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A review of Japanese Encyrtidae (Hymenoptera), with descriptions of new species, new records and comments on the types described by Japanese authors

George JAPOSHVILI[1,2], Yoshimitsu HIGASHIURA[3] & Satoshi KAMITANI[4]

[1] Department of Arthropods, Institute of Entomology, Agricultural University of Georgia, 13 km David Agmashenebeli Alley, Tbilisi, Georgia; e-mail: g.japoshvili@agruni.edu.ge

[2] Invertebrate Research Center, Agladze #26, Tbilisi, Georgia; e-mail: giorgij70@yahoo.com

[3] Citrus Promotion Center, Agricultural Technology Department, Yamaguchi Prefectural Agriculture & Forestry General Technology Center, Higashi-agenosho, Suo-oshima, Yamaguchi, Japan; e-mail: higashiura.yoshimitsu@pref.yamaguchi.lg.jp

[4] Department of Entomology, Faculty of Agriculture, Kyushu University, Fukuoka, Japan; e-mail: kamitani@agr.kyushu-u.ac.jp

Abstract. The study of Japanese encyrtids has been started with desctiption of first new species by Howard in 1898. Later many authors devoted their attention to the study of Encyrtidae in Japan. Almost all type specimens of Encyrtidae, described by Tei Ishii and Tetsusaburo Tachikawa, were examined, and all Encyrtidae recorded from Japan, which were available in Japanese collections, are revised. Fifty-two genera and 150 species were recorded to date from Japan. Five new species are described and illustrated: *Aphidencyrtoides tachikawai* Japoshvili sp. nov., *Leptomastix teii* Japoshvili sp. nov., *Psyllaephagus enokicola* Japoshvili sp. nov., *P. higashiurai* Japoshvili sp. nov. and *P. kamitanii* Japoshvili sp. nov. One genus, *Parablastothrix* Mercet, 1917, and five species, *Adelencyrtus comis* (Noyes & Ren, 1987), *Anagyrus bicolor* Noyes & Hayat, 1994, *Leptomastix auraticorpus* Girault, 1915, *Parablastothrix maritima* Logvinovskaya, 1981, and *Syrphophagus aeruginosus* (Dalman, 1820), were recorded for the first time from the country. Nine new synonymies are established: *Aschitus* Mercet, 1921, syn. nov. of *Microterys* Thomson, 1876; *Anicetus eous* Trjapitzin, 1965, syn. nov. of *A. annulatus* Timberlake, 1919; *Blastothrix kermivora* Ishii, 1828, syn. nov. of *B. erythrostetha* (Walker, 1847); *Cerchysiella togashii* Tachikawa, 1988, syn. nov. of *Bethylomimus academus* Trjapitzin, 1967; *Cheiloneurus japonicus* Ashmead, 1904, syn. nov. of *Ch. claviger* Thomson, 1876; *Epitetracnemus* Girault, 1915, syn. nov. of *Adelencyrtus* Ashmead, 1900; *Ericydnus japonicus* Tachikawa, 1963, syn. nov. of *E. longicornis* (Dalman, 1820); *Eugahania mongolica* Hoffer, 1970, syn. nov. of *E. yanoi* Tachikawa, 1956; *Leptomastidea rubra* Tachikawa, 1956, syn. nov. of *L. bifasciata* (Mayr, 1876). Thirty two new combinations are proposed: *Adelencyrtus*

bandus (Zhang & Shi, 2010) comb. nov. (from *Epitetracnemus*), *A. comis* (Noyes & Ren, 1987) comb. nov. (from *Epitetracnemus*), *A. intersectus* (Fonscolombe, 1832) comb. nov. (from *Encyrtus*), *A. japonicus* (Ishii, 1923) comb. nov. (from *Anabrolepis*), *A. kosef* (Li & Byun, 2002) comb. nov. (from *Epitetracnemus*), *A. lindingaspidis* (Tachikawa, 1963) comb. nov. (from *Anabrolepis*), *A. reni* (Zhang & Shi, 2010) comb. nov. (from *Epitetracnemus*), *A. sexguttatipennis* (Girault, 1915) comb. nov. (from *Epitetracnemus*), *A. shanghaiensis* (Si, Li & Li, 2010) comb. nov. (from *Epitetracnemus*), *Anagyrus rufoscutatus* (Ishii, 1928) comb. nov. (from *Doliphoceras*), *Microterys algiricus* (Ferrière, 1956) comb. nov. (from *Paraphaenodiscus*), *M. annulatus* (Erdős, 1957) comb. nov. (from *Aschitus*), *M. balcanicus* (Jensen, 1989) comb. nov. (from *Aschitus*), *M. bicolor* (Mercet, 1921) comb. nov. (from *Paraphaenodiscus*), *M. carpathicus* (Hoffer, 1958) comb. nov. (from *Paraphaenodiscus*), *M. golcukus* (Japoshvili, 2012) comb. nov. (from *Aschitus*), *M. imeretinus* (Japoshvili, 2007) comb. nov. (from *Aschitus*), *M. jalysus* (Walker, 1837) comb. nov. (from *Paraphaenodiscus*), *M. lichtensiae* (Howard, 1896) comb. nov. (from *Encyrtus*), *M. madyes* (Walker, 1837) comb. nov. (from *Paraphaenodiscus*), *M. margaritae* (Myartseva, 1979) comb. nov. (from *Aschitus*), *M. mongolicus* (Myartseva, 1982) comb. nov. (from *Paraphaenodiscus*), *M. naiacocci* (Trjapitzin, 1968) comb. nov. (from *Paraphaenodiscus*), *M. neoacanthococci* (Myartseva, 1979) comb. nov. (from *Aschitus*), *M. novikovi* (Trjapitzin, 1994) comb. nov. (from *Aschitus*), *M. populi* (Myartseva, 1979) comb. nov. (from *Aschitus*), *M. scapus* (Xu, 2004) comb. nov. (from *Aschitus*), *M. scapus* (Xu, 2004) comb. nov. (from *Aschitus*), *M. submetallicus* (Szelényi, 1972) comb. nov. (from *Anicetellus*), *M. subterraneus* (Ferrière, 1956) comb. nov. (from *Paraphaenodiscus*), *M. triozae* (André, 1877) comb. nov. (from *Encytrus*), *M. zakeri* (Bhuiya, 1998) comb. nov. (from *Aschitus*). The taxonomic status of the following three species is revalidated from synonymy: *Aphycoides lecaniorum* (Tachikawa, 1963), *Copidosoma uruguayensis* Tachikawa, 1968 and *Encyrtus hokkaidonis* Tachikawa, 1963. Lectotypes are designated for the following 31 species: *Adelencyrtus bifasciatus* (Ishii, 1923), *A. japonicus* (Ishii, 1923), *Anagyrus flavus* Ishii, 1928, *Anagyrus rufoscutatus*, *A. sawadai* Ishii, 1928, *A. subalbipes* Ishii, 1928, *Anicetus ceroplastis* Ishii, 1928, *A. ohgushii* Tachikawa, 1958, *Aphidencyrtoides thoracaphidis* Ishii, 1928, *Blastothrix kermivora* Ishii, 1928, *Cerapteroceroides fortunatus* (Ishii, 1925), *Cheloneurus ceroplastis* Ishii, 1923, *Ch. kanagawaensis* Ishii, 1928, *Ch. tenuicornis* Ishii, 1928, *Clausenia purpurea* Ishii, 1923, *Comperiella unifasciata* Ishii, 1925, *Copidosoma komabae* (Ishii, 1923), *Encyrtus sasaki* Ishii, 1928, *Hexencyrtus miyama* (Ishii, 1928), *Homalotylus albifrons* (Ishii, 1925), *Microterys caudatus* Ishii, 1928, *M. ericeri* Ishii, 1923, *Microterys ishiii* Tachikawa, 1963, *M. kuwanai* Ishii, 1928, *M. rufofulvus* Ishii, 1928, *M. speciosus* Ishii, 1923, *Ooencyrtus nezarae* Ishii, 1928, *Pareusemion studiosum* Ishii, 1925, *Prochiloneurus nagasakiensis* Ishii, 1928, *Psyllaephagus iwayaensis* Ishii, 1928, and *Trichomasthus eriococci* (Ishii, 1928).

Key words. Hymenoptera, Chalcidoidea, Encyrtidae, new synonym, new combination, lectotype designation, new record, Japan

Introduction

The family Encyrtidae (Hymenoptera: Chalcidoidea) is one of the most successful groups of insects used in biocontrol programs worldwide (LaSalle 1993, Noyes 2016). Consequently, it has been the focus of biocontrol specialists and taxonomists alike. The first published information on Japanese Encyrtidae was by Howard (1898) who described *Astymachus japonicus* Howard, 1898. Subsequent studies were published by Tei Ishii (active 1923–1956) and Tetsusaburo Tachikawa (active 1952–1988) and several other authors (Ashmead 1904; Azim 1964; Ujiye 1987; Higashiura & Tadauchi 1995; Hirose 1994; Tadauchi & Higashiura 1996; Takematsu et al. 1996; Ikeda & Higashiura 1997a,b,c; Tadauchi et al. 2003; Japoshvili et al. 2013; Takahashi et al. 2013). However, the Japanese encyrtid fauna remains inadequately studied compared to other countries and regions. Only 143 species have been recorded from Japan so far (Noyes 2016). In comparison, the encyrtid fauna of the United Kingdom, whose area is considerably smaller than that of Japan, comprises 242 known species, while that of countries on the Caucasus (Armenia, Azerbaijan and Georgia), nearly equaling Japan in size, has more than 280 recorded species (Japoshvili & Noyes 2005). Almost 60 % of the Encyrtidae from Japan are recorded from Shikoku Island, which comprises only 5 % of the total Japanese territory (Yamagishi 1989). Thus, the Japanese encyrtid fauna evidently requires further study and investigation of collections in several scientific instituitions to estimate the real diversity of Encyrtidae and their distribution in Japan. The temperate climatic conditions in the northern part of Japan are mirrored in its fauna, including mostly Palaearcic elements, while the southern part is subtropical and includes many Oriental elements. It is thus likely that the proportion of the Japanese encyrtid fauna that remains unknown is probably several times greater than the one currently recorded.

The purpose of this study is to revise all available material recorded from Japan. We studied almost all type material described by Tei Ishii and Tetsusaburo Tachikawa, as well as additional material from Japan housed in their collections.

Material and methods

In the present study we examined all available type specimens of Japanese species described by T. Ishii and T. Tachikawa. Slides for identification were made following Noyes (2016). Photos were taken with an Olympus SZX9 and Olympus BX50 microscopes using a Canon EOS photo camera. Focus stacking was done using the automontage software Combine ZM (http://www.hadleyweb.pwp.blueyonder.co.uk/) (Hadley 2008). Under each species listed we provide information about examined material. As most types were described quite adequately, we limited our comments to the addition of pertinent information or correction of some statements. Also, we added figures of taxonomically important morphological features in case they were not well documented in previous papers. Previously published generic and species synonymies are presented in Noyes (2016); therefore, we do not include all this information below. However some nomenclatural changes and synonymies concerning the Japanese species are included where relevant.

All of Ishii's types examined during this study are deposited in the Insect Museum of National Institute for Agro-Environmental Sciences (NIAES), Tsukuba, Japan, and those of

Tachikawa are deposited in the Kyushu University Museum (formerly at the Entomological Laboratory, Faculty of Agriculture), Kyushu University, Fukuoka, Japan (ELKU). Some material is also housed in the collection of Institute of Entomology, Georgian Agricultural University, Tbilisi, Georgia (IEGAU), Ehime University, Matsuyama, Japan (EUM), and Yoshimitsu Higashiura personal collection, Yamaguchi, Japan (YHYJ).

None of Ishii's specimens, except for *Pareusemion studiosum* Ishii, 1925, have been mounted on cards; material of this species was preserved in gelatine capsules. Some capsules had some data on their surface, and some had no data at all. In the cases where numbers were written, they apparently represent collection data. These capsules were stored in glass tubes which have unique identification numbers written on the labels. These numbers are written in the four notebooks of Ishii, provided with additional data (scientific name, host, collecting date, etc.) referring to the specimens. Specimens were either identified or unidentified. In the former case, each species has its own number, which is provided between brackets under 'Material examined' in this paper. In his original descriptions Ishii mainly indicated the collection month only. So we identified the collecting dates of the type material by relying on his notebooks. We had to remove specimens from the tubes, and because the corks were glued on the tube walls and were impossible to remove, we broke the corks and transferred the material first into plastic tubes with screw caps. The specimens were subsequently relaxed according to the protocol of Noyes (2016), card-mounted and labelled according to Ishii's notebook and labels inside old tubes. Designated lectotypes were labelled accordingly. Since Tachikawa's types provided information about the host in Japanese, we translated the original label and gave corrections in square brackets ([ ]) if it was necessary. In one case (No. 95), a fore wing of *Cerapteroceroides similis* (Ishii, 1925) was not visible on the slide, in which case the first author dissolved the mounting medium (glue) in alcohol and xylene, and then re-mounted the specimen in Canada balsam.

Tei Ishii did not designate a holotype and paratypes in his publications. Therefore, we considered all his type specimens to be syntypes and, in order to preserve nomenclatural stability and according to Articles 72 and 74 of the International Code of Zoological Nomenclature (ICZN 1999), we designated lectotypes when appropriate. In cases when Ishii clearly indicated that there was only one specimen for a given number, date and place, we considered it as the holotype (ICZN 1999: Article 71.1.2). In cases when Tachikawa did not designate a holotype and paratypes, we designated a lectotype and paralectotypes from his syntypes. All designations were hand written by the first author and left for the collection manager to make the appropriate further labelling.

Host scale insects names were corrected according to Ben-Dov et al. (2014) and additional labels were added to the specimens.

The following abbreviations were used, following Noyes (2010):

AOD – largest diameter of anterior ocellus;
AOL – minimum distance between posterior ocellus and anterior ocellus;
EL – eye length;
EW – eye width;
F_1, F_2, etc. – funicle segments one, two, etc.;
FV – minimum width of frontovertex;
FVL – length of frontovertex;
FWL – maximum length of fore wing;
FWW – maximum width of fore wing;
GL – length of gonostylus;
HH – length of head in facial view, excluding the mouth parts;
HW – head width;

ML – length of mesoscutum (maximum length along the midline);
MS – malar space;
MT – length of mid tibia;
MV – marginal vein;
OCL – minimum distance between posterior ocellus and occipital margin;
OD – longest diameter of an ocellus;
OEL – minimum distance between eye and occipital margin;
OL – length of ovipositor;
OOL – minimum distance between eye margin and adjacent posterior ocellus;
PM – postmarginal vein;
POL – minimum distance between posterior ocelli;
ScL – length of scutellum;
ScW – width of scutellum;
SL – length of scape;
SV – stigmal vein;
SW – maximum width of scape;
TAO – minimum distance between torulus and anterior ocellus;
TMM – minimum distance between torulus and mouth margin.

The format for descriptions of the new species follows those of Noyes & Hayat (1994) and Singh & Singh (2011). Terms for sculpture follow Gibson & Fusu (2016). The species are listed in alphabetic order, by genus, and within genus, by species. All distributional data were compared with the original papers and specimens in the collections examined.

List of Japanese Encyrtidae

Genus *Acerophagus* Smith, 1880

Acerophagus malinus (Gahan, 1946)

Material examined. 9 ♀♀, Fukuoka-shi, ex *Pseudococcus comstocki*, 13.xi.1961, M. Miyahara lgt., T. Tachikawa det. (ELKU).

Distribution. Japan: Kyushu (Gahan 1946). Holarctic (Noyes 2016).

Genus *Adelencyrtus* Ashmead, 1900

Epitetracnemus Girault, 1915: 164, **syn. nov.**

Comments. We studied several species of these two genera and found that their diagnostic features were the same: antennae, wing venation, body structure and ovipositor shape were all identical. The only differences appear to be those suggested by Noyes & Hayat (1984) and Noyes (1990). In *Epitetracnemus* there is a line of silvery setae across the face and the fore wing has a stronger pattern of infuscation. In *Adelencyrtus* the face lacks a line of silvery setae and the fore wing is generally hyaline or only weakly infuscate. However these characters show some varaibility across these genera. Zhang & Shi (2010) also stated that these two genera are very close and that further studies were needed to assess the validity of the two genera. For instance *Epitetracnemus comis* Noyes & Ren, 1987 is extremely close to *Adelencyrtus* and would run to *Adelencyrtus* in Trjapitzin's (1989) key to Palaearctic species. In this species, the line of silver setae across the face is hardly present and therefore we suggest that *Epitetracnemus* should be treated as a junior synonym of *Adelencyrtus*. As a result of this synonymy, besides the combinations proposed below, the following new combinations are proposed: *Adelencyrtus bandus* (Zhang & Shi, 2010) **comb. nov.** (from *Epitetracnemus*),

A. kosef (Li & Byun, 2002) **comb. nov.** (from *Epitetracnemus*), *A. reni* (Zhang & Shi, 2010) **comb. nov.** (from *Epitetracnemus*), *A. sexguttatipennis* (Girault, 1915) **comb. nov.** (from *Epitetracnemus*), *A. shanghaiensis* (Si, Li & Li, 2010) **comb. nov.** (from *Epitetracnemus*).

Adelencyrtus aulacaspidis (Brèthes, 1914)

Material examined. 1 ♀, Matsuyama, 28.–30.iv.1955, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Shikoku (Tachikawa 1974). Cosmopolitan (Noyes 2016).

Adelencyrtus bifasciatus (Ishii, 1923)

Anabrolepis bifasciatus Ishii, 1923: 106.
Adelencyrtus bifasciatus (Ishii): Compere & Annecke (1961): 57 (new combination).

Type material examined. Lectotype: ♀ (here designated) (No. 16), Nagasaki, swept, 8.vi.1922, T. Ishii lgt. (NIAES). Paralectotype: 1 ♀, antenna and wing (as separate slides), same data as lectotype (NIAES).
Additional material examined. 1 ♀, Nagasaki, swept, 30.v.1924, T. Ishii; 1 ♀, Nagasaki, swept, 1924, T. Ishii lgt. & det.; 1 ♀, Matsuyama, ex *Pseudaonidia duplex*, 20.v.1954, T. Tachikawa lgt. & det.; 6 ♀♀, Matsuyama, 23.v.1954, T. Tachikawa; 1 ♀ (on slide), Matsuyama, 23.v.1954, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Kyushu (Yasumatsu & Tachikawa 1949), Shikoku (Ishii 1923). Oriental & Nearctic (Noyes 2016).

Adelencyrtus comis (Noyes & Ren, 1987) comb. nov.

Material examined. 4 ♀♀, Ino, Hisayama, Fukuoka Pref. swept, 11.ix.1997, Y. Higashiura lgt., G. Japoshvili & Y. Higashiura det. (YHYJ).

Distribution. Japan: Kyushu (new record). New record for Japan. China (Noyes 2016).

Adelencyrtus intersectus (Fonscolombe, 1832) comb. nov.

Material examined. 1 ♀, Matsuyama, 5.ix.1959, T. Tachikawa lgt. & det.; 1 ♀, Matsuyama, 10.ix.1959, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Honshu (Ishii 1928), Shikoku (Tachikawa 1974). Cosmopolitan (Noyes 2016).

Adelencyrtus japonicus (Ishii, 1923) comb. nov.

Anabrolepis japonica Ishii, 1923: 104.
Epitetracnemus japonicus (Ishii): Noyes & Hayat (1984): 273 (new combination).

Type marterial examined. Lectotype: ♀ (here designated): swept on bamboo infested with *Eriococcus onukii*, 22.x.1922, T. Ishii lgt. (NIAES). Paralecotypes: 1 ♀, same data as lectotype; 1 ♀, head and body (as separate slides), same data as lectotype (NIAES).
Additional material examined. 2 ♀♀, Nagasaki, ex *Odonaspis bambusarum*, 28.v.1926, T. Ishii lgt., T. Tachikawa det.; 1 ♀, Matsuyama, 20.vi.1960, T. Tachikawa lgt. & det.; 1 ♀ (on slide), Ehime pref., Nakajima, 12.x.1957, F. Takechi lgt., T. Tachikawa det.; 1 ♀, Matsuyama, ex *O. bambusarum*, 2.vi.1960, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Kyushu (Ishii 1923), Shikoku (new record). Endemic.
Comments. It is unlikely that the host of this species is *Eriococcus onukii* Kuwana, 1902

(Hemiptera: Ericoccidae). We suspect that the true host is an undiscovered diaspidid scale insect (Hemiptera: Diaspididae) mixed in with the eriococcid.

Adelencyrtus lindingaspidis (Tachikawa, 1963) comb. nov.

Anabrolepis lindingaspidis Tachikawa, 1963a: 166.
Epitetracnemus lindingaspidis (Tachikawa): Noyes & Hayat (1984): 273 (new combination).

Type material examined. Holotype: ♀, Tsukumi, Oita, ex *Pseudaonidia duplex*, 10.v.1955, T. Tachikawa lgt. (ELKU). Paratypes: 3 ♀♀, Matsuyama, ex *Lindingaspis setiger*, 23.v.1954; 1 ♀, Matsuyama, 31.v.1954, T. Tachikawa lgt. (ELKU).
Additional material examined. 1 ♀ (on slide), Fukue, Yamaguchi Pref., ex *Diaspidiotus macroporanus*, 24.vi.1983, T. Kodama, T. Tachikawa det. (ELKU).

