrachelus* sp. on *B. nivea*; 1♀, 5-V-1994, ex *T. meliosmae* on *Polygonum chinense*; 1♀, 11-V-1994, ex *Aleurotrachelus* sp. on *B. nivea*; 1♀, 19-V-1994, ex *A. malloti* on *Ampelopsis brevipedunculata*; 3♀, 20-V-1994, ex *T. carpini* on *M. alba*; 1♀, 1-V-1995, ex *A. ficicola* on *M. alba*; 1♀, 20-VI-1995, ex *A. caerulescens* on *A. brevipedunculata*. TAINAN: Kuantyling, 1♂, 22-IX-1994, ex *A. uraianus* on *S. formosana*. TAIPEI: Hsintien, 1♀, 21-IV-1995, ex *S. hibisci* on *Glochidion philippicum*; Kungkuan, 1♀, 7-VIII-1994, ex *B. tabaci* on *Ipomoea obscura*; 1♀, 24-VI-1995, ex *D. kirkaldyi* on *Jasminum sambac*; Mucha, 1♀, 6-III-1994, ex *A. caerulescens* on *Turpinia formosana*; 1♂, 4-IX-1994, ex *D. fici* on *F. virgata*; 1♀, 19-IX-1994, ex *T. carpini* on *M. japonica*; 1♀, 7-X-1994, ex *A. ficicola* on *Wendlandia formosana*; 1♂, 9-XII-1994, ex *A. marlatti* on *G. hongkongense*; 1♂, 9-XII-1994, ex *D. fici* on *Glochidion hongkongense*; 2♀3♂, 9-XII-1994, ex *A. caerulescens* on *Smilax china*; 1♀, 19-II-1995, ex *A. smilaceti* on *S. china*; Shihting, 1♂, 28-X-1994, ex *A. murrayae* on *E. lineolatum*; Wulai, 3♀, 10-XII-1994, ex *P. myricae* and *A. jasmini* on *M. japonica*; 1♀, 31-XII-1994, ex *A. elatostemae* on *E. lineolatum*; Yangmingshan, 8♀, 15-IV-1994, ex *A. micheliae* on *O. fragrans*.

Distribution: India and Taiwan (new record).

Hosts: *Aleurolobus marlatti*, *Aleurothrixus smilaceti*, *Aleurotrachelus caerulescens*, *A. elatostemae*, *A. micheliae*, *A. rubi*, *A. sp.*, *Aleurotuberculatus ficicola*, *A. jasmini*, *A. malloti*, *A. murrayae*, *A. uraianus*, *Bemisia tabaci*, *Dialeurodes fici*, *D. formosanensis*, *D. kirkaldyi*, *Odontaleyrodes rhododendri*, *Parabemisia myricae*, *Pealius kankoensis*, *P. mori*, *Singhius hibisci*, *Taiwanaleyrodes carpini*, *T. meliosmae* (Aleyrodidae).

Encarsia tristis (Zehntner)

Prospalta tristis Zehntner, 1896. Meded. Proaf. Oest-Java (n.s.) 29:11.

Aspidiotiphagus aleyrodus Ashmead, 1904. Proc. U. S. Natl. Mus. 28:139.

Encarsia neomaskelliae Prasad, 1955. Indian J. Ent. 17:49.

Prospaltella breviclavata Shafee, 1973. Entomophaga 18:252.

Encarsia tristis (Zehntner): Hayat, 1981. Oriental Ins. 14:468. - Hayat, 1989. Oriental Ins. 23:66.

Material examined: CHIAI: Chiai, 25♀16♂, 22-XI-1993. TAICHUNG: Wufeng, 2♀2♂,

4-XII-1993. All ex *N. bergii* on *Saccharum sinensis*.

Distribution: Australia, Bangladesh, India, Indonesia, Philippines and Taiwan (new record).

Host: *Neomaskellia bergii* (Aleyrodidae).

ACKNOWLEDGEMENTS

The authors wish to express their cordial thanks to Dr. Hajimu Takada for the identification of *Aphelinus gossypii*, to Mr. Yen-Hsueh Tseng for the identification of host plants, to Mr. Chen-yu Wong and Miss Chia-hsin Liu for their help in field collection, to Miss Chia-hsin Liu for mounting the specimens. This study was financially supported (83AST-1.3-FAD-27(7) and 84AST-1.3-FAD-15) in part by the Council of Agriculture, Executive Yuan, Republic of China.

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臺灣產蚜小蜂科（膜翅目）之新記錄種¹

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摘 要

本文首次記錄飼育自蚜蟲或粉蝨之臺灣產14種蚜小蜂。其中蚜小蜂屬 (*Aphelinus*) 有3種：*A. albipodus* Hayat, *A. ancer* Hayat 及 *A. gossypii* Timberlate；恩蚜小蜂屬 (*Encarsia*) 有11種：*E. albiscutellum longipalpa* Hayat, *E. azimi* Hayat, *E. bifasciafacies* Hayat, *E. cerataphivora* Evans, *E. duorunga* Hayat, *E. lahorensis* (Howard), *E. longifasciata* Subba Rao, *E. lutea* Hayat, *E. mohyuddini* Shafee & Rizvi, *E. perflava* Hayat 及 *E. tristis* (Zehntner)。

關鍵詞：蚜小蜂屬、恩蚜小蜂屬、蚜總科、粉蝨科、臺灣。

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