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REVIEW OF THE MYMARIDAE (HYMENOPTERA, CHALCIDOIDEA) OF PRIMORSKII KRAI: GENERA *CLERUCHUS* ENOCK AND *STETHYNIUM* ENOCK

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Two species of *Cleruchus* and two species of *Stethynium* are included in this review. *C. mikhail* sp. n. and *C. petr* sp. n. are described from the Russian Far East. New distributional data are provided for the widespread Holarctic species *S. triclavatum* Enock. *S. empoascae* Subba Rao is resurrected as a valid taxon; this species is for the first time recorded from Australia.

KEY WORDS: Hymenoptera, Mymaridae, *Cleruchus*, *Stethynium*, taxonomy.

С. В. Тряпицын. Обзор семейства Мумариде (Hymenoptera, Chalcidoidea) Приморского края: роды *Cleruchus* Энокок и *Stethynium* Энокок. // Дальневосточный энтомолог. 2002. N 122. С. 1-13.

Дается обзор 2 видов *Cleruchus* и 2 видов *Stethynium*. С Дальнего Востока России описываются *C. mikhail* sp. n. и *C. petr* sp. n. Расширены сведения о распространении голарктического *S. triclavatum* Энокок. Восстановлен статус *S. empoascae* Subba Rao, который также впервые указывается из Австралии.

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INTRODUCTION

Collecting and preservation methods of the material from Primorskii krai were described by Triapitsyn & Berezovskiy (2001). Terms for morphological features are

those of Gibson (1997). All measurements are given in micrometers (μm), as length or, where necessary, as length/width. Abbreviations used are: F = funicle segment of the female antenna or flagellomere of the male antenna; MT = Malaise trap; YPT = yellow pan trap. New distribution records are asterisked (*).

Acronyms for depositories of specimens are as follows: CAS – California Academy of Sciences, San Francisco, California, USA; ENITA – ENITA de Bordeaux, Gradignan, France; IBPV – Institute of Biology and Soil Science, Vladivostok, Russia; ISNB – Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium; QDPI – Queensland Department of Primary Industries, Brisbane, Queensland, Australia; UCRC – University of California, Riverside, California, USA; ZIN – Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia.

Genus *Cleruchus* Enoch, 1909

Cleruchus Enoch, 1909: 453. Type-species: *Cleruchus pluteus* Enoch, 1909 (Woking, Loughton, and Burnham Beeches, England), by monotypy.

Cleruchus: Debauche, 1948: 142; Annecke & Douth, 1961: 20; Novicky, 1965: 56; Trjapitzin, 1978: 531; Schauff, 1984: 43; Noyes & Valentine, 1989: 31; Yoshimoto, 1990: 55; Triapitsyn & Huber, 2000: 613.

Platypatasson Ogloblin, 1946: 293. Type species: *Platypatasson fransseni* Ogloblin, 1946 (Buitenzorg, Java, Indonesia), by original designation. Synonymized with *Cleruchus* by Schauff, 1984: 43.

Stenopteromymar Ferrière, 1952: 41. Type species: *Stenopteromymar biciliatus* Ferrière, 1952 (d'Arcine, Vuache, Savoie, France), by monotypy. Synonymized with *Cleruchus* by Viggiani, 1974: 88.

Douttiella Annecke, 1961: 71. Type species: *Douttiella depressa* Annecke, 1961 (Rosebank, Cape Province, South Africa), by original designation. Synonymized with *Cleruchus* by Noyes & Valentine, 1989: 31.

Paracleruchus Yoshimoto, 1971: 1079. Type species: *Paracleruchus pieloui* Yoshimoto, 1971 (Ludlow, New Brunswick, Canada), by original designation. Synonymized with *Cleruchus* by Viggiani, 1974: 88.

DIAGNOSIS. A generic redefinition of *Cleruchus* will be necessary to accommodate numerous undescribed and several described species; the limits of *Cleruchus* thus must be significantly broadened in the future because at present this genus is too narrowly defined.

COMMENTS. *Cleruchus* is a cosmopolitan genus with 21 valid species, including the two new ones described herein. Identification keys are available only for the Belgian (Debauche, 1948) and European species (Novicky, 1965; Trjapitzin, 1978).