Distribution. Japan: Kyushu, Shikoku (Tachikawa 1963a), Honshu (new record). China (**Noyes** 2016).
Comments. The exserted part of ovipositor varies from 1/3 to 1/4 of gaster length.

Adelencyrtus moderatus (Howard, 1897)

Adelencyrtus miyarai Tachikawa, 1963b: 131. Synonymy by Noyes (1979): 143–169.

Type material examined. *Adelencyrtus miyarai*: Holotype: ♀, Ryukyu, Miyako Is., ex *Aulacaspis miyakensis*, 5.i. 1962, T. Miyara lgt. (ELKU). Paratypes: 3 ♀♀, same data as holotype (ELKU).

Distribution. Japan: Shikoku (Tachikawa 1963b). Cosmopolitan (Noyes 2016).

Genus *Ageniaspis* Dahlbom, 1857

Ageniaspis testaceipes (Ratzeburg, 1848)

Material examined. 8 ♀♀, Morioka, ex *Phyllonorycter ringoniella*, 1.–10.vi.1965, Hiroo Sugahara lgt., T. Tachikawa det. (ELKU).

Distribution. Japan: Honshu (Askew 1983). Holarctic (Noyes 2016).

Genus *Anagyrus* Howard, 1896

Anagyrus antoninae Timberlake, 1920

Material examined. 2 ♀♀, Matsuyama, 5.v.1961; 1 ♀, Shikoku, Omogokei, Omogo, Ehime, swept, 15.viii.1992, E. Ikeda lgt.; 1 ♀, Kashii, Fukuoka, Fukuoka pref., ex *Antonina crawi*, v. 1994, Y. Higashiura lgt. All G. Japoshvili & Y. Higashiura det. (2014).

Distribution. Japan: Shikoku (Tachikawa 1963a). Brazil, China, Hawaii, Mexico, USA (Noyes 2016).

Anagyrus bicolor Noyes & Hayat, 1994

Material examined. 1 ♀, Motoyashiki, Gokase, Myazaki pref., swept, 27.vii.1996, Y. Higashiura lgt., G. Japoshvili & Y. Higashiura det. (YHYJ).

Distribution. Japan: Kyushu (new record). New record for Japan. Thailand (Noyes 2016).

Anagyrus fujikona Tachikawa, 1963

Anagyrus fujikona Tachikawa, 1963: 47.

Type material examined. Holotype: ♀, Matsuyama, ex *Planococcus kraunhiae* 9.x.1958, T. Tachikawa lgt. (ELKU). Paratypes: 3 ♀♀, same data as holotype; 1 ♀, Okitsu, Shizuoka, 10.x.1957, T. Tachikawa lgt. & det.; 1 ♀, Matsuyama, ex *P. kraunhiae* on Satsuma mandarin, 18.vii.1959, T. Tachikawa lgt. & det.; 1 ♀ (antenna on slide) Matsuyama, ex *P. kraunhiae*, 10.ix.1958, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Honshu, Kyushu, Shikoku (Tachikawa 1963a). Endemic.
Comments. The abovementioned material is indistinguishable from *Anagyrus almoriensis* Shafee, Alam and Agarwal, 1975 according to Noyes & Hayat's (1994) key and diagnosis of the latter species. It is therefore probable that *A. almoriensis* is a junior synonym of *A. fujikona*, but we prefer not to formally propose this taxonomic change without having examined the relevant type material.

Anagyrus niger (Ishii, 1928)

Doliphoceras niger Ishii, 1928: 92.
Anagyrus niger (Ishii): Noyes & Hayat (1994): 431 (new combination).

Type material examined. Holotype: ♀ (No. 150), Mt. Oyama, Kanagawa, 5.vi.1923, T. Ishii lgt. (one antenna and one fore wing of holotype on slide) (NIAES).
Additional material examined. 1 ♀, x.1962, T. Tachikawa lgt. & det.; 1 ♀, Yokohama, ex *Trionymus* sp., 16.vii.1960, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Honshu (Ishii 1928). Russia (Noyes 2016).

Anagyrus pilosus Ishii, 1928

Anagyrus pilosus Ishii, 1928: 87.

Type material examined. Holotype: ♀ (No. 149), Nagasaki, swept, 18.x.1925, T. Ishii lgt. (NIAES).
Additional material examined. 1 ♀, Kaguyama, Kashihara, Nara pref., swept, 1.vii.1996, Y. Higashiura lgt., G. Japoshvili & Y. Higashiura det. (YHYJ).

Distribution. Japan: Kyushu (Ishii 1928). Endemic.
Comments. This species is very close to *Anagyrus zubairi* Noyes & Hayat, 1994. However, the two species can be distinguished by the relative width of the frontovertex and ocellar angle. In *A. pilosus* the frontovertex is 0.31× as wide as the head and the ocelli form an angle of about 80° whilst in *A. zubairi* the frontovertex is 0.43× as wide as the head and the ocelli form an angle of about 55°.

Anagyrus rufoscutatus (Ishii, 1928) comb. nov.

Doliphoceras rufoscutata Ishii, 1928: 92.

Type material examined. Lectotype: ♀ (here designated) (No. 96), Nagasaki, 7.x.1923, T. Ishii lgt., 1 antenna and 1 wing of lectotype on slide (NIAES).
Additional material examined. 3 ♀♀, Takagi, Kasugai, Aichi, collected by yellow pan traps, 1–7.vi.1994, Y. Suzuki lgt., G. Japoshvili & Y. Higashiura det. (YHYJ).

Distribution. Japan: Kyushu (Ishii 1928). Russia (Noyes 2016).
Comments. *Doliphoceras* was synonymized under *Anagyrus* by Noyes & Hayat (1994: 69), however the new combination for *D. rufoscutata* has not been formally proposed so far.

Anagyrus saccharicola Timberlake, 1932

Material examined. 2 ♀♀, Okinawa, ex *Saccharicoccus sacchari*, 19.iii.1959, Teruya Rinko lgt., T. Tachikawa det. (ELKU).

Distribution. Japan: Ryukyu (Tachikawa 1963a). Afrotropical, Nearctic, Oriental, Neotropical (Noyes 2016).

Anagyrus sawadai Ishii, 1928

Anagyrus sawadai Ishii, 1928: 88.

Type material examined. Lectotype: ♀ (here designated) (No. 114), Isahaya, Nagasaki, ex *Eriococcus* sp. on *Cryptomeria japonica*, 29.vii.1924, T. Ishii lgt. (NIAES). Paralectotype: 1 ♀ (on slide), antenna and fore wing, same data as lectotype (NIAES).
Additional material examined. 2 ♀♀, Matsuyama, 5.viii.1953; slides: 1 ♀, Matsuyama, Tarumi, 5.vii.1955, T. Tachikawa lgt. & det.; 1 ♀, Matsuyama, 5.viii.1953, T. Tachikawa lgt. & det.; 1 ♀, Matsuyama, 13.viii.1955, T. Tachikawa lgt. & det.; 1 ♀, ex *Spilococcus flavidus*, Matsuyama, 10.vi.1961, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Kyushu (Ishii 1928), Shikoku (Tachikawa 1963a). China, India, Israel, Taiwan (Noyes 2016).
Comments. According to Ishii's notes the host information is erroneous. The host is likely to be a mealybug (Hemiptera: Pseudococcidae) and not a soft scale (Coccidae).

Anagyrus schoenherri (Westwood, 1837)

Anagyrus flavus Ishii, 1928: 86. Synonymy by Gahan (1949: 360).
Anagyrus alboclavatus Ishii, 1928: 85. Synonymy by Tachikawa (1965: 93).

Type material examined. *Anagyrus flavus*: Lectotype: ♀ (here designated) (No. 157), Nagasaki, ex *Pulvinaria* sp. on *Mallotus japonicus*, 4.vi.1926, M. Maida lgt.
Additional material examined. 1 ♀, Tsukumi, Oita, 20.–25.v.1955, T. Tachikawa lgt., G. Japoshvili det.; 1 ♀, Matsuyama, 19.v.1955, T. Tachikawa lgt., Japoshvili det. (ELKU).

Distribution. Japan: Honshu, Kyushu, Shikoku (Tachikawa 1963a). Palaearctic (Noyes 2016).
Comments. It is likely that the host recorded above is erroneous since species of *Anagyrus* are almost exclusively parasitoids of mealybugs (Hemiptera: Pseudococcidae). It is likely that the true host is *Phenacoccus pergandei* Cockerell, 1896, a species commonly found on *Mallotus japonicus* in Japan (Kawai 1980) and which looks very similar to *Pulvinaria* sp. (Hemiptera: Coccidae). Tachikawa (1963) also states that the abovementioned host record is probably incorrect, as all specimens found later in Japan were reared only from *Phenacoccus* sp.

We were not able to find the type material of *A. alboclavatus*.

Anagyrus subalbipes Ishii, 1928

Anagyrus subalbipes Ishii, 1928: 90.

Type material examined. Lectotype: ♀ (here designated) (No. 24), Nagasaki, ex *Pseudococcus* sp. on *Citrus*, vi.1922, T. Ishii lgt. (NIAES).
Additional material examined. 1 ♀, Akasaki, Honshu, ex *Pseudococcus comstocki*, 27.viii.–18.ix.1962, E. Murakami lgt., T. Tachikawa det.; 1 ♀, Fujikasi nr. Hirosaki, Honshu, 24.vii.–10.viii.1960, Y. Murakami lgt., T. Tachikawa det.; 1 ♀ (on slide), Akasaki, Honshu, ex *P. comstocki*, 27.viii.–18.ix.1962, Y. Murakami lgt., T. Tachikawa det. (ELKU).

Distribution. Japan: Honshu, Kyushu (Tachikawa 1963a). China, Taiwan, USA (Noyes 2016).
Comments. Tachikawa (1963) supposed that *A. subalbipes* may be a synonym of *A. sawadai*, later Noyes & Hayat (1994) also mentioned that these two names could be synonymous, however they were unable to examine the type material. The species is indeed close to *A. sawadai*, but it differs in the relative width of the frontovertex, ocellar angle, relative scape width and length of the malar space. In *A. subalbipes* the frontovetex is 0.38× head width, the ocelli form a slightly obtuse angle, the scape is about 1.87× as long as broad and the malar space is about 0.41× as long as an eye. In *A. sawadai* frontovertex is 0.25× head width, scape much longer than 2× as long as broad and malar space about 0.5× as long as an eye.

Anagyrus subnigricornis Ishii, 1928

Anagyrus subnigricornis Ishii, 1928: 89.

Type material examined. Holotype: ♀ (No. 144, without head), Nagasaki, swept, 12.vii.1923 (in the publication Ishii writes 1924), T. Ishii lgt. (antennae and wing of holotype on slide) (NIAES).
Additional material examined. 1 ♀ (mounted on label with glued small piece of red tape), Tarumi, Matsuyama, 2.x.1955, T. Tachikawa lgt. & det.; 1 ♀, Matsuyama, 27.ix.1955, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Kyushu, Shikoku (Tachikawa 1963a). Oriental (Noyes 2016).

Genus *Anicetus* Howard, 1896

Anicetus annulatus Timberlake, 1919

Anicetus eous Trjapitzin, 1965: 901, **syn. nov.**

Material examined. 1 ♀, Oita-City, 13.v.1953, T. Tachikawa lgt. & det.; 1 ♀, Matsuyama, ex *Coccus hesperidum*, 14.v.1955, T. Tachikawa lgt. & det.; 4 ♀♀ (on slide), Matsuyama, 14.v.1954, ex *Pulvinaria aurantii*, T. Tachikawa lgt. & det.; 1 ♀ (on slide), Matsuyama, 8.v.1954, ex *P. aurantii*, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Honshu, Kyushu, Shikoku (Tachikawa 1963a). Holarctic, Neotropical, Oriental (Noyes 2016).
Comments. *Anicetus eous* was described based on a single specimen. Although the senior author visited St. Petersburg in 2003 and examined the type of this species, he did not copy the label details. After checking many samples of *A. annulatus* from Japan we decided to synonymize *A. eous* with *A. annulatus* having no doubts about their conspecificity.

Anicetus beneficus Ishii & Yasumatsu, 1954

Anicetus benefices Ishii & Yasumatsu, 1954: 70.

Material examined. 2 ♀♀, Matsuyama, ex *Ceroplastes rubens*, 20.vi.1960, T. Tachikawa lgt. & det.; 5 ♀♀, Matsuyama, vi.1956, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Honshu, Kyushu, Shikoku (Tachikawa 1963a). Australian, Oriental, Palaearctic (Noyes 2016).
Comments. The type material of this species could not be located. Our interpretation of the species is based on the abovementioned specimens. The clava has two complete sutures and the ovipositor is exserted with the exserted part about 0.75× as long as the mid tibial spur.

Anicetus ceroplastis Ishii, 1928

Anicetus ceroplastis Ishii, 1928: 150.

Type material examined. Lectotype: ♀ (here designated) (No. 7), Nagasaki, ex *Ceroplastes pseudoceriferus*, 1.x.1922, T. Ishii lgt. (NIAES). Paralectotype: 1 ♀ (on slide), same data as lectotype (NIAES).
Additional material examined. 5 ♀♀, Nagasaki, ex *Ceropastes japonicus*, 27.x.1926, T. Ishii lgt., T. Tachikawa det.; 1 ♀, Matsuyama, ex *Ceroplastes ceriferus*, 5.vii.1957, T. Tachikawa lgt. & det.; 8 ♀♀, Matsuyama, vii.1958, T. Tachikawa lgt. & det.; 5 ♀♀, Kozaki, Kyushu, vi.1954, T. Tachikawa lgt. & det.; 1 ♀, Fukuoka, Kyushu, ix.1960. T. Kato lgt., T. Tachikawa det. (ELKU); 1 ♀ (on slide), Maidashi, Fukuoka-city, Fukuoka Pref., ex *C. japonicus* on *Ilex rotunda*, vi.1993, Y. Higashiura lgt., G. Japoshvili & Y. Higashiura det. (YHYJ).

Distribution. Japan: Honshu, Kyushu, Shikoku (Tachikawa 1963a). China, Israel (Noyes 2016).
Comments. In this species the exserted part of the ovipositor is 1.5× as long as the mid tibial spur. Tachikawa (1963a) states that *Anicetus ceroplastis* exclusively parasitizes *Ceroplastes pseudoceriferus* Green, 1935 and suggests that records of *C. japonicus* (Green, 1921) as host are based on misdentifications of *C. pseudoceriferus*.

Anicetus ohgushii Tachikawa, 1958

Anicetus ohgushii Tachikawa, 1958: 80.

Type material examined. Lectotype: ♀ (glued on the first card) (here designated), Koriyama, Fukushima, ex *Ceroplastes japonicus* Green, 22.v.1957, R. Ohgushi lgt. (ELKU). Paralectotypes: 4 ♀♀ (glued on the second to the fifth cards), same data as lectotype; 14 ♂♂, same data as lectotype; 2 ♀♀ 7 ♂♂, ex *C. japonicus*, Koriyama, Fukushima, vii.1956, R. Ohgushi lgt. (ELKU).

Distribution. Japan: Honshu (Tachikawa 1963a). China (Noyes 2016).
Comments. Tachikawa (1958) did not designate a holotype and paratypes and therefore the above card-mounted specimen is here designated as lectotype.

Genus *Aphidencyrtoides* Ishii, 1928

Aphidencyrtoides thoracaphis Ishii, 1928

Aphidencyrtoides thoracaphis Ishii, 1928: 123.

Type material examined. Lectotype: ♀ (here designated), Nagasaki, ex *Thoracaphis* sp. on *Quercus glauca*, v. 1925 or 1926, T. Ishii lgt. (NIAES); Paralectotypes: 4 ♀♀, same data as lectotype; 2 ♀♀ (on slide), same data as lectotype (NIAES).
Additional material examined. 1 ♀, Tsukumi, Oita, 19.iv.1954, T. Tachikawa lgt. & det.; 1 ♀, Uwajima, ex *Nipponaphis distyliicola* Monzen, v. 1960, T. Tachikawa lgt. & det.; 1 ♀, Matsuyama, ex *N. distyliicola*, 15.v.1955, T. Tachikawa lgt. & det.; slides: 1 ♀, Tsukumi, Oita, ex *N. distyliicola*, 19.iv.1954, T. Tachikawa lgt. & det.; 1 ♀, Matsuyama, ex *N. distyliicola*, 15.v.1955, T. Tachikawa lgt. & det.; 1 ♀, Tsukumi, Oita Pref., 1.xii.1947, ex *N. distyliicola* on *Q. glauca*, T. Tachikawa det.; 1 ♀, Oita, 17.ii.1948, ex *N. distyliicola* on *Q. glauca*, T. Tachikawa det. (ELKU).

Distribution. Japan: Kyushu, Shikoku (Tachikawa 1963a). Endemic.
Comments. In couplete 517 of Trjapitzin's (1989) key to Palaearcic genera he stated that in *Aphydencyrtoides* the frontovertex is 2× as long as wide. This statement is incorrect since in the type material the frontovertex is at most 1.3× as long as wide which would lead the user to *Metablastothrix*. Morphologically these two genera can be distinguished by the very short gonostyli and wide outer plates of the ovipiositor in *Aphidencyrtoides* which contrast with

the relatively longer gonostyli and narrower outer plates of the ovipositor in *Metablastothrix*. Furthermore, the hosts of both genera belong to different superfamilies of hemipterans, the Aphidoidea and Coccoidea respectively (Sugonjaev & Trjapitzin 1988).

Aphidencyrtoides tachikawai Japoshvili, sp. nov.

(Figs 1–2, 16–20)

Type material. Holotype: ♀, Mt. Kurodake, Shounai, Ooita Pref., swept, 13.vi.1996, Y. Higashiura lgt. (ELKU). Paratypes: 10 ♀♀ (1 ♀ on slide), same data as holotype; 8 ♀♀, Aburayama, Fukuoka, ex *Nipponaphis cuspidatae*, 28.–30.v.1959, Y. Murakami lgt. (ELKU, 2 ♀♀ in IEAUG).

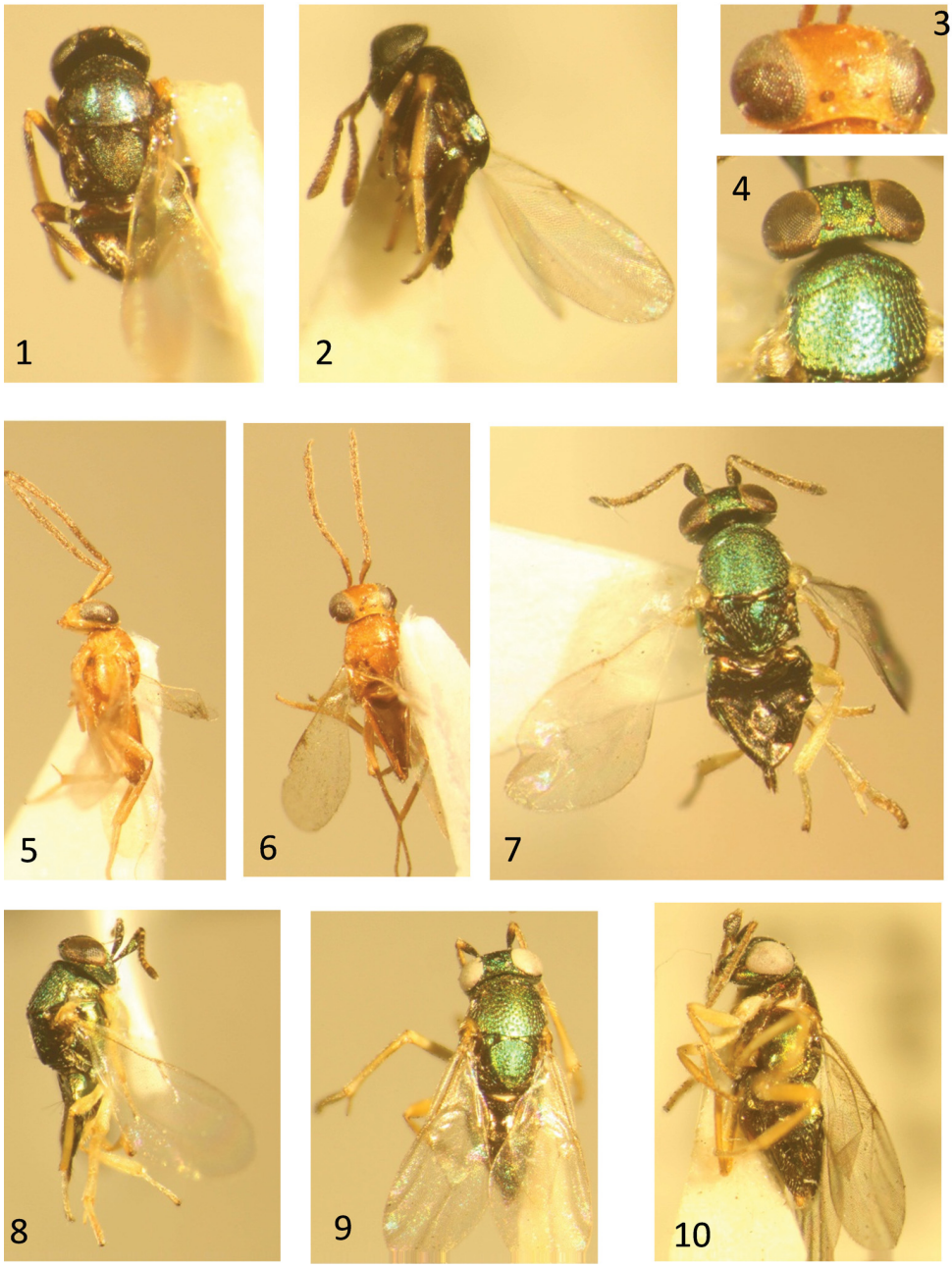
Diagnosis. ***Female*** (length about 1.14–1.43 mm) (Figs 1–2). Head and mesosoma generally black; scape and pedicel brown; funicle light brown and apical 2 segments of clava generally darker than other flagellar segments; legs generally dark brown, only apical tip of hind tibia, apical 1/3 of fore tibia, apical 1/2 to 3/5 of mid tibia, apical tip of mid femora and tarsal segments (except hind leg last tarsal segment, which is brown) yellow; wings hyaline; scape about 4–5× as long as wide; pedicel about 2× as long as wide, longer than F_1–F_2 combined. All flagellar segments at least slightly shorter than wide; F_4–F_6 with longitudinal sensilla, sometimes F_3 also has sensilla, but F_1–F_2 without longitudinal sensilla; frontovertex about 0.33–0.38× as wide as head; fore wing about 2.25× as long as wide; ovipositor not exserted.