The biology of *Cleruchus* species is poorly known; previous host records, summarized by Huber (1986), include Acrididae (Orthoptera) and Cleridae (Coleoptera), with Curculionidae (Coleoptera) added later to that list (Schauff, 1989). I have seen an unidentified species associated with a culture of a minute tree-fungus beetle (Coleoptera: Ciidae) on a *Polyporus* fungus in Contra Costa County, California, USA. These winged specimens likely represent an undescribed species related to *C.*

pieloui (Yoshimoto, 1971), an apterous species from New Brunswick, Canada, which is also associated with a bracket fungus, *Polyporus betulinus* (Bull.) Fr. on birch (Yoshimoto, 1971). Therefore, *C. pieloui* may parasitize eggs of a minute tree-fungus beetle host as well.

Key to species of the Russian Far East, females

1. All antennal funicle segments without longitudinal sensilla (Fig. 1); marginal vein of forewing with dorsal macrochaetae long (Fig. 2) ***C mikhail* sp. n.**
- F2-F6 each with a longitudinal sensillum (Fig. 6); marginal vein of forewing with dorsal macrochaetae short (Fig. 7) ***C petr* sp. n.**

***Cleruchus mikhail* S. Triapitsyn, sp. n.**

Figs 1-5

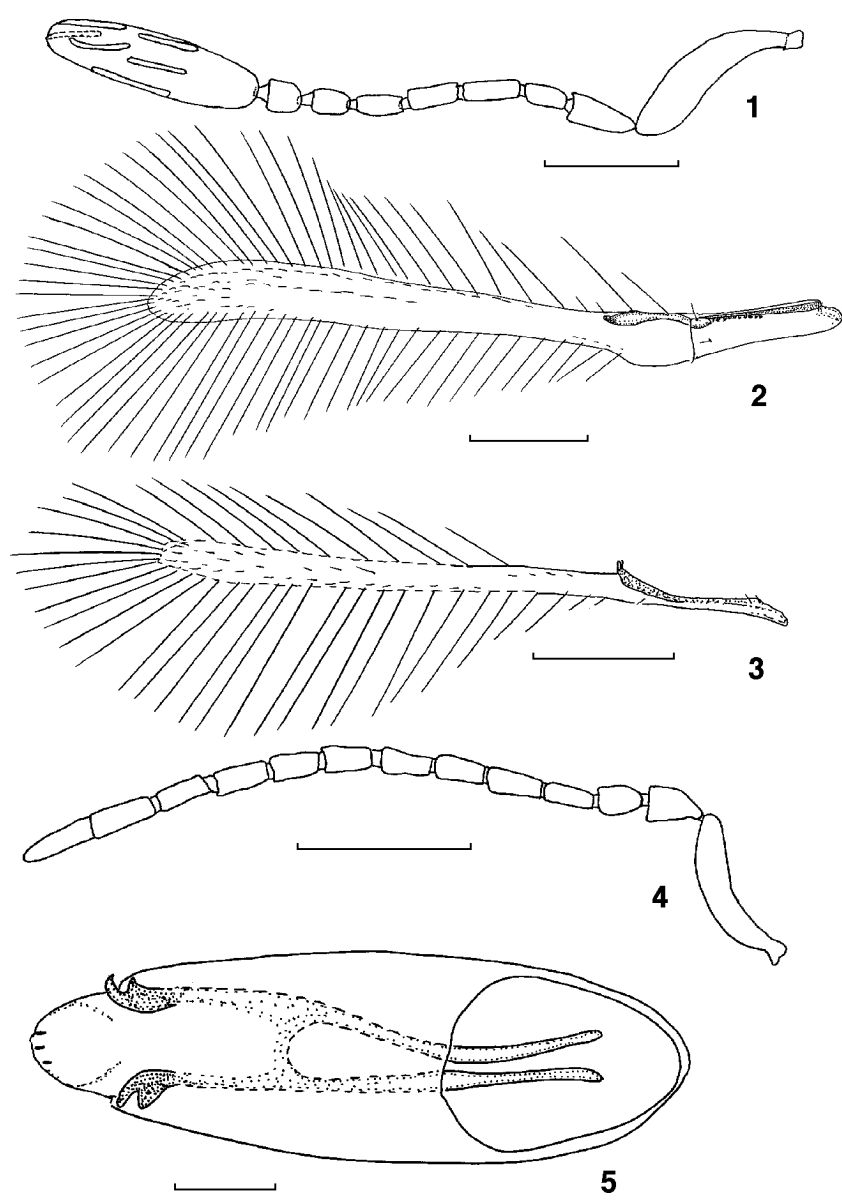
MATERIAL. Holotype - ♀ (on slide): Russia, Primorskii krai, Ussuriysk district, Gornotayozhnoye, 6-14.IX 1999, MT (M. Michailovskaya) [ZIN]. Paratypes – Russia: same locality and collector as the holotype, 12-17.VIII 1999, 1 ♀, 1 ♂ on slides and 1 ♀ on point, MT; 15-17.VIII 1999, 1 ♂ on card, YPT [UCRC, ZIN].

DESCRIPTION. FEMALE (holotype and paratypes). Pedicel, flagellum, occiput, gena, mesoscutum, anterior scutellum, tarsi, and middle gastral terga light brown; trabeculae on the head, posterior scutellum, propodeum, wing venation, and distal gastral terga brown to dark brown; scape, pronotum, posterior scutellum, legs (except tarsi), and basal gastral terga pale. Eye dirty pink.

Head. Much wider than long in dorsal view, trapezoidal in lateral view, rounded and slightly wider than high in anterior view, and about as wide as mesosoma. Vertex large; ocelli much closer to occipital sulcus (posterior ocelli almost touching it) than to transverse trabecula, ocellar setae weak, supraorbital seta and especially the seta near eye margin at the junction of supraorbital trabecula and occipital sulcus stronger. Transverse trabecula slightly below mid level of eye. Face subquadrate, medial face with a pair of long but fine intertolular setae, torulus almost touching transverse and preorbital trabeculae, 2 setae near the inner side of each torulus.

Antenna (Fig. 1). Scape and pedicel sparsely setose, flagellum densely setose. Radicle very small and partially fused with the rest of scape, which is strongly curved and finely longitudinally striate, about 4 x as long as wide; pedicel longer than wide, with a fine longitudinal sculpture, longer than F1; F2 slightly longer than other funicle segments, F1-F4 cylindrical, F5 subcylindrical, F6 more rounded, F5 and F6 slightly wider than F1-F4, all funicle segments without longitudinal sensilla; clava about 3.5 x as long as wide, with 6 longitudinal sensilla, 3 of them subapical.

Mesosoma. Pronotum, mesoscutum, and axilla with faint, mostly cellulate, sculpture. Each side lobe of pronotum with several short setae. Mesoscutum much wider than long, its midlobe with a pair of strong adnotaular setae. Axilla with 1 seta. Scutellum almost smooth, trapezoidal, slightly shorter than mesoscutum, placoid



Figs 1-5. *Cleruchus mikhail* sp. n. (holotype and paratypes). 1) Antenna, female, 2) forewing, female, 3) hind wing, female, 4) antenna, male, 5) male genitalia, dorsal view. Scale bars for figs 1-4 = 0.1 mm, for fig. 5 = 0.01 mm.

sensilla next to posterior margin of its anterior part (which looks like being the anterior scutellum in slide-mounted specimens). Metanotum very narrow, strap-like and hardly noticeable. Propodeum longer than mesoscutum, smooth. Mesophragma broadly U-shaped, reaching posterior margin of propodeum.

Wings. Forewing (Fig. 2) 11-12 x as long as wide, with venation typical of the genus; hypochaeta reaching posterior margin, proximal macrochaeta slightly shorter than distal macrochaeta, both macrochaetae rather long; blade slightly infuscated, more so behind venation and apically, with one median row of setae in the apical 2/5 and a few scattered setae at apex; longest marginal cilia 3.8-4.5 x greatest width of wing beyond venation. Hind wing (Fig. 3) narrow, about 19 x as long as wide; blade slightly (less than forewing) infuscated, with one irregular median row of setae and two rows of microtrichia along margins; longest marginal cilia 5-6 x greatest width of wing.

Metasoma. Petiole very short, about 5 x as wide as long. Gaster a little longer than mesosoma; ovipositor rather short, about 0.8 x length of hind tibia and occupying about 1/2 length of gaster, not or barely exerted beyond its apex.

Measurements (holotype): Body: 549; head: 110; mesosoma: 210; metasoma: 247; ovipositor: 128. Antenna: scape: 102; pedicel: 40; F1: 22; F2: 37; F3: 33; F4: 31; F5: 29; F6: 26; clava: 120. Forewing: 483/44; longest marginal cilia: 200. Hind wing: 458/24; longest marginal cilia: 135. Legs (given as femur, tibia, tarsus): fore: 102, 106, 135; middle: 91, 142, 131; hind: 110, 153, 146.

MALE. Similar to the female except for the normal sexually dimorphic characters and the following. Color: vertex light brown; only 2 basal gastral terga pale, the other brown. Antenna (Fig. 4) 13-segmented, all flagellomeres subequal in length (F1 and F2 slightly shorter) and with longitudinal sensilla. Wings a little wider relative to their length than in female. Gaster notably shorter than mesosoma; genitalia (Fig. 5) very similar in shape and structure to those of *C. bakkendorfi* Debauche, 1948 (Viggiani, 1988).