Male. Unknown.

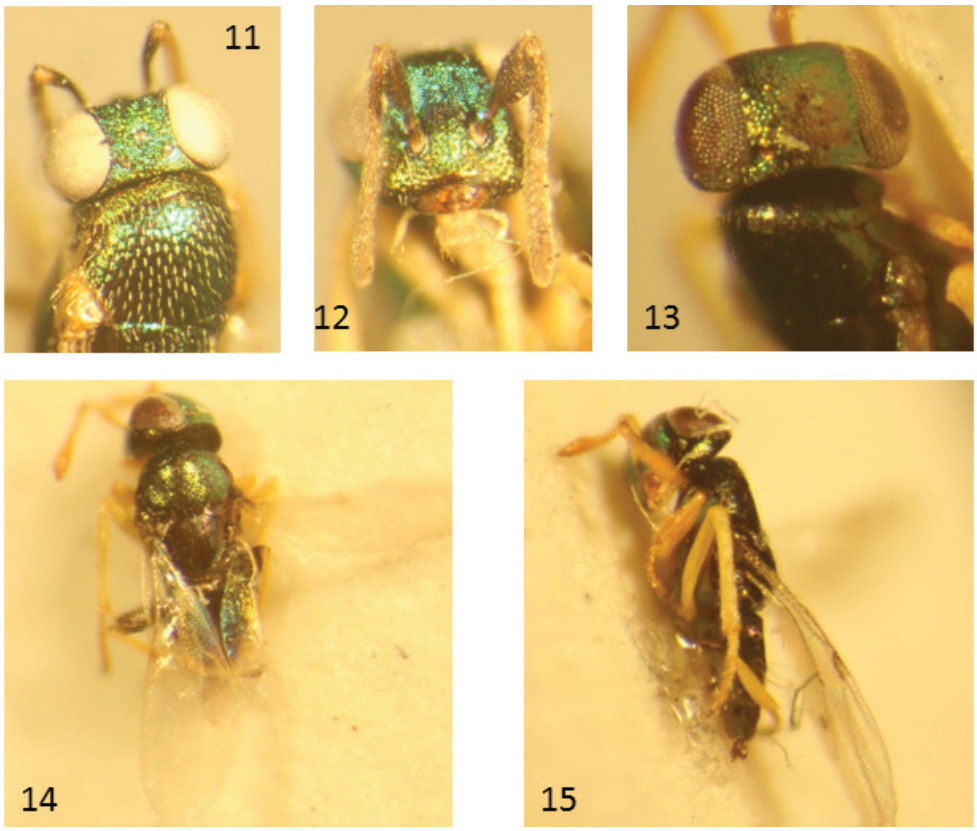
Description. ***Female*** (holotype): length, including ovipositor, 1.43 mm.

Head black, with blue-golden metallic reflection; scape, pedicel, second and third segments of clava completely brown; funicular segments light brownish; mesosoma black; pronotum, tegulae, axillae and mesoscutum, with blue-violet metallic reflection, mesopleuron with violet-golden metallic reflection; scutellum in basal part similar to that of mesoscutum, its upper half provided with a bright green-metallic reflection; metanotum and propodeum with violet to greengolden metallic reflection; legs dark brown except apical tip of hind tibia, apical 1/3 of fore tibia, apical 3/5 of mid tibia, apical tip of mid femur and tarsal segments (except hind leg last tarsal segment, which is brown) which are yellow; fore (Fig. 16) and hind wings hyaline; gaster almost as black as the mesosoma; first tergite with greenish metallic reflection and remaining tergites with more violet metallic reflection.

Head (Fig. 19) on frontovertex with fine, raised, regular, polygonally reticulate sculpture of mesh size almost the same size as the diameter of an eye facet; FV with black setae as long as OD; face and temple with similar, but more elongate reticulate-imbricate sculpture; gena immediately below eye with shallow, longitudinally elongate sculpture; ocellar angle about 100°; occipital margin sharp, carinate; eye reaching occipital margin; malar suture absent. Antenna as in Fig. 17; all flagellar segments almost transverse; F_1–F_2 very small and their combined length 0.8× as long as pedicel; F_1–F_2 without longitudinal sensilla; F_3–F_6 with longitudinal sensilla each; clava with sutures parallel, but inconspicuous; mandible with an acute lower tooth and a wide truncation. Relative measurements: HW 30, FV 10, FVL 13, OD 2, POL 6, OOL 0.5, OCL 2, AOL 4, EL 17.5, EW 40, MS 10, SL 12, SW 3; ScL 19; LM 18; WS 17. Dorsum of mesosoma (Fig. 20) with fine, raised, fairly regular, polygonally reticulate sculpture similar to that on frontovertex, but of slightly larger mesh size; scutellum moderately convex in profile, most strongly curved at apical 2/3 along its length; setae on



Figs 1–10. 1–2 – *Aphidencyrtoides tachikawai* Japoshvili sp. nov., female, body. 3, 5–6 – *Leptomastix teii* Japoshvili sp. nov., female: 3 – head; 5–6 – body. 4, 7–8 – *Psyllaephagus enokicola* Japoshvili sp. nov., female: 4 – head; 7–8 – body. 9–10 – *Psyllaephagus kamitanii* Japoshvili sp. nov., female, body.



Figs 11–15. 11–12 – *Psyllaephagus kamitanii* Japoshvili sp. nov., female, head. 13–15 – *Psyllaephagus higashiurai* Japoshvili sp. nov., female: 13 – head; 14–15 – body.

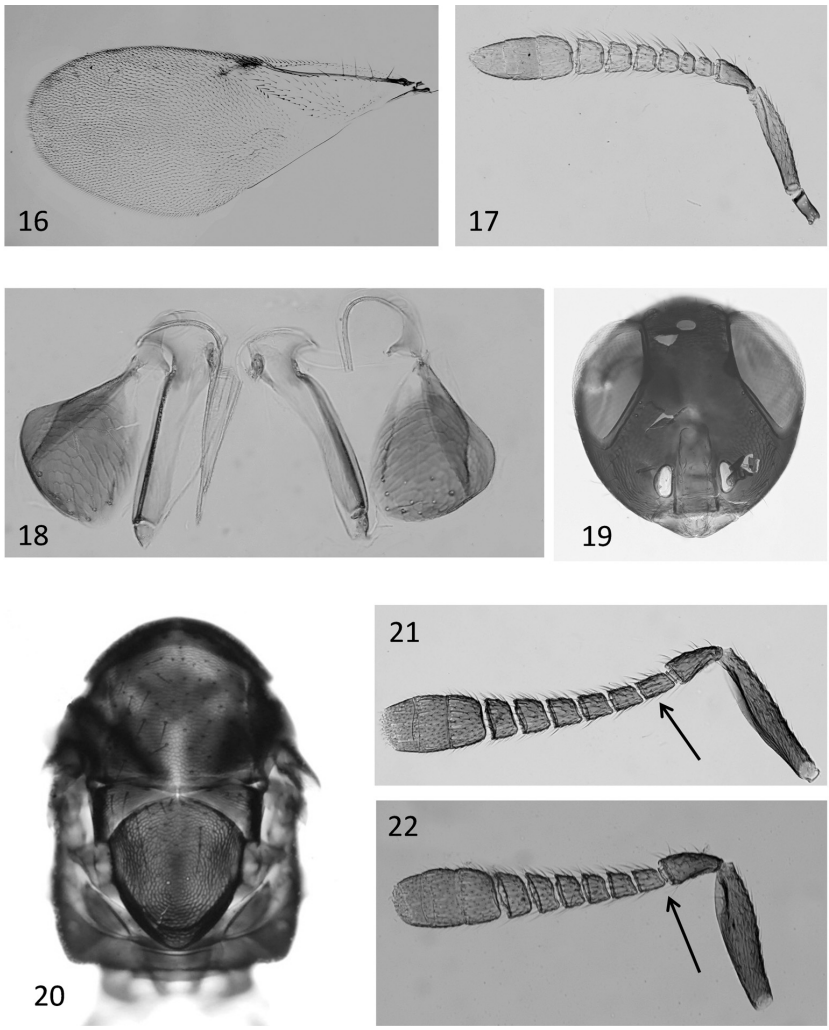
disc of mesoscutum and scutellum slightly longer than those on frontovertex and stouter; setae present only on the basal half of the scutellum; propodeum on each side with a tuft of silvery setae adjacent to spiracle; mesopleuron almost touching base of metasoma; head and mesosoma combined almost 1.8× as long as metasoma. Fore wing with venation and setation as in Fig. 16. Relative measurements: FWL 87, FWW 38; HWL 62, HWW 19.

Metasoma at the apex appears horizontally cut, so that apical horizontal line width almost 1/4 of mesosoma width; ovipositor not exserted. Relative measurements (paratype): OL 22, GL 2, MT 57. Ovipositor as in Fig. 18.

Differential diagnosis. This new species can be distinguished from *A. thoracaphis* using the characters given in the Table 1.

Etymology. Named after Japanese taxonomist working on encyrtids, Prof. Dr. Tetsusaburo Tachikawa.

Distribution. Japan: Kyushu (new record). Endemic.



Figs 16–22. 16–20 – *Aphidencyrtoides tachikawai* Japoshvili sp. nov., female: 16 – fore wing; 17 – antenna; 18 – ovipositor; 19 – head; 20 – mesosoma. 21 – *Aphycoides lecaniorum* (Tachikawa, 1963), female, antenna. 22 – *Aphycoides fuscipennis* (Ashmead, 1904), female, antenna.

Table 1. Characters used to separate *Aphidencyrtoides tachikawai* Japoshvili sp. nov. and *A. thoracapis* Ishii, 1928.

***A. tachikawai* sp. nov.**	***A. thoracaphis***
OL 0.38× as long as mid tibia.	OL 0.54× as long as mid tibia.
Combined length of F_1–F_2 0.8× as long as pedicel.	Combined length of F_1–F_2 as long as pedicel.
Apical 1/2 to 3/5 of mid tibia yellow.	Apical 1/3 of mid tibia yellow.
Scutelum not wider than long.	Scutellum wider than long.

Genus *Aphycoides* Mercet, 1921

Aphycoides clavellatus (Dalman, 1820)

Material examined. 1 ♀, Asahikawa, Hokkaido, ex *Physokermes jesoensis*, 20.vi.1970, K. Kamijo lgt., T. Tachikawa det.; 1 ♀, Asahigava, Hokkaido, ex *P. jesoensis*, 8.vii.1970, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Hokkaido (Tachikawa 1982a). Holarctic (Noyes 2016).

Aphycoides fuscipennis (Ashmead, 1904)

(Figs 22, 23, 25)

Tachinaephagus fuscipennis Ashmead, 1904: 155.
Aphycoides fuscipennis (Ashmead): Trjapitzin (1989): 161, 453 (new combination).
Plesiomicroterys infuscatus Ishii, 1928: 139. Synonymised with *Aphycoides fuscipennis* by Trjapitzin (1989: 161, 452).

Material examined. 2 ♀♀, Futagoyama, Ishikawa, ex *Eulecanium cerasorum*, 2.vi.1975, I. Togashi lgt., T. Tachikawa det.; 1 ♀ (on slide), Tsukumi, Oita, swept, 12.v.1957, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Kyushu (Tachikawa 1963a), Honshu (new record). Holarctic (Noyes 2016).

Aphycoides lecaniorum (Tachikawa, 1963) stat. restit.

(Figs 21, 24, 26)

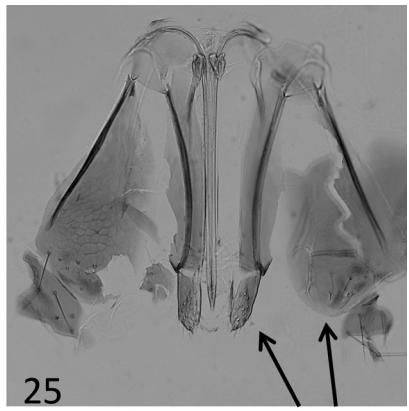
Plesiomicroterys lecaniorum Tachikawa, 1963: 238. Synonymised with *Plesiomicroterys infuscatus* by Voynovich (1984: 634), and later with *Aphycoides fuscipennis* by Trjapitzin (1989: 161, 252).

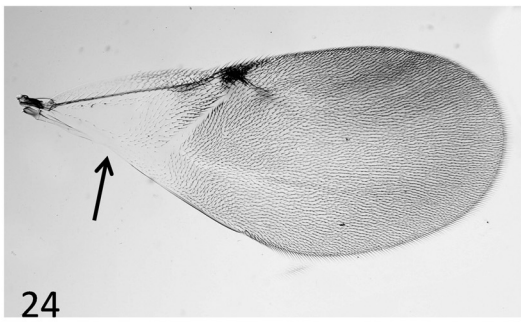
Type material examined. Holotype: ♀, Matsuyama, ex *Takahashia japonica*, 29.v.1958, T. Tachikawa lgt. (ELKU). Paratypes: 2 ♀♀, Matsuyama, ex *Lecanium* sp. on *Cudrania tricuspidata*, 2.vi.1962, T. Tachikawa lgt.; 1 ♀ (on slide), Matsuyama, ex *Parthenolecanium* sp. nr. *glandi*, 2.vi.1962, T. Tachikawa lgt. (ELKU).

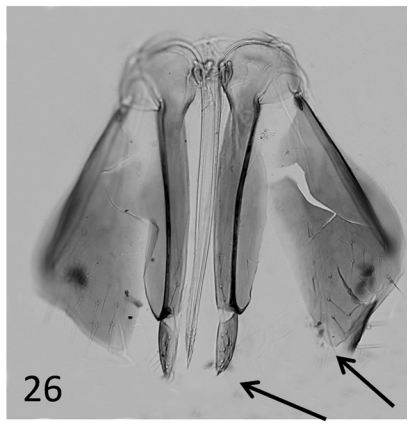
Distribution. Japan: Kyushu, Shikoku (Tachikawa 1963a). Endemic.
Comments. Voynovich (1984) incorrectly synonymized this species with *A. fuscipennis*. The differences between the two species were described by Tachikawa (1963) and presented in Table 2. For these reasons we are confident that the two species are distinct and reinstate *A. lecaniorum* as a valid species.

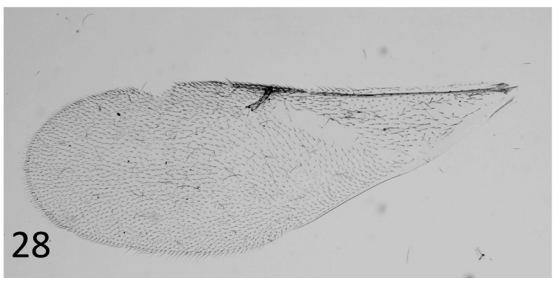
Table 2. Characters used to separate *Aphycoides fuscipennis* (Ashmead, 1904) and *A. lecaniorum* (Tachikawa, 1963).

A. fuscipennis	*A. lecaniorum*
All funicullar segments transverse.	At least F_1–F_4 longer than wide.
Ovipositor outer plates with inner apex rounded.	Ovipositor outer plates with inner apex acute.
Mid tibial spur as long as first tarsal segment.	Mid tibial spur longer than first tarsal segment.
Base of speculum with 4 lines of setae under submarginal vein (Fig. 23).	Base of speculum at most with 3 very fine lines of setae under marginal vein (Fig. 24).









Figs 23–29. 23, 25 – *Aphycoides fuscipennis* (Ashmead, 1904), female: 23 – fore wing; 25 – ovipositor. 24, 26 – *Aphycoides lecaniorum* (Tachikawa, 1963), female: 24 – fore wing; 26 – ovipositor. 27–29 – *Leptomastix teii* Japoshvili, sp. nov., female: 27 – antenna; 28 – fore wing; 29 – ovipositor.

Genus *Aphycus* Mayr, 1876

Aphycus apicalis (Dalman, 1820)

Material examined. 1 ♀, Matsuyama, 13.v.1955, T. Tachikawa lgt. & det.; 1 ♀, Matsuyama, ex *Phenacoccus pergandei*, 13.v.1955, T. Tachikawa lgt. & det.; 1 ♀, Matsuyama, ex *P. pergandei*, 21.iv.1955, T. Tachikawa lgt. & det.; 1 ♀, Matsuyama, ex *P. pergandei*, 15.v.1955, T. Tachikawa lgt. & det. (ELKU).

Distribution. Hokkaido, Honshu, Kyushu, Shikoku (Tachikawa 1963a). Holarctic (Noyes 2016).

Aphycus elegans (Compere & Annecke, 1961)

Distribution. Japan: Honshu (Compere & Annecke 1961).

Aphycus sapporoensis (Compere & Annecke, 1961)

Distribution. Japan: Hokkaido, Shikoku (Compere & Annecke 1961).

Genus *Arrenophagus* Aurivillius, 1888

Arrenophagus albitibiae Girault, 1915

Distribution. Japan: Shikoku (Annecke & Prinsloo 1974).

Arrenophagus chionaspidis Aurivillius, 1888

Material examined. Specimen numbers 1507, 1520, 1530, 1524; Japan, 29.ix.–18.xii.2010, ex Diaspididae *Fiorinia externa* on *Tsuga canadensis* and *T. diversifolia*, K. Abell lgt., G. Japoshvili det. (IEGAU). 1 ♀, Shikoku, v.1956, T. Tachikawa lgt. & det.; 1 ♀, Shikoku, Ashizuri, ex *Aulacaspis yabunikkei*, v.1956, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Honshu (Japoshvili et al. 2013), Shikoku (new record). Cosmopolitan (Noyes 2016).

Genus *Asterolecanobius* Tachikawa, 1963

Asterolecanobius tsukumiensis Tachikawa, 1963

Asterolecanobius tsukumiensis Tachikawa, 1963: 174.

Type material examined. Lectotype: ♀ (here designated), Tsukumi, Oita Pref. ex *Asterolecanium* sp. on *Pleioblastus variegatus* var. *viridis* f. *glabra*, vi.1955, T. Tachikawa lgt. (ELKU). Paralectotype: 1 ♀, same data as holotype. Left fore wing, antennae and broken head of paratype dissected on slide (ELKU).

Distribution. Japan: Kyushu (Tachikawa 1963a). Endemic.
Comments. Since both the card-mounted specimen and the slide are labelled as holotypes, we considered them as syntypes and designate here the card mounted specimen as a lectotype.

Genus *Astymachus* Howard, 1898

Astymachus japonicus Howard, 1898

Material examined. 6 ♀♀, Hakozaki, Fukuoka-city, Kyushu, ex *Aclerda tokionis*, 15.vi.–6.vii.1956, T. Tachikawa lgt. & det.; 1 ♀, Fukuoka, 31.viii.1955, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Honshu, Kyushu (Tachikawa 1963a). Endemic.

Genus *Bethylomimus* Trjapitzin, 1962 stat. restit.

Bethylomimus academus Trjapitzin, 1967 comb. restit.

Bethylomimus academus Trjapitzin, 1967: 208.
Cerchysiella togashii Tachikawa, 1988: 63–65, **syn. nov.**

Material examined. *Cerchysiella togashii*: Paratypes: 5 ♀♀ (2 ♀♀ on slides), Kaga city, Ishikawa pref. ex *Mesosa longipennis*, 6.vii.1987, I. Togashi lgt. (ELKU).