Measurements (one paratype): Body: 466; head: 101; mesosoma: 219; metasoma: 174. Antenna: scape: 99; pedicel: 33; F1: 29; F2: 29; F3: 35; F4: 34; F5: 35; F6: 35; F7: 35; F8: 36; F9: 35; F10: 35; F11: 36. Forewing: 494/49; longest marginal cilia: 189. Hind wing: 439/26; longest marginal cilia: 139. Genitalia: 68.

DIAGNOSIS. This species is characterized by the unique combination of characters, as follows: the female antenna (Fig. 1) with F1 notably cylindrical and all funicle segments without longitudinal sensilla; the forewing (Fig. 2) with the blade slightly infuscated, dorsal setae on the marginal vein very long; ovipositor short, occupying about half length of the gaster and not projecting beyond its apex; the male antenna 13-segmented (Fig. 4). The female antenna of *C. mikhail* sp. n. is quite similar to that of *C. subterraneus* Viggiani, 1974 but the latter has very short dorsal setae on the marginal vein of the forewing (Viggiani, 1970).

DISTRIBUTION. Russia: Primorskii krai.

HOSTS. Unknown.

ETYMOLOGY. The specific name is a noun and dedicated to my eldest son Mikhail.

Cleruchus petr S. Triapitsyn, sp. n.

Figs 6-8

MATERIAL. Holotype - ♀ (on slide): Russia, Primorskii krai, Ussuriysk district, Gornotayozhnoye, 21-22.VII 1999, YPT (M. Michailovskaya) [ZIN]. Paratypes – Russia: same locality and collector as the holotype, 23-24.VI 1999, 2♀ on points, YPT; 3-4.VII 1999, 1♀ on card, YPT; 21-22.VII 1999, 1♀ on point, YPT; 9-10. VIII 1999, 1♀ on card, YPT; 4-5.VII 2000, 1♀ on slide, YPT; [IBPV, UCRC, ZIN]. Sakhalin Island, 2-3 km E Sokol: 29.VII 2001, 1♀ on slide, MT (N. Minakawa); 10.VIII 2001, 1♀ on card, MT (N. Minakawa) [CAS].

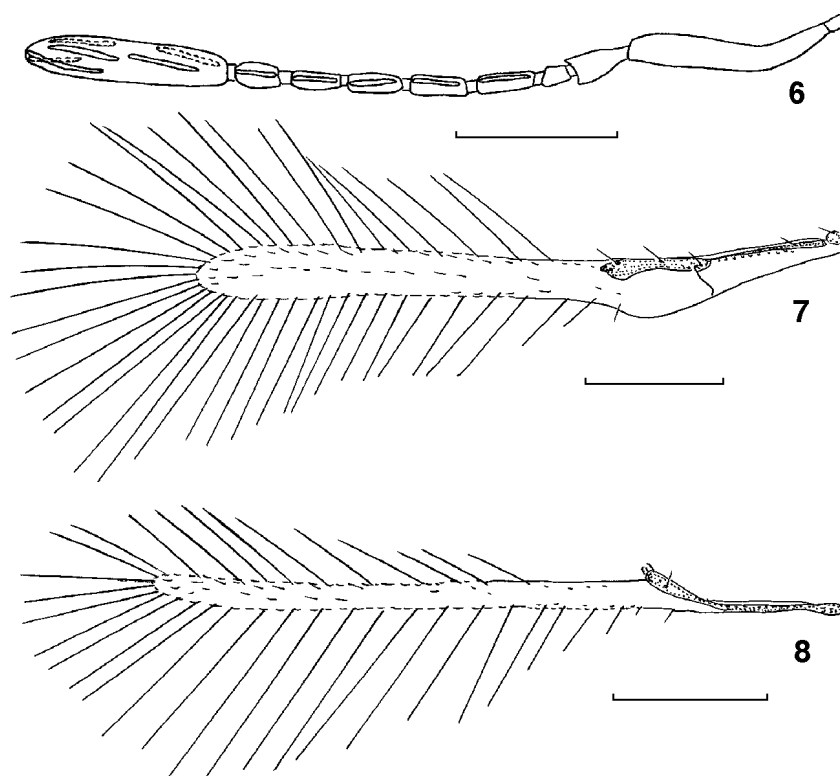
DESCRIPTION. FEMALE. Body and appendages brown to dark brown, except as follows: eyes and ocelli dirty pink; scape, pedicel, and legs slightly lighter (light brown to brown); gaster terga with narrow, pale, transverse bands. Wings strongly infumated with brown, forewing especially.