Distribution. Japan: Honshu (Tachikawa 1963a). Russia (Noyes 2016).
Comments. According to John Noyes (pers. comm.), *Bethylomimus* was incorrectly synonymised with *Zaommoencyrtus* Girault, 1916, by Trjapitzin & Gordth (1978). It differs from *Zaommoencyrtus* in having the head hypognathous, the filum spinosum conspicuously converging with the proximal margin of the linea calva and directed towards the junction of the submarginal and marginal veins and lack a strongly swollen parastigma whereas in *Zaommoencyrtus* the head is more or less prognathous, the filum spinosum is not directed towards the junction of the submarginal and marginal veins and the parastigma is strongly swollen and much wider than the submarginal vein. The characters highlighted by Yang et al. (2013) are incorrect as they are based on an undescribed species, whose placement in *Zaommoencyrtus* by Noyes et al. (1996) is possibly incorrect. It is likely that species previously placed in *Bethylomimus* could be quite easily accommodated in that genus. However, as we are confident that *C. togashii* is a synonym of *B. academus* (supported by morphological characters and proximity of the type locality of *B. academus*, Russia: Primorskiy Kray, to Japan) we prefer to reinstate *Bethylomimus* as a valid genus until the generic limits of the two genera can be investigated in more detail. Further work will probably suggest that *Bethylomimus* includes diminutive species that actually represent a monophyletic clade derived from within the *Cerchysiella* clade.

Genus *Blastothrix* Mayr, 1876

Blastothrix erythrostetha (Walker, 1847)

Blastothrix kermivora Ishii, 1828: 117, **syn. nov.**

Type material examined. *Blastothrix kermivora*: Lectotype: ♀ (here designated) (No. 43), antenna and fore wing (NIAES).

Additional material examined. 3 ♀♀, Ooyagyu, Nara, ex *Kermes nakagawae*, 13.v.1993, Y. Higashiura lgt., G. Japoshvili & Y. Higashiura det.; 3 ♀♀ (on slide), Kaguyama, Kashihara, Nara Pref., ex *K. nakagawae* on *Quercus serrata*, 24–28.v.1994, Y. Higashiura lgt., G. Japoshvili & Y. Higashiura det. (YHYJ).

Distribution. Japan: Honshu, Shikoku (Tachikawa 1963a). Palaearctic (Noyes 2016).
Comments. After comparing type material of *B. kermivora* with reliably identified material of *B. erythrostetha* deposited in the Francis Walker collection (Hope Department of Oxford University – HDOU, Oxford), British Museum of Natural History (BMNH, London) and samples from the Zoological Institute (ZIN, St. Petersburg) (see also Japoshvili & Karaca 2004), we conclude that the two species are conspecific and therefore treat *B. kermivora* Ishii as a junior synonym of *B. erythrostetha*.

Blastothrix hungarica Erdős, 1959

Material examined. 1 ♀, Hikinuma, Shiobara, Tochigi Pref., by trunk trap, 16.v.1985, K. Takahashi lgt., G. Japoshvili det. (ELKU).

Distribution. Japan: Honshu (new record). Palaearctic (Noyes 2016).
Comments. We have been unable to find published records of this species from Japan even though Trjapitzin (1989) includes Japan in his distributional list for the species. However, we located a single specimen of this species in the second author's collection.

Blastothrix ozukiensis Ishii, 1828

Blastothrix ozukiensis Ishii, 1928: 119.

Type material examined. Holotype: ♀ (No. 55), Ozuki, Kanagawa-ken, swept, 2.vi.1923, T. Ishii lgt. (NIAES).

Distribution. Japan: Honshu (Ishii 1928). Afghanistan (Noyes 2016).

Blastothrix kuwanai Sugonjaev, 1989

Material examined. 7 ♀♀ (1 ♀ on slide), Mt. Omine, Gunma Pref., ex *Eulecanium kunoense*, vi.1957, T. Kimura lgt., T. Tachikawa det. (ELKU).

Distribution. Japan: Honshu (Sugonjaev 1989). China (Noyes 2016).
Comments. This species was described by Sugonjaev (1989) from Japanese material housed in the National Museum of Natural History in Washington D.C. (USNM). The species is very close to *B. hedqvisti* Sugonjaev, 1984 and is possibly its synonym.

Blastothrix longipennis Howard, 1881

Material examined. 1 ♀, Hokudai, Sapporo, Hokkaido, 5.vi.1992, Y. Sakamaki lgt., G. Japoshvili & Y. Higashiura det. (YHYJ).

Distribution. Japan: Hokkaido (Higashiura & Tadauchi 1995). Holarctic (Noyes 2016).

Genus *Boucekiella* Hoffer, 1954

Boucekiella depressa Hoffer, 1954

Material examined. 1 ♀, Fukuoka, ex *Nipponaclerda biwakoensis*, 31.vii.1955, T. Tachikawa lgt. & det.; 1 ♀, Fukuoka, 31.vii.1955, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Honshu, Kyushu (Tachikawa 1963a). Holarctic (Noyes 2016).

Genus *Caenohomalopoda* Tachikawa, 1979

Caenohomalopoda shikokuensis (Tachikawa, 1956)

Pseudhomalopoda shikokuensis Tachikawa, 1956: 90.
Caenohomalopoda shikokuensis (Tachikawa): Tachikawa (1979): 169 (new combination).

Type material examined. Holotype: ♀, Matsuyama, Shikoku, 14.vi.1955, T. Tachikawa lgt. (ELKU). Paratypes: 1 ♀, same data as holotype; 1 ♀ (on slide), Asami, Matsuyama, 14.vi.1955, T. Tachikawa lgt. (ELKU).

Distribution. Japan: Shikoku (Tachikawa 1963a). Holarctic (Noyes 2016).

Genus *Callipteroma* Motschulsky, 1863

Callipteroma sexguttata Motschulsky, 1863

Callipteroma quinqueguttata Motschulsky, 1863: 36. Synonymised with *Callipteroma sexguttata* by Bouček (1977: 70).
Callipteroma kiushiuensis Ishii, 1928: 96. Synonymised with *Callipteroma quinqueguttata* by Tachikawa (1962: 79).

Type material examined. *Callipteroma kiushiuensis*: Holotype: ♂, (No. 132), Nagasaki, swept, 31.viii.1924, T. Ishii lgt. (NIAES).
Additional material examined. 1 ♀, Matsuyama, 19.ix.1955, T. Tachikawa lgt. (with the label "Paratype"); 1 ♀, Tsukumi, Oita, 30.viii.1955, T. Tachikawa lgt. (with the label "Allotype"); 1 ♀, Matsuyama, 28.ix.1956, T. Tachikawa lgt.; 1 ♀ (on slide), Hiratsuka, Kanagawa Pref., Honshu, 26.–30.ix.1965, N. Oho and Y. Murakami lgt. (ELKU). All specimens identified as *C. kiushiuensis* by T. Tachikawa.

Distribution. Japan: Kyushu, Shikoku (Tachikawa 1963a). Afrotropical, Australian, Oriental, Palaearctic (Noyes 2016).
Comments. The material labelled as 'paratype' and 'allotype' has no nomenclatural status since Ishii (1928) based the description of *C. kiushiuensis* on the unique male holotype. The species was synonymised with *C. quinqueguttata* by Tachikawa (1962). Although they are treated as a single species by Noyes (1978), European and Asian specimens differ significantly in their morphology and therefore we believe that their status as a single species requires further investigation.

Genus *Cerapteroceroides* Ashmead, 1904

Cerapteroceroides fortunatus (Ishii, 1925)

Cerapterocerus fortunatus Ishii, 1925: 26.
Cerapteroceroides fortunatus (Ishii): Tachikawa (1963): 147 (new combination).

Type material examined. Lectotype: ♀ (here designated), (No. 10), Nagasaki, ex *Aleurodaphis* sp. (Hemiptera: Aphidoidea) on *Quercus glauca*, T. Ishii lgt. (NIAES). Paralectotypes: 1 ♀, 15.v, other data same as lectotype; 1 ♀, 28.vii, other data same as lectotype (NIAES).
Additional material examined. 1 ♀ (labelled as 'Homotype'), Matsuyama, 23.iv.1956, T. Tachikawa lgt. & det.; 1 ♀, same data as the former specimen; 2 ♀♀ (1 ♀ on slide), Matsuyama, ex *Dermaphis japonensis* Takahashi, 1958 (Hemiptera: Aphidoidea), the 1st decade v.1956, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Kyushu, Shikoku (Tachikawa 1963a). China (Noyes 2016)
Comments. The collection date for the specimen designated as lectotype was not published by Ishii and it is also missing from his note book. The lecotype is missing an antenna and fore wing. These were probably mounted separately on a slide which has been lost.

Cerapteroceroides japonicus Ashmead, 1904

Material examined. 2 ♀♀, Matsuyama, 21.v.1955, T. Tachikawa lgt. & det.; 1 ♀, Matsuyama, 25.vi.1955, T. Tachikawa lgt. & det.; 1 ♀ (on slide), Matsuyama, ex *Takahashia japonica*, 30.v.1957, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Honshu, Kyushu, Shikoku (Tachikawa 1963a). Oriental (Noyes 2016).
Comments. Additional morphological characters differentiating *C. japonicus* from *C. fortunatus* are given in the Table 3.

Table 3. Characters used to separate *Cerapteroceroides fortunatus* (Ishii, 1925) and *C. japonicus* Ashmead, 1904.

C. fortunatus	*C. japonicus*
Ovipositor 5× as long as gonostyli.	Ovipositor 3.5× as long as gonostyli.
Scutellum shorter than wide.	Scutellum longer than wide.
Wings without flat bristles on down-basal cell in front of linea calva.	Wings with flat bristles on down-basal cell in front of linea calva.

Cerapteroceroides similis (Ishii, 1925)

Cerapterocerus similis Ishii, 1925: 27.
Cerapteroceroides similis (Ishii): Tachikawa (1963): 150 (new combination).

Type material examined. Holotype: ♀, fore wing only (No. 95, on slide), Nagasaki, swept, 5.x.1923, T. Ishii lgt. (NIAES).

Distribution. Japan: Kyushu (Tachikawa 1963a). Oriental (Noyes 2016)
Comments. We were able to find only a single slide-mounted fore wing of the holotype, but this is sufficient to separate this species from both *C. fortunatus* and *C. japoni*cus. Ishii (1925) erroneously writes the year as 1921, his notebook shows 1923.

Genus *Cerapterocerus* Westwood, 1833

Cerapterocerus mirabilis Westwood, 1833

Distribution. Japan: Honshu (Ishii 1928). Afrotropical, Palaearctic, Mexico (Noyes 2016).

Genus *Cerchysiella* Girault, 1914

Cerchysiella kuwatai Tachikawa, 1985

Cerchysiella kuwatai Tachikawa, 1985: 94–95.

Type material examined. Holotype: ♀ (on slide), Yoshida-machi, Kitauwa-gun, Ehime Pref., ex *Cybocephalus nipponicus*, 1971, 15.x.1984, Y. Kuwata lgt. (ELKU). Paratypes: 4 ♀♀, same data as holotype (ELKU).

Distribution. Japan: Shikoku (Tachikawa 1985). India (Noyes 2016).
Comments. This species can be recognised by the combination of the pedicel being longer than F_1 and the clearly exserted part of the ovipositor which is about 1.3× as long as the mid tibial spur and almost 0.25× as long as the gaster.

Cerchysiella takenakai (Tachikawa, 1980)

Zeteticontus takenakai Tachikawa, 1980: 121–123.
Cerchysiella takenakai (Tachikawa): Noyes & Hayat (1984): 247 (new combination).

Type material examined. Holotype: ♀, ex *Encaustes praenobilis*, Tsuta, Aomori Pref., 3.vii.1964, H. Takenaka lgt. (ELKU). Paratypes: 7 ♀♀, same data as holotype (ELKU).

Distribution. Japan: Honshu (Tachikawa 1980c). Russia (Noyes 2016).

Genus *Cheiloneurus* Westwood, 1833

Cheiloneurus ceroplastis Ishii, 1923

Cheiloneurus ceroplastis Ishii, 1923: 103.

Type material examined. Lectotype: ♀ (here designated), (No. 18), Nagasaki, ex. *Ceroplastes ceriferus*, 15.x.1922, T. Ishii lgt. (NIAES). Paralectotypes: 1 ♀, Nagasaki, 18.vii.1922, T. Ishii lgt.; 1 ♀, Nagasaki, ex. *C. ceriferus*, 18.x.1922, T. Ishii lgt.; 1 ♀, antennae of paralectotype on slide (NIAES).
Additional material examined. 1 ♀, Tsukumi, Oita, 19.vi.1954, T. Tachikawa lgt. & det.; 1 ♀, Matsuyama, 27.ix.1955, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Kyushu, Shikoku (Tachikawa 1963a). Iran (Noyes 2016).
Comments. In the type material of this species the frontovertex is slightly wider (about 0.17–0.20× head width) than the ratio (about 0.13× head width) given by Trjapitzin (1989) in his key for species. It is also worth noting that the apical 1/10 of the fore wing is hyaline and ovipositor is clearly exserted with the exserted part about 0.17× as long as the gaster. *Cheiloneurus ceroplastis* is very close to *C. boldyrevi*, and may be conspecific with it. The only difference we could find between these species is that *C. ceroplastis* has F_6 dark brown whilst in *C. boldyrevi* it is white.

Cheiloneurus claviger Thomson, 1876

Cheiloneurus japonicus Ashmead, 1904, **syn. nov.**

Material examined. 2 ♀♀, Matsuyama, ex *Pulvinaria idesiae*, 20.v.1961, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Shikoku (Tachikawa 1963a). Palaearctic (Noyes 2016).
Comments. We have examined specimens of *Cheiloneurus claviger* from a number of different localities and it is apparent that the coloration of the funicule segments varies widely, especially F_4 and F_5. This opinion is supported by Sugonjaev (1962), Tachikawa (1963) and Trjapitzin (1989). As *Cheiloneurus claviger* is a widely distributed and variable species we have no hesitation in treating *C. japonicus* as a junior synonym of *C. claviger*.

Cheiloneurus kanagawaensis Ishii, 1928

Cheiloneurus kanagawaensis Ishii, 1928: 144

Type material examined. Lectotype: ♀ (here designated), (No. 97), Ozuki, Kanagawa-ken, swept, 2.vi.1922, T. Ishii lgt. (NIAES). Paralectotypes: 3 ♀♀, same data as holotype (antenna of one paralectotype on slide) (NIAES).
Additional material examined. 1 ♀, Ooyagyu, Nara, ex *Kermes nakagawae,* 13.v.1993, Y. Higashiura lgt., G. Japoshvili & Y. Higashiura det. (YHYJ).

Distribution. Japan: Honshu (Tachikawa 1963a). Endemic.

Cheiloneurus matsuyamensis Tachikawa, 1956

Cheiloneurus matsuyamensis Tachikawa, 1956: 44.

Type material examined. Holotype: ♀, Matsuyama, 25.vi.1955, T. Tachikawa lgt. (ELKU).

Distribution. Japan: Shikoku (Tachikawa 1963a). Endemic.

Cheiloneurus quercus Mayr, 1876

Cheiloneurus tenuicornis Ishii, 1928: 147. Synonymised with *Cheiloneurus quercus* by Trjapitzin (1989: 305).

Type material examined. *Cheiloneurus tenuicornis*: Lectotype: ♀ (here designated), (No. 44), Ozuki, Kanagawa-ken, ex *Kermes miyasakii* on *Qercus serrata* ssp. *serrata*, 8.vi.1922, T. Ishii lgt. (NIAES). Paralectotypes: 2 ♀♀, same data as lectotype; 1 ♀, on slide (NIAES).
Additional material examined. 3 ♀♀, Matsuyama, 25.–30.vi.1955, T. Tachikawa lgt. & det. (with the label *Ch. tenuicornis* Ishii), G. Japoshvili revid. (ELKU).

Distribution. Japan: Honshu, Shikoku (Tachikawa 1963a). Palaearctic (Noyes 2016).

Genus *Clausenia* Ishii, 1923

Clausenia purpurea Ishii, 1923

Clausenia purpurea Ishii, 1923: 100.

Type material examined. Lectotype: ♀ (here designated), Nagasaki, 15.v.1922, T. Ishii lgt. (NIAES). Paralectotypes: 4 ♀♀, 18.vii.1922, T. Ishii lgt.; 1 ♀, on slide, without data (NIAES).
Additional material examined. 2 ♀♀, Matsuyama, ex *Pseudococcus cryptus* (Hempel, 1918) (Hemiptera: Pseudococcidae), 27.vii.1958, T. Tachikawa lgt. & det.; 1 ♀, Matsuyama, ex *P. cryptus*, 25.ix.1958, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Honshu, Kyushu, Shikoku (Tachikawa 1963a). Holarctic (Noyes 2016).
Comments. All type specimens were reared from *Pseudococcus* on *Citrus* (Ishii 1923).

In Trjapitzin's (1989) key to Palaearctic genera this species does not run to *Clausenia*, because in his key *Clausenia* has a postmarginal vein longer than the marginal vein (couplet 280), which is not correct. In the examined material the marginal vein is considerably longer than postmarginal. In Trjapitzin's (1989) key to species of *Clausenia* he states that F_1 is not longer or slightly longer than wide, whereas in the type material F_1 is 1.4–1.6× as long as wide and F_2 and F_3 each 1.5× as long as wide.

Genus *Coccidencyrtus* Ashmead, 1900

Coccidencyrtus shiyakei Japoshvili, 2013

Coccidencyrtus shiyakei Japoshvili, 2013 in Japoshvili et al. (2013: 551).

Type material examined. Holotype: ♀, (No. 1518). Paratypes: 11 ♀♀ (Nos 1487, 1492, 1493, 1495, 1517, 1535, 1551, 1681, 1709, 1553, 1607), 29.ix.–18.xii.2010, ex *Lepidosaphes pseudotsugae*, *L. japonica*, *Dynaspidiotus tsugae* on *Tsuga diversifolia* and *T. sieboldii* K. Abell lgt., G. Japoshvili det. (IEGAU).

Distribution. Japan: Honshu (Japoshvili et al. 2013). Endemic.

Coccidencyrtus sp.

Material examined. 2 ♀♀ (specimen numbers 1465 and 1404), 29.ix.–18.xii.2010, ex *L. pseudotsugae* on *T. diversifolia,* K. Abell lgt., G. Japoshvili det. (IEGAU).

Distribution. Japan: Honshu (Japoshvili et al. 2013).
Comments. As the samples were not in sufficient condition to be identified, additional material is required.

Genus *Comperiella* Howard, 1906

Comperiella bifasciata Howard, 1906

Material examined. 1 ♀, Oita-city, 15.v.1950, T. Tachikwa lgt. & det.; 1 ♀, Oita-city, ex *Chrysomphalus bifasciculatus*, 15.v.1950, T. Tachikawa lgt. & det. (ELKU); 1 ♀, Oita-city, ex *C. bifasciculatus*, 15.v.1950, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Hokkaido, Honshu, Kyushu, Shikoku (Tachikawa 1963a). Cosmopolitan (Noyes 2016).

Comperiella indica Ayyar, 1934

Material examined. 1 ♀, Hikinuma, Shiobara, Tochigi Pref., by truck trap, 2.ix.1985, K. Takahashi lgt., G. Japoshvili & Y. Higashiura det. (ELKU).

Distribution. Japan: Hokkaido, Shikoku (Tachikawa 1982b). China, India, Russia (Noyes 2016).

Comperiella unifasciata Ishii, 1925

Comperiella unifasciata Ishii, 1925: 25.

Type material examined. Lectotype: ♀ (here designated), Amakusa, swept, 11.viii.1923, T. Ishii lgt. (NIAES). Paralectotype: 1 ♀, same data as lectotype (NIAES).
Additional material examined. 2 ♀♀, Tarumi, Matsuyama, ex *Pseudaonidia duplex*, T. Tachikawa lgt. & det.; 1 ♀, Tarumi, Matsuyama, 21.v.1953, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Honshu, Kyushu, Shikoku (Tachikawa 1963a). Oriental, USA (Noyes 2016).

Genus *Copidosoma* Ratzeburg, 1844

Copidosoma convexum Ishii, 1928

Copidosoma convexum Ishii, 1928: 113.

Type material examined. Holotype: ♀ (head missing, 1 antennae on slide), Nagasaki, swept, 3.viii.1923, T. Ishii lgt. (NIAES).

Distribution. Japan: Kyushu (Ishii 1928). Endemic.
Comments. The species is very close to *C. ancharus* (Walker, 1837), but differs from the later by the shorter F_2 and the flagellum slightly widening at apex.

Copidosoma desantisi Annecke & Mynhardt, 1974

Distribution. Japan: Honshu (Annecke & Mynhardt 1974). Australian, Nearctic, Neotropical, Oriental (Noyes 2016).

Copidosoma floridanum (Ashmead, 1900)

Litomastix maculata Ishii, 1928: 115. Synonymised with *Copidosoma floridanum* by Noyes (1988: 200, 202).

Material examined. 1 ♀, Fuchu, Tokyo, x.1955, T. Tachikawa lgt. & det.; 1 ♀, Tokyo, ex *Thysanoplusia intermixta*, x.1955, T. Ichinose lgt. T. Tachikawa det. (ELKU).

Distribution. Japan: Honshu (Ishii 1928). Cosmopolitan (**Noyes** 2016).
Comments. We were not able to find the type material of *C. maculata.*

Copidosoma komabae (Ishii, 1923)

Neocopidosoma komabae Ishii, 1923: 102.
Copidosoma komabae (Ishii): Trjapitzin (1989): 353 (new combination).

Type material examined. Lectotype: ♂ (here designated), (No. 4), Komaba, Tokyo, ex tortricid larvae on *Lecagnus umbellata*, 6.vi.1920, T. Ishii lgt. (NIAES).

Distribution. Japan: Honshu (Ishii 1923). Endemic.

Copidosoma uruguayensis Tachikawa, 1968, stat. restit.

Copidosoma uruguayensis Tachikawa, 1968: 115.

Type material examined. Holotype: ♂, Akashi, 28.ii.1967, A. Wake lgt. (ELKU). Paratypes: 6 ♀♀, Akashi, 28.ii.1967, A. Wake lgt., with the label *C. uruguayensis* (ELKU).

Distribution. Japan: Honshu (Tachikawa 1968). Uruguay (Tachikawa 1968).
Comments. This species was erroneously synonymized with *C. koehleri* Blanchard, 1940 by Annecke & Mynhardt (1974). Specimens of *C. koehleri* have a wider clavus almost 3× as long as broad, while in *C. uruguayensis* it is 4.3× as long as broad. Mid tibia of *C. uruguayensis* with the apical 0.2–0.25 yellow, while in *C. koehleri* mid tibia is completely dark; the postmarginal vein is not developed in *C. uruguayensis,* while in *C. koehleri* it is indicated. Tachikawa (1968) adequately illustrated differences between these species, and therefore we restitute *C. uruguayensis* as a valid species.

Genus *Encyrtus* Latreille, 1809

Encyrtus aurantii (Geoffroy, 1785)

Material examined. 1 ♀, Nagasaki, ex *Coccus hesperidum* Linnaeus, 1758, 25.ix.1920, T. Ishii lgt., T. Tachikawa det.; 1 ♀, Kyushu, Hakozaki, Fukuoka-city, 27.x.1956, Y. Murakami lgt., T. Tachikawa det. (ELKU).

Distribution. Japan: Honshu, Kyushu, Shikoku (Tachikawa 1963a). Cosmopolitan (Noyes 2016).

Encyrtus hokkaidonis Tachikawa, 1963, stat. restit.

Encyrtus hokkaidonis Tachikawa, 1963: 91.

Type material examined. Holotype: ♀, Mt. Yuo, Hokkaido, swept, 17.vii.1955, K. Morimoto lgt. (ELKU). Paratype: 1 ♀, Mt. Yuo, Akan. Nat. Park, Hokkaido, swept, 17.vii.1955, Y. Murakami lgt. (ELKU).
Additional material examined. 1 ♀, Honshu, Mt. Hakusan, Ishikawa pref., 31.vii.1956, Y. Murakami lgt., G. Japoshvili det. (ELKU).

Distribution. Japan: Hokkaido (Tachikawa 1963a). Endemic.
Comments. *Encyrtus hokkaidonis* was synonymized with *E. infidus* (Rossi, 1790) by Trjapitzin (1989), but we believe that the synonymy was incorrect and reinstate the species name as valid. The two species can be separated relaibaly using the characters presented by Tachikawa (1963).

Encyrtus infidus (Rossi, 1790)

Chrysis infidus Rossi, 1790: 80.
Encyrtus infidus (Rossi): Latreille (1809): 31 (new combination).

Material examined. 1 ♀, (under the label *E. obscurus* Dalman), Matsuyama, ex *Eulecanium kuwanai* on *Prunus* sp., 29.iv.1957, T. Tachikawa lgt., G. Japoshvili det. (ELKU).

Distribution. Japan: Shikoku (Noyes 2016). Holarctic (Noyes 2016).

Encyrtus sasakii Ishii, 1928

Encyrtus sasakii Ishii, 1928: 99.

Type material examined. Lectotype: ♀ (here designated), Nagasaki, ex *Kermes* sp. on *Celtis sinensis*, 23.v.1924 or 1926, T. Ishii lgt. (NIAES). Paralectotypes: 6 ♀♀, same data as lectotype (1 ♀ head on slide) (NIAES).
Additional material examined. 10 ♀♀, Matsuyama, 28.v.1955, T. Tachikawa lgt. & det.; slides: 1 ♀, Tsukumi, Oita Pref. 16.v.1955, T. Tachikawa lgt. & det., only wings; 1 ♀, Matsuyama, 28.v.1955, T. Tachikawa lgt. & det.

Labelled as paratypes of *E. hokkaidonis*: 2 ♀♀, Mt. Yuo, Hokkaido, swept, 17.vii.1955, K. Morimoto lgt., T. Tachikawa det.; 1 ♀, Mt. Yuo, Akan. Nat. Park, Hokkaido, swept, 17.vii.1955, Y. Murakami lgt., T. Tachikawa det. (ELKU).

Distribution. Japan: Kyushu, Shikoku (Tachikawa 1963a). China (Noyes 2016).

Genus *Ericydnus* Haliday, 1832

Ericydnus longicornis (Dalman, 1820)

Grandoriella japonica Tachikawa, 1963: 58, **syn. nov.**
Ericydnus japonicus (Tachikawa, 1963): Kerrich (1966) (new combination).

Type material examined. *Ericydnus japonicas*: Holotype: ♀, Matsuyama, Shikoku, 28.vi.1955, T. Tachikawa lgt. (ELKU). Paratype: 1 ♀, Asami, Matsuyama, 28.vi.1955, T. Tachikawa lgt. T. Tachikawa det. (ELKU).

Distribution. Japan: Shikoku (Tachikawa 1963). Europe (Noyes 2016).
Comments. Since Dalman's types were in poor condition, we additionally used Graham's (1991) comments on the species. We are confident that this species is the same as *E. longicornis* and thus treat *E. japonicus* as a junior synonym of *E. longicornis*.

Genus *Eugahania* Mercet, 1926

Eugahania latiscapus (Ishii, 1925)

Chalcaspis latiscapus Ishii, 1925: 27.
Eugahania latiscapus (Ishii): Mercet (1926): 46 (new combination).
Eugahania ishiharai Tachikawa, 1956: 164. Synonymised with *Eugahania latiscapus* by Sharkov (1984: 820).

Type material examined. *Chalcaspis latiscapus*: Holotype: ♀, fore wing on slide: (No. 8), Nagasaki, swept, 16.x.1921, T. Ishii lgt. (NIAES). *Eugahania ishiharai*: Holotype: ♀, one fore wing as separate slide: Honshu, Hiroshima city, swept, 27.x.1954, T. Ishihara lgt. (ELKU).

Distribution. Japan: Kyushu (Ishii 1925). Oriental, Russia (Noyes 2016).
Coments. Hayat & Khanna (1977) stated that the holotype of *C. latiscapus* was lost during

the World War II and this was subsequently followed by Sharkov (1984). However, we found a slide-mounted fore wing of the holotype in Ishii's collection. We think that the suggestion by Hayat & Khanna (1977) that the holotype was female is correct.

Eugahania yanoi Tachikawa, 1956

Eugahania yanoi Tachikawa, 1956: 162.
Eugahania mongolica Hoffer, 1970, **syn. nov.**

Type material examined. *Eugahania yanoi*: Holotype: ♀, one fore wing as separate slide, Shikoku, Mt Takanawa, 22.x.1954, T. Yano lgt. (ELKU).

Distribution. Japan: Shikoku (Tachikawa 1956). Mongolia, Russia (Noyes 2016).
Comments. *Eugahania yanoi* was treated as a synonym of *E. fumipennis* by Hoffer (1956) and later Tachikawa (1963) accepted this synonymy. Sharkov (1984) later studied the type of *E. yanoi* and considered it as a valid species. We agree with Sharkov and after a careful analysis of the original desctiption of *E. mongolica* we are confident that *E. mongolica* and *E. yanoi* are conspecific.

Genus *Eusemion* Dahlbom, 1857

Eusemion cornigerum (Walker, 1838)

Eusemion tsukumiense Tachikawa, 1957: 55. Synonymised with *Eusemion cornigerum* by Trjapitzin (1989: 301).

Distribution. Japan: Kyushu (Tachikawa 1963a). Palaearctic (Noyes 2016).
Comments. We were not able to find the type of *E. tsukumiense* in Tachikawa's collection (ELKU).

Genus *Exoristobia* Ashmead, 1904

Exoristobia nikolskayae Sharkov, 1988

Distribution. Japan: Honshu (Sharkov 1988). Endemic.

Genus *Hexencyrtus* Girault, 1915

Hexencyrtus miyama (Ishii, 1928)

Heteroleptomastix miyama Ishii, 1928: 104–106.
Hexencyrtus miyama (Ishii): Trjapitzin (1989): 377 (new combination).
Heteroleptomastix matsuyamensis Tachikawa, 1963: 51. Synonymised with *Hexencyrtus miyama* by Trjapitzin (1989: 377).

Type material examined. *Heteroleptomastix miyama*: Lectotype: ♀ (here designated), (No. 28, head, wing and antenna as separate slides), Nagasaki, swept, 1.v.1922, T. Ishii lgt. (NIAES). *Heteroleptomastix matsuyamensis*: Holotype: ♀, Matsuyama, 23.v.1955, T. Tachikawa lgt. (ELKU).

Distribution. Japan: Honshu, Kyushu, Shikoku (Tachikawa 1963a). Russia (Noyes 2016).

Genus *Homalotylus* Mayr, 1876

Homalotylus albifrons (Ishii, 1925)

Anisotylus albifrons Ishii, 1925: 28.
Homalotylus albifrons (Ishii): Trjapitzin (1989): 361 (new combination).

Type material examined. Lectotype: ♂ (here designated), (No. 5), Nagasaki, ex *Scymnus* sp. feeding on *Pseudococcus* sp. on *Citrus*, 7.ix.1922, T. Ishii lgt. (NIAES).
Additional material examined. 1 ♀, Matsuyama, 22.ix.1959, ex *Pseudoscymnus hareja*, T. Tachikawa lgt. & det. (labelled as allotype); 1 ♀ (on slide), 27.ix.1959, ex *P. hareja*, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Kyushu, Shikoku (Tachikawa 1963a). Endemic.
Comments. The lectotype is missing its head and the overall body colouration has faded to orange-yellow probably due to storage in alcohol or similar medium in a glass tube. We have mounted the remains of the lectotype on a card. Examination of the non-type material in Tachikawa's collection shows that the head is mostly brown, but yellow between the toruli and anterior ocellus. F_1 is dark brown with the remaining funicle segments white, the tegula is brown in the apical half with the basal half white and the mid femur is dusky-yellow. The colour of the head, tegula and mid femur is not included in Ishii's original description of the species.

Homalotylus flaminius (Dalman, 1820)

Material examined. 6 ♀♀, Tsukumi, Oita, 20.viii.1957, T. Tachikawa lgt. & det.; 1 ♀, Matsuyama, 25.ix.1955, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Honshu, Kyushu, Shikoku (Tachikawa 1963a). Cosmopolitan (Noyes 2016).
Comments. This material may be incorrectly identified because the antenna differs from that of Trjapitzin's (1989) drawing of the species in that the funicle segments are all longer than wide and F_6 is white.

Homalotylus hemipterinus (De Stefani, 1898)

Distribution. Japan: Honshu (Girault 1917). Neotropical, Oriental, Palaearctic (Noyes 2016).

Homalotylus hyperaspicola Tachikawa, 1963

Homalotylus hyperaspicola Tachikawa, 1963: 208.

Type material examined. Holotype: ♀, Matsuyama, 29.v.1958, T. Tachikawa lgt. (ELKU). Paratype: 1 ♀, same data as holotype (ELKU).

Distribution. Japan: Shikoku (Tachikawa 1963a). Endemic.
Comments. According to Trjapitzin (1989) the tegula of this species is black, but this is incorrect because in the holotype the basal 0.5 of the tegula is white and the apical 0.5 is brown. Further to this the ovipositor is exserted, with the exserted part more than 0.33× as long as the gaster.

Homalotylus scymnivorus Tachikawa, 1963

Homalotylus scymnivorus Tachikawa, 1963: 206.

Type material examined. Paratypes: 1 ♀, Matsuyama, 27.vi.1959, T. Tachikawa lgt.; 1 ♀, Matsuyama, ex *Scymnus phosphorus*, 20.vi.1966, T. Tachikawa lgt. (ELKU).

Distribution. Japan: Shikoku (Tachikawa 1963a). India, Mongolia (Noyes 2016).
Comments. In the paratypes the exserted part of the ovipositor is slightly shorter than the gaster, the tegula has the basal 2/3 white and apical 1/3 brown and the funicle has F_5–F_6 and clava white. We were unable to locate the holotype.

Genus *Idiococcophilus* Tachikawa & Gordh, 1987

Idiococcophilus japonicus Tachikawa & Gordh, 1987

Idiococcophilus japonicus Tachikawa & Gordh, 1987: 307–309.

Type material examined. Paratypes: 1 ♀ (on slide), ex *Idiococcus bambusae*, 8.vi.1955, T. Tachikawa lgt. (same data as holotype: according to Tachikawa & Gordh (1987)); 1 ♀, ex *I. bambusae*, Matsuyama, 25.x.1955, T. Tachikawa lgt.; 1 ♀, ex *I. bambusae*, 25.x.1955, T. Tachikawa lgt. (ELKU).
Additional material examined. 1 ♀, Mt. Shiro, Matsuyama, 12.vi.1955, S. Hisamatsu lgt., T. Tachikawa det. (ELKU).

Distribution. Japan: Shikoku (Tachikawa & Gordh 1987). Russia (Noyes 2016).
Comments. This genus was treated as a synonym of *Ectroma* Westwood, 1833 by Sharkov (1988) but it was later reainstated as valid by Trjapitzin & Triapitsyn (2007). We were not able to examine the holotype, which is housed in Ehime University.

Genus *Isodromus* Howard, 1887

Isodromus axillaris Timberlake, 1919

Distribution. Japan: Kyushu (Tachikawa 1963a). China, Hawaii, India (Noyes 2016).

Isodromus niger Ashmead, 1900

Material examined. 2 ♀♀, Matsuyama, viii.1959, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Shikoku (Tachikawa 1963a). Holarctic (Noyes 2016).

Isodromus uwajimensis Tachikawa, 1963

Isodromus uwajimensis Tachikawa, 1963: 212.

Type material examined. Holotype: ♀, Uwajima city, Ehime Pref. 30.iv.1956, T. Tachikawa lgt. (ELKU).
Additional material examined. 2 ♀♀, Matsuyama, xi.1972, T. Tachikawa lgt.; 3 ♀♀ (on slides), vi.1975, T. Tachikawa lgt. (ELKU).

Distribution. Japan: Shikoku (Tachikawa 1963a). Endemic.

Genus *Ixodiphagus* Howard, 1907

Ixodiphagus sagarensis (Geevarghese, 1977)

Hunterellus sagarensis Geevarghese, 1977: 49–51.
Ixodiphagus sagarensis (Geevarghese): Trjapitzin (1989: 288).

Material examined. 2 ♀♀, Hachijojima Is. Tokyo, ex *Haemophysalis longicornis*, 1952, Y. Asanuma lgt., T. Tachikawa det. & det. (ELKU).

Distribution. Japan: Honshu (Tachikawa 1980a). India (Noyes 2016).

Genus *Lakshaphagus* Mahdihassan, 1931

Lakshaphagus japonicus (Tachikawa, 1963)

Mayrencyrtus japonicus Tachikawa, 1963: 154.
Lakshaphagus japonicus (Tachikawa): Trjapitzin (1999: 700).

Type material examined. Holotype: ♀; Matsuyama, Shikoku, 25.vi.1955, T. Tachikawa lgt. (ELKU). Paratypes: 2 ♀♀, Matsuyama, 26.vi.1956, T. Tachikawa lgt.; 1 ♀ (on slide), Matsuyama, 20.vi.1959, T. Tachikawa lgt.; 1 ♀ (on slide), Matsuyama, 19.vi.1959, T. Tachikawa lgt.; 1 ♀ (on slide), Matsuyama, 14.vi.1956, T. Tachikawa lgt.; 1 ♀ (on slide), Matsuyama, 30.vi.1954, T. Tachikawa lgt. (ELKU).

Distribution. Japan: Shikoku (Tachikawa 1963a). Endemic.
Comments. According to Tachikawa (1963a), all the type specimens were reared from *Psoraleococcus quercus* (Cockerell, 1896) (Hemiptera: Coccoidea). The collecting month for the holotype (May) provided by Tachikawa (1963a) is incorrect; it is actually June (given above). In the holotype the frontovertex is dirty yellow, with slight greenish metallic reflection; the mesosoma is brown, all funicle segments are longer than wide, the exserted part of the ovipositor is 1.3× as long as mid tibial spur and the hypopygium almost reaches the apex of gaster. As the exserted part of the ovipositor is almost 0.25× as long as the gaster, couplet 116 in Trjapitzin (1989) is incorrect in stating that it is 0.33–0.5× as long as gaster.

Genus *Leptomastidea* Mercet, 1916

Leptomastidea abnormis (Girault, 1915)

Distribution. Japan: Honshu (Tachikawa 1963a). Cosmopolitan (Noyes 2016).

Leptomastidea bifasciata (Mayr, 1876)

Leptomastidea rubra Tachikawa, 1956: 141, **syn. nov.**

Type material examined. *Leptomastidea rubra*: Holotype: ♀, Matsuyama, Shikoku, 17.vi.1953, T. Tachikawa lgt. (ELKU). Paratypes: 2 ♀♀, Matsuyama, 8.x.1953, T. Tachikawa lgt.; 2 ♀♀, Matsuyama, 14.vi.1954, T. Tachikawa lgt.; 1 ♀, Matsuyama, 21.ix.1955, T. Tachikawa lgt.; 1 ♀, Tarumi, Matsuyama, 26.vii.1953, T. Tachikawa lgt.; 1 ♀, Matsuyama, 15.vi.1953, T. Tachikawa lgt.; 1 ♀ (on slide), Tarumi, Matsuyama, 24.ix.1953, T. Tachikawa lgt.; 3 ♀♀ (on slides), without locality, 23.ix.1955, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Hokkaido, Kyushu, Shikoku (Tachikawa 1963a). Palaearctic (Noyes 2016).
Comments. The type material of *L. rubra* falls within the variation observed in material of *L. bifasciata* housed in European collections, in particular antennal and general body colouration. Females of *L. bifasciata* vary from the head and mesosoma being generally bright red to orangish brown, with F_1 and sometimes F_2 and clava varying from pale orange to brown. We are therefore confident that *L. rubra* is a junior synonym of *L. bifasciata*.

Genus *Leptomastix* Förster, 1856

Leptomastix auraticorpus Girault, 1915

Material examined. 3 ♀♀, Kibi-cho, Wakayama Pref., ex *Pseudococcus cryptus*, 5.xii.1969, M. Matsuura lgt., G. Japoshvili det. (ELKU).

Distribution. Japan: Honshu (new record). New record for Japan. Australia, China (Noyes 2016).

Leptomastix citri Ishii, 1928

Leptomastix citri Ishii, 1928: 95.

Type material examined. Holotype: ♀ (one antenna and fore wing mounted on two separate slides), ex *Pseudococcus* sp. on *Citrus*, 29.iv.1923, T. Ishii lgt. (NIAES).

Distribution. Japan: Kyushu (Ishii 1928). Endemic.
Comments. Ishii (1928) states that the posterior ocellus is separated from the eye margin by a space twice its own diameter and from the occipital margin by a little less than its own diameter. This is not correct. In the holotype OCL and OOL are equal and 2.5× OD. The slide-mounted fore wing of the holotype is poorly mounted, which makes it impossible to accurately measure its length and width. *Leptomastix citri* is very close to *L. tetrica* Noyes & Hayat, 1994, and they may be synonymous, but this can only be identified with direct comparison of the relevant type material.

Leptomastix dactylopii Howard, 1885

Material examined. 1 ♀, Okitsu, ex *Planococcus kraunhiae*, 10.ix.1957, S. Okudai lgt., G. Japoshvili lgt. (ELKU).

Distribution. Japan: Honshu (Tachikawa 1963a). Cosmopolitan (Noyes 2016).

Leptomastix tsukumiensis Tachikawa, 1963

Leptomastix tsukumiensis Tachikawa, 1963: 66.

Material examined. Holotype: ♀, Tsukumi, Oita pref., 30.viii.1955, T. Tachikawa lgt. (ELKU).
Additional material examined. 1 ♀ (on slide), Shensi, Lintung, Lisan (480–720 m), 4.ix.1973, T. Tachikawa lgt. (ELKU).

Distribution. Japan: Kyushu (Tachikawa 1963a). Afrotropical, Oriental (Noyes 2016).

Leptomastix teii Japoshvili, sp. nov.

(Figs 3, 5–6, 27–30)

Type material. Holotype: ♀, no exact location is given, ex *Pseudococcus* sp. on *Citrus*, 29.iv.1923, T. Ishii lgt. (ELKU).

Diagnosis. ***Female*** (length 1.9 mm) (Figs 5–6). Head and mesosoma mostly orange with only dorsal side of mesosoma, tip of ventral side of mesosoma and small spot behind fore coxa brown. Antenna with radicle brown; scape yellow with dorsal margin brown; pedicel and flagellum generally brown, pedicel yellowish in some aspects; F_1 2× as long as pedicel and 0.75× as long as clava; F_6 about 2× as long as wide. Fore wing nearly 3× as long as wide; costal cell narrow, marginal vein longer than stigmal and postmarginal vein; postmarginal vein longer than stigmal; linea calva interrupted by 3 lines of setae. Gaster longer than mesosoma and apically pointed; ovipositor not exserted.

***Male*.** Unknown.

Description. ***Female.*** Length 1.9 mm (holotype).

Head and mesosoma generally orange yellow; mesosoma mostly orange, but brown dorsally and immediately behind fore coxa. Antenna with radicle brown; scape yellow with dorsal margin brown; pedicel and flagellum brownish; pedicel yellow in some aspects. Legs orange--yellow with only basal half of hind tibia a little darker. Head on FV between anterior ocellus and top of scrobes with fairly regular, hexagonal, reticulate sculpture of mesh size subequal to diameter of an eye facet; ocelli forming about a 90° angle (Fig. 3); lowest margin of antennal torulus slightly bellow lowest eye margin. Antenna as in Fig. 27. Relative measurements: HW 97, FV 40, FVL 35, OD 5, OOL 7, OCL 10, POL 13, AOL 10, MS 16, EL 40, EW 26.

Mesosoma (Fig. 30) dorsally with very fine coriaceous sculpture with mesh on mesoscutum slightly smaller than that on scutellum. Linea calva interrupted by 3 line of setae; wing setation as in Fig. 28; marginal vein longer than postmarginal and stigmal veins combined; postmarginal vein longer than stigmal vein; metasoma 1.25× as long as mesosoma; ovipositor (Fig. 29) not exserted. Relative measurements: OL 48, GL 9, MT 85.

Differential diagnosis. The new species is very close to *L. tsukumiensis*, but differs as shown in Table 4.

Etymology. Named after the Japanese specialist on Encyrtidae, Prof. Dr. Tei Ishii.

Distribution. Japan (new record).

Table 4. Characters used to separate *Leptomastix teii* Japoshvili sp. nov. and *L. tsukumiensis* Tachikawa, 1963.

***L. teii* sp. nov.**	***L. tsukumiensis***
POL>OCL, ocelli in obtuse triangle.	POL≈OCL, ocelli in equilateral triangle.
Body etirely yellow, except dark spot behind fore coxa.	Scutellum and sides of axillae with dark brown to blackish markings.
Pedicel almost one half as long as F_1.	Pedicel 0.25 times as long as F_1.

Genus *Metaphycus* Mercet, 1917

Metaphycus albopleuralis (Ashmead, 1904)

Distribution. Japan: Honshu, Kyuhsu, Shikoku (Tachikawa 1963a). Endemic.

Metaphycus angustifrons Compere, 1957

Distribution. Japan: Shikoku (Tachikawa 1963a). Neotropical, Bermuda, China, Iran, Israel, Taiwan, USA (Noyes 2016).

Metaphycus dispar (Mercet, 1925)

Metaphycus tamakatakaigara Tachikawa, 1957: 27–30. Synonymised with *Metaphycus dispar* by Trjapitzin (1989: 232).

Type material examined. *Metaphycus tamakatakaigara*: Paratypes: 6 ♀♀, Matsuyama, 22.iv.1956, T. Tachikawa lgt.; 2 ♀♀, Matsuyama, ex *Eulecanium kunoense*, 25.iv.1962, T. Tachikawa lgt. (ELKU).

Distribution. Japan: Shikoku (Tachikawa 1963a). Holarctic (Noyes 2016).
Comments. We were unable to locate the holotype.

Metaphycus maculipennis (Timberlake, 1916)

Aphycus timberlakei Ishii, 1923: 108. Synonymised with *Metaphycus maculipennis* by Guerrieri & Noyes (2000: 196).
Metaphycus timberlakei (Ishii, 1923): Maple (1947: 101).

Material examined. 2 ♀♀, Matsuyama, ex *Parthenolecanium persicae*, 3.vi.1955, T. Tachikawa lgt.; 1 ♀ (on slide), Matsuyama, ex *P. persicae* 3.vi.1956, T. Tachikawa lgt. G. Japoshvili det. (ELKU).

Distribution. Japan: Kyushu, Shikoku (Tachikawa 1963a). Australia, Europe, USA (Noyes 2016).
Comments. We were not able to find Ishii's types. We agree with Guerrieri & Noyes (2000) on the synonymization of *M. timberlakei* with *M. maculipennis*.

Metaphycus melanostomatus (Timberlake, 1916)

Distribution. Japan: Honshu (Tachikawa 1963a). Holarctic (Noyes 2016).

Metaphycus orientalis (Compere, 1924)

Distribution. Japan: Honshu (Compere 1924). Belgium, China, USA (Noyes 2016).

Metaphycus pulvinariae (Howard, 1881)

Distribution. Japan: Honshu, Kyushu, Shikoku (Tachikawa 1963a). Holarctic (Noyes 2016).

Metaphycus punctipes (Dalman, 1820)

Distribution. Japan: no exact location given (Thompson 1954). Holarctic (Noyes 2016).

Metaphycus tenuicornis (Timberlake, 1916)

Material examined. 3 ♀♀, Matsuyama, ex *Kermes miyasakii*, 23.vi.1955, T. Tachikawa lgt. & det.; 2 ♀♀, Matsuyama, 23.vi.1955, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Honshu, Shikoku (Tachikawa 1963a). China, USA (Noyes 2016).

Genus *Microterys* Thomson, 1876

Aschitus Mercet, 1921: 599, **syn. nov.**

Comments. After a long term study of many species of *Microterys* and *Aschitus* we cannot find any significant and consistent characters for distinguishing these two genera. Therefore, as has already been suggested by Noyes (2010) and Japoshvili (2010), we believe that the two genera should be treated as one. As a result of this synonymy, the following species previously included in *Aschitus* (see Jensen 1989) must be transferred to *Microterys*:

Microterys algiricus (Ferrière, 1956) **comb. nov.** (originally from *Paraphaenodiscus*),
Microterys annulatus (Erdős, 1957) **comb. nov.** (from *Aschitus*),
Microterys balcanicus (Jensen, 1989) **comb. nov.** (from *Aschitus*),
Microterys bicolor (Mercet, 1921) **comb. nov.** (from *Paraphaenodiscus*),
Microterys carpathicus (Hoffer, 1958) **comb. nov.** (from *Paraphaenodiscus*),
Microterys golcukus (Japoshvili, 2012) **comb. nov.** (from *Aschitus*),
Microterys imeretinus (Japoshvili, 2007) **comb. nov.** (from *Aschitus*),
Microterys jalysus (Walker, 1837) **comb. nov.** (from *Paraphaenodiscus*),
Microterys lichtensiae (Howard, 1896) **comb. nov.** (from *Encyrtus*),
Microterys madyes (Walker, 1837) **comb. nov.** (from *Paraphaenodiscus*),
Microterys margaritae (Myartseva, 1979) **comb. nov.** (from *Aschitus*),
Microterys mongolicus (Myartseva, 1982) **comb. nov.** (from *Paraphaenodiscus*),
Microterys naiacocci (Trjapitzin, 1968) **comb. nov.** (from *Paraphaenodiscus*),
Microterys neoacanthococci (Myartseva, 1979) **comb. nov.** (from *Aschitus*),
Microterys novikovi (Trjapitzin, 1994) **comb. nov.** (from *Aschitus*),
Microterys populi (Myartseva, 1979) **comb. nov.** (from *Aschitus*),
Microterys scapus (Xu, 2004) **comb. nov.** (from *Aschitus*),
Microterys scapus (Xu, 2004) **comb. nov.** (from *Aschitus*),
Microterys submetallicus (Szelényi, 1972) **comb. nov.** (from *Anicetellus*),
Microterys subterraneus (Ferrière, 1956) **comb. nov.** (from *Paraphaenodiscus*),
Microterys triozae (André, 1877) **comb. nov.** (from *Encytrus*),
Microterys zakeri (Bhuiya, 1998) **comb. nov.** (from *Aschitus*).

Microterys amamensis Azim, 1964

Microterys amamensis Azim, 1964: 11.

Distribution. Japan: Amami-Oshima (Azim 1964). Endemic.
Comments. We were unable to locate the type material in the Kyushu University collections, which based on the original description, was the presumed depository. From the original description it seems that this species is very close to *M. speciosus* Ishii, 1923.

Microterys caudatus Ishii, 1928

Microterys caudatus Ishii, 1928: 134.

Type material examined. Lectotype: ♀ (here designated), (No. 129), Nagasaki, 1.x.1924, T. Ishii lgt. (antenna and fore wing slide-mounted, but in poor condition) (NIAES).
Additional material examined. 5 ♀♀, with number 137 in Ishii's tube.

Distribution. Japan: Kyushu (Ishii 1928). Endemic.

Microterys clauseni Compere, 1926

Microterys clauseni Compere, 1926: 35.

Material examined. 2 ♀♀, Matsuyama, 10.v.1955, T. Tachikawa lgt. & det.; 1 ♀, Takehara-cho, Matsuyama, ex *Ceroplastes pseudoceriferus*, 24.vi.1955, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Honshu, Kyushu, Shikoku (Tachikawa 1963a). China, Georgia, Israel, Pakistan, South Africa (Noyes 2016).
Comments. Japoshvili & Noyes (2005) mentioned the similarity between *M. clauseni* and *M. lunatus* (Dalman 1820), however after examining the lectotype of *M. lunatus,* kindly provided by the Stocholm museum (NHRS-HEVA 000003127) we came to the conclusion that these species are distinct.

Microterys degeneratus Ishii, 1928

Microterys degeneratus Ishii, 1928: 134.

Type material examined. Holotype: ♀ (one antenna on slide), Amakusa, Kumamoto, swept, 11.viii.1923, T. Ishii lgt. (NIAES).

Distribution. Japan: Kyushu (Ishii 1928). Endemic.

Microterys ericeri Ishii, 1923

Microterys ericeri Ishii, 1923: 109.
Microterys evelinae Trjapitzin, 1966: 143–145. Synonymised with *Microterys ericeri* by Trjapitzin (1989: 177).
Microterys tachikawai Sugonjaev, 1976: 924. Synonymised with *Microterys ericeri* by Trjapitzin (1989: 177).

Type material examined. Lectotype: ♀ (here designated), (No. 3, wings and one antenna missing, probably on slide), Nagasaki, ex *Ericerus pela*, 31.x.1921, T. Ishii lgt. (NIAES). Paralectotypes: 3 ♀♀ (1 ♀ on slide), same data as lectotype (NIAES).
Additional material examined. 2 ♀♀, Matsuyama, 13.x.1955, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Honshu, Shikoku (Tachikawa 1963a). China, Iran, Russia (Noyes 2016).
Comments. Apart from the material listed above we also found several slides labelled with the number 3 (Ishii's notebook), but as the date on these slides disagreed with that given in Ishii's notebook we do not accept any of them belonging to the type material.

Microterys interpunctus (Dalman, 1820)

Material examined. 3 ♀♀, Matsuyama, ex *Kermes miyasakii*, 25.–30.vi.1955, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Honshu, Shikoku (Tachikawa 1963a). Nearctic, Finland, Greenland, Norway, Sweden, United Kingdom (Noyes 2016).
Comments. The identification of this material requires confirmation in the future.

Microterys ishiii Tachikawa, 1963

Microterys ishiii Tachikawa, 1963a: 231.

Type material examined. Lectotype: ♀ (here designated): Matsuyama, ex *Pulvinaria aurantii* on *Pittosporum tobira*, 10.vi.1959, T. Tachikawa (ELKU). Paralectotypes: 4 ♀♀, same data as lectotype; 1 ♀, ex *P. aurantii*, 20.vi.1955, T. Tachikawa lgt.; 3 ♀♀, Kurume, ex *P. aurantii*, 5.ix.1962, K. Inoue lgt. (ELKU).

Distribution. Japan: Honshu, Kyushu, Shikoku (Tachikawa 1963a). China (Noyes 2016).
Comments. The species was initially misidentified as *M. okitsuensis* Compere, 1926 by Ishii (1928) and consequently Tachikawa (1963) proposed a new name for this species. We were not able to find any specimens labelled as *M. okitusensis* in Dr. Ishii's collection, but we consider also the material in Dr. Tachikawa's collection fitting the original description of *M. ishiii* as syntypes: '… specimens which were reared from *Pulvinaria aurantii* collected by me in Kyushu (Fukuoka; Oita) were not *M. okitsuensis* but *M. ishiii*. *M. ishiii* is very common and widely distributed in Honshu, Shikoku and Kyushu, and is an important parasite of *Pulvinaria aurantii*.'; Tachikawa 1963). We have selected a lectotype from this material.

This species runs very close to *M. turanicus* (Sugnojaev, 1965) in Trjapitzin's (1989) key. Pilipyuk & Sugonjaev (1971) described *M. insularis* from Sakhalin and Kuril Islands, and this was later synonymised with *M. turanicus* by Sugonjaev (1976). It is therefore possible that *M. insularis* is actually a synonym of *M. ishiii*, but this can only be confirmed by comparison with the relevant type material.

Microterys japonicus Ashmead, 1904

Distribution. Japan: Honshu (Ashmead 1904). Endemic.

Microterys kuwanai Ishii, 1928

Microterys kuwanai Ishii, 1928: 135.

Type material examined. Lectotype: ♀ (here designated), (No. 36), Nagasaki, ex *Pulvinaria horii* on *Quercus glauca*, 20.vi.1922, T. Ishii lgt. (NIAES). Paralectotypes: 2 ♀♀ (1 ♀ on slide, antenna and fore wing), same data as holotype; 10 ♀♀, (No. 36), ex *Pulvinaria* sp., 4.vi (year of collecting not written on the label), T. Ishii lgt. (NIAES). **Additional material examined.** 3 ♀♀, Honshu, Tokyo, ex *P. horii*, 5.vi.1953, T. Tachikawa lgt. & det.; 1 ♀, ex *Psoraleococcus quercus*, Tsukumo, Oita, 9.vi.1954, T. Tachikawa lgt. & det.; 2 ♀♀, ex *P. quercus*, Oita-city, 6.vi.1958, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Honshu, Kyushu, Shikoku (Tachikawa 1963a). China (Noyes 2016).
Comments. We must note that the non type specimens identified by Sugonjaev as *M. turanicus lutescens* Sugionjaev, 1976 examined by first author, actually belong to *M. kuwanai*. Later *M. turanicus lutescens* was treated under *M. turanicus* by Noyes (2015). Thus the true identification of *M. turanicus lutescens* needs further investigation.

Microterys nietneri (Motschulsky, 1859)

Material examined. 1 ♀, Matsuyama, 3.ix.1961, T. Tachikawa lgt.; 1 ♀, Matsuyama, 10.vi.1960, T. Tachikawa lgt.; 1 ♀ (labelled as *M. flavus* (Howard)), Tobe-cho, near Matsuyama, ex *Coccus hesperidum*, 5.xi.1962, S. Mori lgt. T. Tachikawa det. (ELKU).

Distribution. Japan: Honshu, Kyushu, Shikoku (Tachikawa 1963a, as *M. flavus*). Cosmopolitan (Noyes 2016).

Microterys okitsuensis Compere, 1926

Distribution. Japan: Honshu (Compere 1926). China, USA (Noyes 2016)

Microterys rufofulvus Ishii, 1928

Microterys rufofulvus Ishii, 1928: 138.

Type material examined. Lectotype: ♀ **(**here designated**),** (No. 115 in the tube), Isahaya, Nagasaki-ken, swept, 22.viii.1924, T. Ishii lgt. (with the label 'Type') (antennae and wing on slide). Paralectotype: 1 ♀, same data as lectotype (with the label 'cotype'), head lost (NIAES).

Distribution. Japan: Kyushu (Tachikawa 1963a). China (Noyes 2016).
Comments. The original description by Ishii (1928) gives the year 1923, however, examination of the type material and all the information from the tubes and notebook confirm that he made an error in citing that year and the correct date is 1924.

Microterys speciosus Ishii, 1923

Microterys speciosus Ishii, 1923: 70.

Type material examined. Lectotype: ♀ (here designated), (No. 11), Nagasaki or Shizuoka or Kagoshima, ex *Ceroplastes rubens*, before 1923, T. Ishii lgt. (NIAES). Paralectotype: 1 ♀ (on slide), same data as lectotype (NIAES). **Additional material examined.** 1 ♀, Oita-city, ex *C. rubens*, 12.vi.1948, T. Tachikawa lgt. & det. (ELKU). 1 ♀, Nagasaki, ex *C. rubens*, originally identified as *M. amamiensis*, G. Japoshvili revid. (Madrid NHM).

Distribution. Japan: Honshu, Kyushu, Shikoku (Tachikawa 1963a). China, Israel, South Africa, Taiwan (Noyes 2016).
Comments. This species was previously misidentifed by Japoshvili (2011) as *M. amamiensis*. However as we have not been able to examine the type material of *M. amamiensis*, it is possible that the two names are synonymous. Trjapitzin's (1989) statement that the exserted part of the ovipositor of *M. speciosus* is 0.2–0.25× as long as the gaster is not correct. In all females of this species that we have examined the exserted part of the ovipositor is about 0.33× as long as the gaster.

Microterys sylvius (Dalman, 1820)

Distribution. Japan: Hokkaido (Tachikawa 1982). Holarctic (Noyes 2016).

Microterys tarumiensis Tachikawa, 1963

Microterys tarumiensis Tachikawa, 1963: 226.

Type material examined. Holotype: ♀, Matsuyama, 12.vi.1959, T. Tachikawa lgt. (ELKU).

Distribution. Japan: Shikoku (Tachikawa 1963a). Endemic.

Genus *Neastymachus* Girault, 1915

Neastymachus japonicus (Tachikawa, 1970)

Nikolskiella japonica Tachikawa, 1970: 100–103. *Nikolskiella* was synonimised with *Neasthymachus* by Noyes & Hayat (1984: 304).
Neastymachus japonicus (Tachikawa): Trjapitzin (1989: 191) (new combination).

Type material examined. Holotype: ♀, Fukuoka, ex *Nipponaclerda biwakoensis*, 20.ix.1955, T. Tachikawa lgt. (ELKU). Paratype: 1 ♀, same data as holotype; 1 ♀, Fukuoka, 11.vii.1956, T. Tachikawa lgt. (ELKU).

Distribution. Japan: Kyushu (Tachikawa 1970). Endemic.

Genus *Ooencyrtus* Ashmead, 1900

Ooencyrtus kuvanae (Howard, 1910)

Material examined. 1 ♀, Komakino, ex egg of *Lymantria fumida*, 16.viii.1957, Y. Ariga lgt., T. Tachikawa det. (ELKU).

Distribution. Japan: Honshu (Ishii 1928), Kyushu (new record). Afrotropical, Holarctic (**Noyes** 2016).

Ooencyrtus nezarae Ishii, 1928

Ooencyrtus nezarae Ishii, 1928: 126.

Type material examined. Lectotype: ♀ (here designated), (No. 131), Nagasaki, ex egg of *Nezara antennata*, xi.1924, T. Ishii lgt. (NIAES). Paralectotypes: 5 ♀♀, same data as lectotype; 1 ♀ (on slide), antennae and fore wing, same data as lectotype; 1 ♀ (on slide), entire body, same data as lectotype (NIAES).
Additional material examined. 1 ♀, Fukuoka, ex *Riptortus clavatus*, 6.viii.1984, Y. Hirose lgt., T. Tachikawa det.; 2 ♀♀, Yatabe, Tsukuba, ex *N. antennata* Scott, 17.viii.1983, H. Kobayashi lgt., T. Tachikawa det.; 1 ♀ (on slide), Fukuoka, 19.viii.1954, T. Hidaka lgt., T. Tachikawa det.; 2 ♀♀ (on slides), Zentsuji, Kagawa, 10.viii.1951, T. Kobayashi lgt., T. Tachikawa det. (ELKU).

Distribution. Japan: Kyushu, Shikoku (Tachikawa 1963a). Neotropical, Oriental, China, South Korea (Noyes 2016).

Ooencyrtus pinicola (Matsumura, 1925)

Encyrtus pinicola Matsumura, 1926: 37.
Ooencyrtus pinicola (Matsumura): Orlov & Gorshkov (1966): 39–40 (new combination).

Distribution. Japan: Kuriles (Matsumura 1925). China, Kazakhstan, Russia (Noyes 2016).

Ooencyrtus tardus (Ratzeburg, 1844)

Distribution. Japan: Kyushu (Hirose 1994). Palaearctic (Noyes 2016).

Ooencyrtus yoshidai Noyes & Hirose, 1997

Ooencyrtus yoshidai Noyes & Hirose, 1997: 200–203.

Type material examined. Holotype: ♀, Nagano Pref. Shiojiri, Kosobedani, ex egg of *Protohermes grandis*, 16.viii.1989, T. Yoshida lgt. (ELKU). Paratypes: 3 ♀♀, same data as holotype (ELKU).

Distribution. Japan: Honshu (Noyes & Hirose 1997). Endemic.

Genus *Parablastothrix* Mercet, 1917

Parablastothrix maritima Logvinovskaya, 1981

Parablastothrix maritima Logvinovskaya, 1981: 163–164.

Material examined. 1 ♀, Hokkaido, Naebo, Otaru, Shiribeshi, swept, 18.vii.1992, M. Ohara lgt. G. Japoshvili & Y. Higashiura det. (ELKU).

Distribution. Japan: Hokkaido (new record). Russia (Noyes 2016)

Genus *Parasauleia* Hoffer, 1968

Parasauleia sp.

Material examined. 1 ♀ 1 ♂, 1444, 1452; Japan; 29.ix.–18.xii.2010, ex *Dynaspidiotus tsugae* on *Tsuga sieboldii,* K. Abell lgt., G. Japoshvili det. (IEGAU) (**Japoshvili** et al. 2013).

Distribution. Japan (Japoshvili et al. 2013).

Genus *Pareusemion* Ishii, 1925

Pareusemion studiosum Ishii, 1925

Pareusemion studiosum Ishii, 1925: 23.

Type material examined. Lectotype: ♀ (here designated), (No. 1), Nagasaki, Kyushu, ex *Coccus hesperidum* on *Citrus*, 1923–1924, T. Ishii lgt. (NIAES).
Additional material examined. 1 ♀, Matsuyama, vi.1961, T. Tachikawa lgt. & det.; 1 ♀, Matsuyama, 1.x.1955, T. Tachikawa lgt. & det.; 1 ♀ (on slide), Matsuyama, 1.x.1955, T. Tachikawa lgt. & det.; 1 ♀ (on slide), 6.x.1955, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Honshu, Kyushu, Shikoku (Tachikawa 1963a). China (Noyes 2016)
Comments. Ishii described this species from many specimens, but we were only able to locate a single syntype, designated here as the lectotype.

Genus *Prochiloneurus* Silvestri, 1915

Prochiloneurus bolivari Mercet, 1919

Neoprochiloneurus fukudai Tachikawa, 1971: 45–48. Synonymised with *Prochiloneurus bolivari* by **Trjapitzin** (1989: 315).

Type material examined. *Neoprochiloneurus fukudai*: Holotype: ♀, Honshu, Akasaki, Tottori Pref., ex *Clausenia purpurea* through *Pseudococcus comstocki*, H. Fukuda lgt. (ELKU). Paratypes: 3 ♀♀ (2 ♀♀ on slides), same data as holotype (ELKU).

Distribution. Japan: Honshu (Tachikawa 1971). Afrotropical, Palaearctic (Noyes 2016).

Prochiloneurus nagasakiensis (Ishii, 1928)

Cheiloneurus nagasakiensis Ishii, 1928: 145.
Achrysopophagus nagasakiensis (Ishii): Tachikawa (1956): 144 (new combination).
Prochiloneurus nagasakiensis (Ishii): Trjapitzin (1968: 116–121).

Type material examined. Lectotype: ♀ (here designated), Nagasaki, 1.viii.1923, T. Ishii lgt. (NIAES). Paralectotypes: 1 ♀, 8.v.1921, T. Ishii lgt.; 2 ♀♀, Nagasaki, 29.iv.1923, T. Ishii lgt.; 1 ♀, 18.vii.1923, T. Ishii lgt.; 1 ♀, 13.ix.1923, T. Ishii lgt.; 2 ♀♀, antennae and wing on slide (other data are missing) (NIAES). All the type material was reared from *Pseudococcus* sp. (Hemiptera: Coccoidea) on *Citrus*.
Additional material examined. 1 ♀, Matsuyama, ix.1962, T. Tachikawa lgt. & det.; 1 ♀, Tsukumi, Oita, 20.–25.v.1955, T. Tachikawa lgt. & det.; 1 ♀, Matsuyama, ex *Planococcus kraunhiae*, 15.x.1959, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Kyushu, Shikoku (Tachikawa 1963a). China, Russia, Thailand (Noyes 2016).
Comments. The illustration of the fore wing provided by Ishii (1928) is incorrect, as he showed the hyaline apical margin of the fore wing to be as long as maximum wing width, whereas in reality it is considerably shorter, about 0.7× as long as maximum width of fore wing. This error was pointed out by Tachikawa (1963a) in his drawing, but this was ignored by Trjapitzin (1989).

Ishii (1928) also stated that this species is an important parasitoid of mealybugs (Hemiptera: Pseudococcidae), but this was questioned by Tachikawa (1963a) who pointed out that species of *Prochiloneurus* are usually exclusively hyperparasitoids of mealybugs via other encyrtids. However, Trjapitzin (1989) also recorded other species of *Prochiloneurus* as primary mealybug parasitoids and this is supported by our own experience, *Prochiloneurus bolivari* being reared from mealybugs in the laboratory of Suleyman Demirel University, Plant Protection Department, Isparta, Turkey (G. Japoshvili, personal observation).

Genus *Psyllaephagus* Ashmead, 1900

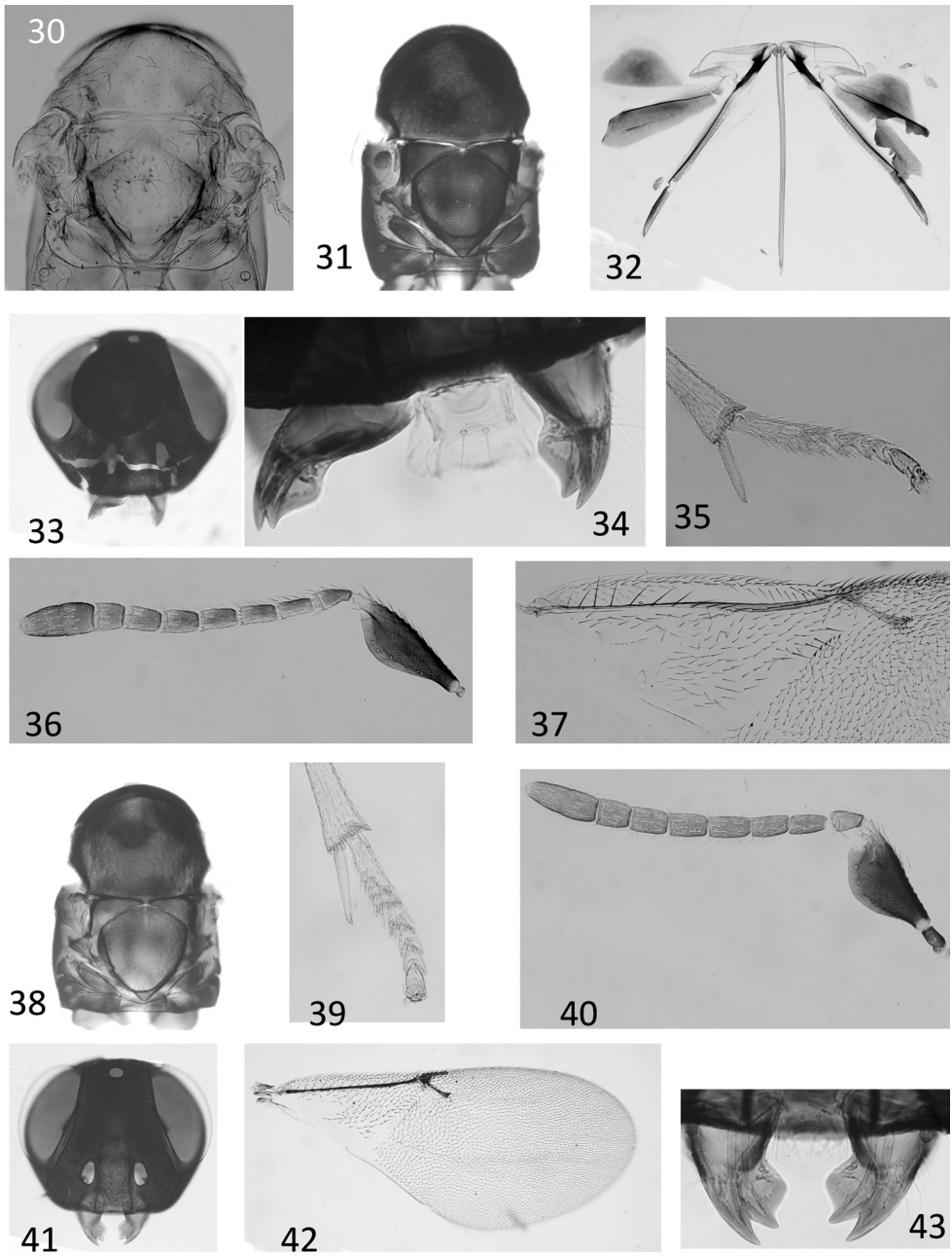
Comments. On a global scale, this genus comprises more than 230 species and is morphologically very diverse. It is likely that a comprehensive study on a worldwide basis will show that the genus should be divided. For instance the synonymy of *Psyllencyrtus* Tachikawa, 1955, with *Psyllaephagus* by Trjapitzin (1971) was not accepted by either Tachikawa (1981) or Yamagishi (1989). For this reason, we plan to use a more integrated approach (combined biological, molecular and morphological data) to investigate further the generic limits in this group.

Psyllaephagus enokicola Japoshvili, sp. nov.

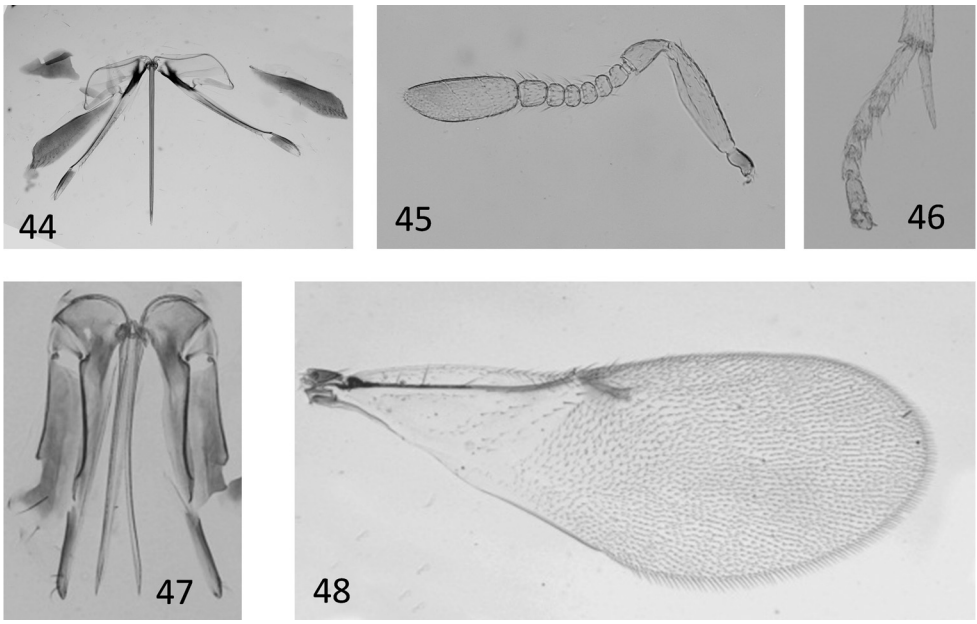
(Figs 4, 7–8, 31–37)

Type material. Holotype: ♀, Nikkonarabu-cho, Kanuma-shi, ex *Pachypsylla japonica* on *Celtis sinensis*, 19.vi.2012, R. Sonobe lgt. (ELKU). Paratypes: 1 ♀, same data as holotype; 1 ♀, Aichi, Shitara, Uradani, Beech forest, trapped during 15.–21.viii.1994, T. Kanbe lgt.; 5 ♀♀, Hatsutani valley, Toyono, Osaka pref. ex *P. japonica,* 24.vi.1994, Y. Higashiura lgt.; 1 ♀ on slide, data as for holotype (ELKU, 1 ♀ in EIAUG).

Diagnosis. ***Female*** (length about 2.00–2.24mm) (Figs 7–8). Head metallic green, mesosoma generally with metallic blue and golden reflection; antenna generally brown; all funicle



Figs. 30–43. 30 – *Leptomastix teii* Japoshvili sp. nov., female, mesosoma. 31–37 – *Psyllaephagus enokicola* Japoshvili sp. nov., female: 31 – mesosoma; 32 – ovipositor; 33 – head; 34 – mandible; 35 – mid tarsus; 36 – antenna; 37 – fore wing. 38–43 – *Psyllaephagus kamitanii* Japoshvili sp. nov., female: 38 – mesosoma; 39 – mid tarsus; 40 – antennae; 41 – head; 42 – fore wing; 43 – mandible.



Figs. 44–48. 44 – *Psyllaephagus kamitanii* Japoshvili sp. nov., female, ovipositor. 45–48 – *Psyllaephagus higashiurai* Japoshvili sp. nov., female: 45 – antennae; 46 – midtarsus; 47 – ovipositor; 48 – fore wing.

segments longer than wide; pedicel almost as long as F_1; legs generally yellow, only basal 1/4 of midcoxa, basal 1/4 and whole of hind coxa brown; wings hyaline; scape about 3× as long as wide; pedicel about 2× as long as wide; F_1 about 2.5× as long as wide; F_6 subquadrate; only F_2–F_6 with one line of longitudinal sensilla in the upper half of segment; frontovertex about 0.25× as wide as head; fore wing about 2.25× as long as wide; ovipositor exserted with exserted part 0.15–0.2× length of gaster.

***Male*.** Unknown

Description. ***Female.*** Length of holotype excluding ovipositor 2 mm, length of exserted part of ovipositor almost 0.2× as long as gaster.

Head (Fig. 4) metallic green with golden reflections and with very short, almost invisible, translucent white setae; antennal scrobes deep and with a blue and golden lustre; gena with a coppery golden-green lustre. Malar sulcus almost inconspicuous. Antenna with scape dark brown, funicle segments partly yellowish in some aspects. Palpi pale yellow. Pronotum, mesoscutum, axillae, scutellum and metanotum generally concolorous and with a metallic blue and golden lustre; apex of scutellum with a brighter greenish and golden lustre; mesopleuron with a bright green and golden lustre; gaster generally with a mixed coppery and golden lustre; tegula completely yellow; visible parts of gonostyli dark brown.

Head in frontal view (Fig. 33) about 1.27× as wide as high; almost 3× as wide as FV; FV with fine, raised, regular, coriaceous granular sculpture, cells smaller than eye facet; face and temple with similar, but more elongate and very small reticulate/imbricate sculpture;

Table 5. Characters used to separate *Ps. enokicola* Japoshvili sp. nov. and *Ps. syntomozae* (Tachikawa, 1955).

***Psyllaephagus enokicola* sp. nov.**	***Psyllaephagus syntomozae***
Ovipositor exserted; exserted part 0.22× as long as gaster.	Ovipositor almost not or hardly exserted.
Scape almost 3× as long as wide.	Scape 2.15× as long as wide.
Ocelli forming obtuse-angled triangle.	Ocelli forming right-angled triangle.
Fillum spinosum with 6 spine-like setae.	Fillum spinosum with 4 spine-like setae.
F_1 has no sensilla, F_6 almost subquadrate.	F_1 has sensilla, F_6 longer than wide.

gena with similar sculpture; ocellar angle about 110°; occipital margin sharp, carinate; eye reaching occipital margin; mesoscutum and scutellum with similar, small, regular polygonal, coriaceous sculpture, however sculpture on mesoscutum deeper and slightly different from that on scutellum, distance between toruli nearly1.4× distance between torulus and clypeal margin and 1.4× as long as distance between torulus and eye; mandible as in Fig. 34; only F_2–F_6 with longitudinal sensilla arranged in a single apical row (Fig. 36); head and mesosoma almost 1.36× as long as gaster (excluding exserted part of ovipositor); mid tibial spur (Fig. 35) shorter than basitarsus; hypopygium extending about 2/5 along gaster; exserted part of ovipositor 0.2× as long as gaster; mesosoma as in Fig. 31; ovipositor as in Fig. 32; basal part of fore wing and venation as in Fig. 37. Relative measurements: HW 40, FV 13, FVL 17, OD 3, OOL 1, OCL 1.5, AOL 5, POL 8, SL 19, SW 7, MS 11, EL 24, EW 16, ScL 21, ML 24, WS 22, FWL 115, FWW 50.

Relative measurements of paratype: OL 49, GL 12, MT 29.

Differential diagnosis. The new species is by its habitus and morphology very close to *Psyllaephagus syntomozae*, but can be separated using the characters given in Table 5.

Etymology. The species name *enokicola* is composed of the Japanese name *enoki*, which is the tree *Celtis sinensis*, and also occurs in the Japanese name of *Pachypsylla japonica* (*enoki-kaigara-kijirami*) living on it, and the Latin ending *-cola* meaning "inhabitant of". Noun in apposition.

Distribution. Japan: Honshu (new record). Endemic.

Psyllaephagus higashiurai Japoshvili, sp. nov.

(Figs 13–15, 45–47)

Material examined. Holotype: ♀, Momiki Izumi, Kumamoto Pref., swept 30.vi.1994, Y. Higashiura lgt. (ELKU). Paratypes: 1 ♀, on slide same data as previous specimens; 7 ♀♀, Momiki Izumi, Kumamoto Pref., swept, 30.vi.1994, Y. Higashiura lgt.; 1 ♀, on slide same data as previous specimens; 1 ♀, Momiki Izumi, Kumamoto Pref., swept, 7.viii.1994, Y. Higashiura lgt.; 2 ♀♀, Kashiwazaki-shi, Niigata Pref, swept, 22.–23.viii.1970, K. Yamagishi lgt.; 1 ♀, Momiki Izumi, Kumamoto Pref., swept, 7.viii.1994, Y. Higashiura lgt.; 1 ♀, Kashiwazaki-shi, Niigata Pref., swept, 22.–23.viii.1970, K. Yamagishi lgt. (ELKU, 1 ♀ in EIAUG).

Diagnosis. ***Female*** (length about 1.0–1.3 mm) (Figs 14–15). Head (Fig. 13) and mesosoma brown with golden green to coppery metallic reflections; antennae generally dirty yellow; not all funicle segments longer than wide; pedicel 1.8× as long as wide and 2.4× as long as F_1; legs generally yellow, only mid and hind coxae, last tarsal segment, hind femur and fourth hind tarsal segment brown; wings hyaline; scape about 3.9× as long as wide; F_1 almost

Table 8. Characters used to separate *Ps. higashiurai* Japoshvili sp. nov. and *Ps. colposceniae* Trjapitzin, 1969.

***Ps. higashiurai* sp. nov.**	***Ps. colposceniae***
FV almost 0.5× as wide as HW.	FV 0.33× or slightly less as wide as HW.
Ocelli in slightly obtuse triangle.	Ocelli in slightly acute triangle.
Clava almost as long as flagellar segments combined.	Clava shorter than flagellar segments combined.

quadrate 1× as long as wide; F_2–F_5 transverse, F_6 1.1× as long as wide; all funicular segments with two lines of longitudinal sensilla (Fig. 45); frontovertex about 0.33× as wide as head; fore wing (Fig. 48) about 2.7× as long as wide; middle tibial spur as in Fig. 46; exserted part of ovipositor (Fig. 47) 0.16× as long as gaster including exserted part.

***Male*.** Unknown.

Description. ***Female.*** Holotype 1.2 mm, including exserted part of ovipositor.

Head metallic green with golden reflections and translucent white setae; front above torulli and in front of anterior ocellus with brown band without metallic reflection; genae with golden-greenish reflection. Malar sulcus prominent. Antenna with scape almost yellowish, funicular segments yellow; clava with C_2–C_3 dirty yellow. Palpi light yellow. Pronotum with at least some kind of coppery with golden green reflections; mesoscutum and axillae golden-green with very reduced coppery reflections; scutellum with golden-green reflections; mesopleuron with coppery golden reflections, with coppery reflection more intensive; tegula brown, with golden metallic reflections; metanotum and propodeum with copperygolden reflections; gaster dorsal side with first tergite coppery golden, remaining tergites with coppery silver reflections; ventral surface with golden-green to coppery reflections; visible parts of gonostyli brown.

Head in frontal view 1.3× as wide as high; almost 3× as wide as FV; head on frontovertex with fine, raised, regular, coriaceous-granular sculpture, cells smaller than diameter of eye facet; face and temple with similar, but more elongate and very small reticulate-imbricate sculpture; gena with similar sculpture; ocellar angle about 100°; occipital margin sharp, carinate; eye reaching occipital margin; mesoscutum and scutellum with similar, small, regular polygonal coriaceous structure, however mesoscutum with sculpture deeper, which makes it different from that of scutellum; distance between torulli almost 1.56× as long as distance between torulli and clypeal margin and 1.08× as long as distance from torulus to eye; sensilla visible only on F_6; mandible with one tooth and truncation; head and mesosoma almost 1.7× as long as gaster; middle tibial spur as long as basitarsus (Fig. 46); hypopygium extending to almost basal half; ovipositor exserted; ovipositor as in Fig. 48. Relative measurements: HW 44, FV 20, FVL 22, OD 3, OOL 2, OCL 4, AOL 7, POL 10, SL 20, SW 5, MS 14, EL 13, EW 19, ScL 24, WS 12.

Differential diagnosis. The overall morphology of this new species is very close to *Ps. syntomozae* and *Ps. colposceniae* Trjapitzin, 1969, but differs in the character given in the Table 8.

Etymology. Named after Japanese biologist and biocontrol specialist working on Encyrtidae, Yoshimitsu Higashiura.

Distribution. Japan: Honshu (new record). Endemic.

Psyllaephagus iwayaensis Ishii, 1928

Psyllaephagus iwayaensis Ishii, 1928: 128.

Type material examined. Lectotype: ♀ (here designated), (No. 145), Mountain Iwaya near Nagasaki, from psyllid found on *Cinnamomum* sp., 3.vi.1925, T. Ishii lgt. Paralectotypes: 5 ♀♀, same data as lectotype.
Additional material examined. 3 ♀♀, Matsuyama, ex *Trioza cinnamomi*, 1.–5.v.1956, T. Tachikawa lgt. & det.; 1 ♀ (on slide), Matsuyama, ex *T. cinnamomi*, 1.v.1956, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Kyushu, Shikoku (Tachikawa 1963a). Endemic.
Comments. It is worth noting that the mesoscutum of the type specimens has a metallic blue-violet to golden lustre which contrasts with the green-bronze and golden lustre of the scutellum and gaster. In the Trjapitzin's (1989) key to species of *Psyllaephagus*, couplet 63 is erroneous in that the marginal and postmarginal veins are both shorter than the stigmal vein, the ocelli form an 80° angle and AOL is less than POL. The same author incorrectly states that the mesoscutum and scutellum are with light purple-green metallic reflection, the postmarginal and marginal veins are as long as stigmal vein, the ocelli form a 60° angle and AOL is as long as POL.

Psyllaephagus kamitanii Japoshvili, sp. nov.

(Figs 9–10, 11–12, 38–44)

Type material. Holotype: ♀, Ryukyus, Sueyoshi park, Naha, Okinawa Pref., 24.iii.1996, N. Takahashi lgt. (ELKU). Paratypes: 6 ♀♀, 15.iii.1996, other data same as holotype; 6 ♀♀, 16.iii.1996, other data same as holotype; 1 ♀, paratype on slide, collected 15.iii.1996; 1 ♀, paratype on slide, collected 16.iii.1996 (ELKU, 2 ♀♀ in IEAUG).

Diagnosis. ***Female*** (length about 1.9–2.7 mm) (Figs 9–10). Mesosoma and head (Figs 11–12) generally with golden-green metallic reflection; antennae generally brown; all funicle segments longer than wide; pedicel at least slightly shorter to 0.8× as long as F_1; legs generally yellow, only basal half of mid coxa and hind coxa brown; wings hyaline; scape about 2× as long as wide; pedicel about 1.5–1.66× as long as wide; F_1 about 2–2.45× as long as wide; F_6 1.25–1.37 as long as wide; all funicular segments with two lines of longitudinal sensilla; frontovertex about 0.33× as wide as head; fore wing about 2.25× as long as wide; ovipositor not exserted in smaller individuals and in larger individuals exserted part can be 1/6 of gaster.

Male. Unknown.

Description. ***Female.*** Holotype 2.03 mm, ovipositor almost not exserted.

Head metallic green with golden reflections and translucent white setae; below toruli golden reflection is more intense; gena with coppery golden-greenish reflections. Malar sulcus prominent. Antenna scape dark brown, funicular segments somewhat lighter. Palpi light yellow colored. Pronotum with faint coppery, golden-greenish reflections; mesoscutum and axillae with green-golden reflection, with very slight coppery reflection; scutellum with golden green reflection; mesopleuron with copery golden-greenish reflections; tegula dirty yellow, with tip somewhat brownish; metanotum and propodeum with coppery-golden reflections; gaster dorsal side with coppery-golden reflections, sides and ventral side with golden-green to coppery reflections; visible parts of gonostyli yellow.

Head in frontal view (Fig. 41) rounded, 1.2× as wide as high; almost 3× as wide as FV; head on frontovertex with fine, raised, regular, coriaceous-granular sculpture, cells smaller

Table 6. Characters used to separate *Ps. kamitanii* Japoshvili sp. nov. and *Ps. syntomozae* (Tachikawa, 1955).

***Psyllaephagus kamitanii* sp. nov.**	***Psyllaephagus syntomozae***
F_1 has 2 lines of sensilla.	F_1 has only the upper line of sensilla.
Dorsal surface of costal cell has two lines of setae.	Dorsal surface of costal cell has one line of setae.
HW 2.8× as wide as FV, ocelli forming obtuse triangle.	HW 3.4× as wide as FV, ocelli forming right triangle.
Ovipositor 4.8× as long as gonostyli.	Ovipositor 5.3× as long as gonostyli.

Table 7. Characters used to separate *Ps. kamitanii* Japoshvili sp. nov. and *Ps. garuga* S. Singh, 2011.

***Psyllaephagus kamitanii* sp. nov**	***Psyllaephagus garuga***
Fillum spinosum with 4 spine-like setae.	Fillum spinosum with 3 spine-like setae.
HW 2.8× as wide as FV.	HW 3.38× as wide as FV.
Ocelli in an obtuse-angled triangle.	Ocelli in a right-angled triangle.
Ovipositor 4.8× as long as gonostyli.	Ovipositor 4.4× as long as gonostyli.

than diameter of eye facet; face and temple with similar, but more elongate and very small reticulate-imbricate sculpture; gena with similar sculpture; ocellar angle about 100°; occipital margin sharp, carinate; eye reaching occipital margin; mesoscutum and scutellum with similar, small, regular polygonal, coriaceous sculpture, however sculpture on mesoscutum deeper (Fig. 38), which makes it different from that on scutellum; distance between toruli almost 1.35× as long as distance between toruli and clypeal margin and 2× as long as distance from toruli to eye; all funicle segments with longitudinal sensilla place in two rows on each segment (Fig. 40); mandible as in Fig. 43; fore wing as in Fig. 42; head and mesosoma almost 1.2× as long as gaster; middle tibial spur shorter than basitarsus (Fig. 39); hypopygium extending to almost basal half; ovipositor almost not exserted; ovipositor as in Fig. 44. Relative measurements: HW 40, FV 13, FVL 16, OD 3, OOL 1, OCL 2, AOL 4, POL 7, SL 16, SW 8, MS 11, EL 22, EW 17, ScL 19, ML 22, WS 17, FWL 85, FWW 37.

Relative measurements of paratype: OL 73, GL 15, MT 37, OL 50, GL 10.5, MT 32.

Variation. There is very little variation among the examined females. Ovipositor is either not exserted (in smaller individuals) or exserted part is almost 1/6 of gaster. Antennal funicle segments in smaller individuals shorter than those of bigger individuals.

Comments. The new species is very close with its habitus and morphology to *Ps. syntomozae* and *Ps. garuga* S. Singh, 2011, but differes in the character given in the Tables 6–7.

Etymology. Named after the Japanese entomologist working on Hemiptera, Dr. Satoshi Kamitani.

Distribution. Japan: Ryukyus (new record). Endemic.

Psyllaephagus nipponicus (Ishii, 1928)

Metaprionomitus nipponicus Ishii, 1928: 110.
Psyllaephagus nipponicus (Ishii): Trjapitzin (1967): 194 (new combination).

Type material examined. Holotype: ♀, Ikiriki, Nagasaki, collected on *Ficus foveolata*, 2.xi.1924, T. Ishii lgt. (head, antenna and wing on slide) (NIAES).

Distribution. Japan: Kyushu (Ishii 1928). Endemic.

Psyllaephagus stenopsyllae (Tachikawa, 1963)

Metaprionomitus stenopsyllae Tachikawa, 1963a: 182.
Psyllaephagus stenopsyllae (Tachikawa): Trjapitzin (1967): 177 (new combination).

Type material examined. Paratype: 1 ♀, Tachibana, Fukuoka, ex *Stenopsylla nigricornis*, Y. Miyatake lgt. (ELKU).

Distribution. Japan: Kyushu (Tachikawa 1963a). China, Iran, Taiwan (Noyes 2016).
Comments. The species is close to *P. intermedius* (Mercet, 1921) but the clava is only a little longer than F_5–F_6 combined whereas in *P. intermedius* the clava is about as long as F_3–F_6. We were not able to locate the holotype.

Psyllaephagus syntomozae (Tachikawa, 1955)

Psyllencyrtus syntomozae Tachikawa, 1955: 64.
Psyllaephagus syntomozae (Tachikawa): Trjapitzin (1967): 191 (new combination).

Type material examined. Paratypes: 2 ♀♀, Nakadore, Matsuyama, ex *Syntomoza magna*, 4.vii.1951, T. Yano lgt.; 6 ♀♀, Matsuyama, ex *S. magna*, 28.vi.1954, T. Tachikawa lgt.; 2 ♀♀, Shikoku, Kashima, nr Matsuyama, ex *S. magna*, 13.vii.1954, T. Tachikawa lgt. (ELKU).

Distribution. Japan: Shikoku (Tachikawa 1963a). Endemic.
Comments. *Psyllaephagus syntomozae* does not fit the first couplet in Trjapitzin's (1989) key to Palaearcic species because the legs are almost completely yellow, with only the hind coxa completely dark brown. The holotype is housed in Ehime University, but we were not able to examine it.

Genus *Rhopus* Förster, 1856

Rhopus semiapterus (Mercet, 1921)

Distribution. Japan: Honshu (Tachikawa 1963a). Germany, Spain, United Kingdom (Noyes 2016).

Genus *Syrphophagus* Ashmead, 1900

Syrphophagus aeruginosus (Dalman, 1820)

Material examined. 2 ♀♀, Matsuyama, 2.vi.1955, T. Tachikawa lgt., G. Japoshvili det.; 1 ♀, Matsuyama, ex *Episyrphus balteatus*, 2.vi.1955, T. Tachikawa lgt., G. Japoshvili det. (ELKU).

Distribution. Japan: Shikoku (new record). New record for Japan. Oriental, Palaearctic (Noyes 2016).
Comments. Tachikawa (1963) initially identified the above material as *Syrphophagus nigrocyaneus* Ashmead, 1904 but we found that they actually belong to *S. aeruginosus*. These specimens are labelled as "Paratype", which is undoubtedly an error and they have no type status, as *S. nigrocyaneus* was described by Ashmead (1904).

Syrphophagus nigrocyaneus Ashmead, 1904

Distribution. Japan: Honshu, Kyushu, Shikoku (Tachikawa 1963a). Afrotropical, China (Noyes 2016).

Comments. Ashmead (1904) recorded this species from Japan without exact locality name.

Syrphophagus splaeophoriae Tachikawa, 1963

Syrphophagus splaeophoriae Tachikawa, 1963: 223.

Type material examined. Holotype: ♀, Matsuyama, ex *Sphaerophoria macrogaster* (misidentified as *S. cylindrica* Say), 7.vii.1958, T. Tachikawa lgt. (ELKU). Paratypes: 2 ♀♀, Matsuyama, ex *Sphaerophoria macromesosoma,* 5.vii.1953, T. Tachikawa lgt.; 1 ♀ (on slide), data as for holotype (ELKU).

Distribution. Japan: Shikoku (Tachikawa 1963a). Endemic.
Comments. This species is close to *Syrphophagus vicinus* (Trjapitzin, 1978) and *S. eliavae* Japoshvili, 2007 and possibly all three taxa are synonymous.

Syrphophagus tachikawai (Hoffer, 1970)

Aphidencyrtus tachikawai Hoffer, 1970: 34–37.
Syrphophagus tachikawai (Hoffer): Noyes & Hayat (1984): 339 (new combination).

Distribution. Japan: Honshu (Hoffer 1970). Endemic.

Genus *Thomsonisca* Ghesquiere, 1946

Thomsonisca amathus (Walker, 1838)

Material examined. 9 ♀♀, Matsuyama, ex *Pseudaulacaspis pentagona*, vi.1958, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Shikoku (Tachikawa 1963a). Palaearctic (Noyes 2016).

Thomsonisca noyesi Japoshvili, 2013

Thomsonisca noyesi Japoshvili, 2013 in Japoshvili et al. (2013: 552).

Type material examined. Holotype: ♀, specimen number 1676. Paratypes: 2 ♀♀, specimens number 1658 and 1659; 3 ♂♂, specimens number 1667, 1682, 1689; 29.ix.–18.xii.2010; ex *Fiorinia externa* on *Tsuga diversifolia,* K. Abell lgt. G. Japoshvili det. (IEGAU).

Distribution. Japan: Honshu (Japoshvili et al. 2013). Endemic.

Genus *Trechnites* Thomson, 1876

Trechnites viridiscutellatus (Ishii, 1928)

Psylledontus viridiscutellatus Ishii, 1928: 111.
Metallon viridiscutellatus (Ishii): Trjapitzin (1989): 251 (new combination).
Trechnites viridiscutellatus (Ishii): Guerrieri & Noyes (2009): 258 (new combination).

Material examined. 2 ♀♀, Hokkaido, Kutchan, Shiribeshi, swept, 17.vii.1992, Y. Sakamaki et al. lgt., G. Japoshvili & Y. Higashiura det.; 1 ♀, Hokkaido, Hokkaido University, Sapporo, Ishikani, swept, 27.vi.1992, E. Ikeda lgt., G. Japoshvili & Y. Higashiura det.; 1 ♀, Hokkaido, Mt. Youtei, Kutchan, Shiribeshi, swept, 15.vii.1992, Y. Sakamaki et al. lgt., G. Japoshvili & Y. Higashiura det.; 1 ♀, Hokkaido, Shavashinzan, swept, 5.viii.1993, Y. Sakamaki lgt., G. Japoshvili & Y. Higashiura det. (YHYJ).

Distribution. Japan: Hokkaido (new record), Kyushu (Tachikawa 1963a). Endemic.

Comments. We were not able to find the type material of this species, but the examined material matches Ishii's description of the species, except that the scape is completely dark brown and the legs are slightly darker. They are similar to *Trechnites insidiosus* (Crawford, 1910) and may be the same.

Genus *Trichomasthus* Thomson, 1876

Trichomasthus eriococci (Ishii, 1928)

Phaenodiscus eriococci Ishii, 1928: 141.
Trichomasthus eriococci (Ishii): Erdős (1961): 417 (new combination).

Material examined. Lectotype: ♀ (here designated), (No. 26), Kanagawa-ken, Ozuki, ex *Acanthococcus onukii* on bamboo, 10.viii.1925, T. Ishii lgt. (NIAES). Antennae and fore wing of lectotype on slide (NIAES).
Additional material examined. 1 ♀, Kanagawa-ken, Ozuki, ex *Eriococcus onukii*, 27.viii.1926, T. Ishii lgt., T. Tachikawa det.; 4 ♀♀, ex *E. onukii*, 5.vi.1955, T. Tachikawa lgt. & det.; 1 ♀, Matsuyama, 22.v.1954, T. Tachikawa lgt. & det.; 1 ♀, Matsuyama, 23.v.1954, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Honshu, Kyushu, Shikoku (Tachikawa 1963a). Russia (Noyes 2016).

Trichomasthus extimus Sharkov, 1989

Distribution. Japan: Kuriles (Jensen & Sharkov 1989). Russia (Noyes 2016).

Genus *Tyndarichus* Howard, 1910

Tyndarichus navae Howard, 1910

Material examined. 1 ♀, Komakino, ex egg of *Lymantria fumida*, 16.viii.1957, Y. Ariga lgt., T. Tachikawa det.; 1 ♀, Komakino, ex *L. fumida*, 16.viii.1957, Y. Ariga lgt., T. Tachikawa det. (ELKU).

Distribution. Japan: Honshu (Tachikawa 1963a). Oriental, Palaearctic (Noyes 2016).

Genus *Zaomma* Ashmead, 1900

Zaomma eriococci (Ferrière, 1955)

Metapterencyrtus eriococci Tachikawa, 1963: 214. Synonymised with *Zaomma eriococci* (Ferrière, 1955) by Gordth & Trjapitzin (1979: 34).

Material exmined. *Metapterencyrtus eriococci*: Holotype: ♀, Matsuyama, ex *Acanthococcus onukii*, 26.ix.1955, T. Tachikawa lgt. & det. (ELKU).

Distribution. Japan: Kyushu, Shikoku (Tachikawa 1963a). Palaearctic (Noyes 2016).

Zaomma lambinus (Walker, 1838)

Material examined. 1 ♀, Matsuyama, ex *Aulacaspis difficilis*, 15.iv.1955, T. Tachikawa lgt.; 1 ♀, Matsuyama, on *Elaeagnus* sp., 5.v.1956, T. Tachikawa lgt. (ELKU). 5 ♀♀, specimen numbers 1561, 1564, 1565, 1692, 1687, Japan; 29.ix.–18.xii.2010; ex *Lepidosaphes pseudotsugae* on *Tsuga diversifolia*, K. Abell lgt., G. Japoshvili det. (IEGAU).

Distribution. Japan: Honshu (Japoshvili et al. 2013). Cosmopolitan (Noyes 2016).

Discussion

Almost all type specimens of Encyrtidae described by Tei Ishii and Tetsusaburo Tachikawa from Japan, have been examined and all previously described species of Encyrtidae recorded from Japan, available in Japanese collections, have been revised. Fifty two genera and 150 species are recorded from Japan. Five species are newly described and illustrated: *Aphidencyrtoides tachikawai* Japoshvili sp. nov., *Leptomastix teii* Japoshvili sp. nov., *Psyllaephagus enokicola* Japoshvili sp. nov., *Ps. kamitanii* Japoshvili sp. nov. and *Ps. higashiurai* Japoshvili sp. nov. One genus (*Parablastothrix*) and four species: *Anagyrus bicolor*, *Leptomastix auraticorpus*, *Parablastothrix maritima* and *Syrphophagus aeruginosus*, are recorded for the first time from Japan. Seven species and two genera are synonymized. New combinations were proposed for 32 species, one genus and three species were restituted from synonymy and considered as valid.

We did not include the following species recorded from Japan by Noyes (2015).

Adelencyrtus odonaspidis Fullaway, 1913

Comments. The Japanese record is based on **Burks** (1958), but this author did not state which material was examined or where the information originated.

Ageniaspis citricola Logvinovskaya, 1983

Comments. This species was introduced to Japan for biological control of *Phyllocnistis citrella* (Stainton, 1856) (Lepidoptera: Gracillariidae) (Ujiye 2000); however, the species has not been recorded in Japan since its introduction.

Anagyrus dactylopii (Howard, 1898)

Comments. Noyes (2016) erroneously recorded the species from Japan based on Noyes & Hayat (1994), but this paper does not mention Japan.

Cheiloneurus phenacocci Trjapitzin, 1964

Material examined. 6 ♀♀, Matsuyama, 14.vi.1954, T. Tachikawa lgt. & det. (ELKU).

Comments. The above material was incorrectly identified as *Ch. phenacocci* by Tachikawa (1971). The specimens differ from *Ch. phenacocci* in having all funicle segments longer than wide, the scutellum yellow and the clava shorter than F_2–F_6. In *Ch. phenacocci* the funicle segments F_2–F_3 are almost subquadrate and F_4 slightly longer than width. We therefore removed this species from the list of Japanese encyrtids. The true identity of the specimens remains unresolved.

Copidosoma koehleri Blanchard, 1940

Material examined. 7 ♀♀, introduced from Argentina, 24.ix.1956 (ELKU).

Comments. We excluded this species from the list, as we had no information about its establishment in Japan.

Copidosoma thebe (Walker, 1938)

Comments. In Tachikawa's collection (ELKU) we found a box containing some 33 specimens (7 ♀♀, Hokkaido, Mt. You, Alkan Nat. Park, 25.vi.1958, Y. Murakami lgt.) labelled as *Litomastix claviger* Mercet, 1921. This species was synonymized with *Copidosoma thebe* by Guerrieri & Noyes (2005). However, the specimens examined by us did not belong to *C. thebe* and more closely resembled *C. cyaneum* Hoffer, 1970 and *C. zdeneki* Guerrieri & Noyes, 2005 and therefore we excluded the possible record of *C. thebe* from the list of Japanese fauna.

Eugahania fumipennis (Ratzeburg, 1852)

Comments. See comments under *Eugahania yanoi*. As we considered *E. yanoi* to be a valid species there are no records of *E. fumipennis* from Japan.

Hambletonia pseudococcina Compere, 1936

Comments. Noyes (2016) records this species from Japan citing Tachikawa (1980b) as the source. However, Tachikawa (1980b) states, that *H. pseudococcina* was reared from *Dysmicoccus brevipes* (Cockerell, 1893) imported from Taiwan to Yokohama. Since then, *H. pseudococcina* has not been recorded from Japan, and we preferred to exclude it from its fauna.

Homalotylus eytelweinii (Ratzeburg, 1844)

Comments. Information about this species occurring in Japan in Noyes (2016) is based on Trjapitzin & Ruiz-Cancino (2003) and Trjapitzin & Triapitsyn (2004). In these publications the authors cited Noyes (2002), which however did not include any mention of the species. Therefore we considered the record as erroneous and excluded it from the list.

Tetracnemoidea brounii (Timberlake, 1929)

Comments. Noyes (2015) cites Noyes & Hayat (1994) as the origin of the record of this species from Japan. But these authors cited Tachikawa (1964) as the source. We were unable to find any record of this species from Japan in any publication of Tachikawa and therefore removed it from the list.

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