Head. Much wider than long in dorsal view, trapezoidal in lateral view, rounded and wider than high in anterior view, and slightly wider than mesosoma. Vertex large; ocelli close to occipital sulcus, ocellar setae weak. Transverse trabecula about at mid level of eye. Face subquadrate medial face with a pair of long but fine, intertolar setae; torulus slightly above lower level of eye, much closer to preorbital trabecula than to transverse trabecula.

Antenna (Fig. 6). Clava more densely setose than other antennomeres. Radicle very small and fused with the rest of scape, which is strongly curved and finely longitudinally striate, about 5 x as long as wide; pedicel longer than wide, much longer than F1; F1 oval and shortest of funicle segments, without longitudinal sensilla; F2 and F3 slightly longer than other funicle segments, F2-F6 cylindrical and each with 1 longitudinal sensillum (F2 may lack a longitudinal sensillum on one of the antenna in the specimens from Sakhalin Island); clava about 4.0 x as long as wide, with 6 longitudinal sensilla, 4 of them subapical.

Mesosoma. Pronotum with a faint cellulose sculpture, mesoscutum and scutellum almost smooth. Each side lobe of pronotum with several setae arranged in 2 irregular rows. Mesoscutum much wider than long, its midlobe with a pair of strong adnotaular setae. Axilla with 1 seta. Scutellum trapezoidal, about as long as mesoscutum, placoid sensilla in the middle of what appears to be anterior scutellum. Metanotum narrow, strap-like. Propodeum about as long as mesoscutum, smooth. Mesophragma broadly U-shaped, almost reaching posterior margin of propodeum.

Wings. Forewing (Fig. 7) about 11 x as long as wide, with venation typical of the genus; hypochaeta almost reaching posterior margin, proximal macrochaeta about same length as distal macrochaeta, both macrochaetae very short; blade strongly infuscated with brown, with one irregular median row of setae beyond venation; longest marginal cilia about 4.3 x greatest width of wing beyond venation. Hind wing (Fig. 8) narrow, about 22 x as long as wide; blade notably infuscated but less than forewing, with one incomplete median row of setae in apical 2/5; longest marginal cilia 6-7 x greatest width of wing.



Figs 6-8. *Cleruchus petr* sp. n., female (holotype and paratype). 1) Antenna, 2) forewing, 3) hind wing. Scale bars = 0.1 mm.

Metasoma. Petiole short, about 2.2 x as wide as long. Gaster a little longer than mesosoma; ovipositor very short, about 0.6 x length of hind tibia and occupying less than 1/2 length of gaster, not exerted beyond its apex.

Measurements (holotype): Body: 622; head: 128; mesosoma: 229; metasoma: 293; ovipositor: 101. Antenna: scape: 135; pedicel: 43; F1: 22; F2: 40; F3: 40; F4: 37; F5: 35; F6: 34; clava: 137. Forewing: 471/42; longest marginal cilia: 183. Hind wing: 466/21; longest marginal cilia: 139. Legs (given as femur, tibia, tarsus): fore: 106, 102, 138; middle: 91, 144, 131; hind: 113, 182, 146.

MALE. Unknown.

DIAGNOSIS. This species is characterized by the unique combination of characters, as follows: the female antenna (Fig. 6) with F1 short and F2-F6 more or less cylindrical, each with a longitudinal sensillum; the forewing (Fig. 7) with the blade strongly infuscated, dorsal setae on the marginal vein very short; ovipositor short, occupying less than half length of gaster and not projecting beyond its apex.

In the key by Trjapitzin (1978), *C. petr* sp. n. would key to the same couplet with *C. pluteus* and *C. bakkendorfi*, both of which have short dorsal setae on the marginal vein of the forewing, as illustrated by Debauche (1948). *C. petr* sp. n. differs from either of these species by F2-F6 each having a longitudinal sensillum, the clava shorter than the combined length of the four preceding funicle segments of the female antenna, and by a different shape of the marginal and stigmal veins of the forewing. The female of *C. petr* sp. n. differs from the winged female of *C. detritus* Bakkendorf, 1964 in having the funicle segments more elongated and a different arrangement of discal setae on the forewing. The forewing venation of *C. petr* sp. n. is quite similar to that of *C. subterraneus* but the female antenna of the latter lacks longitudinal sensilla on F2-F6 (Viggiani, 1970).

DISTRIBUTION. Russia: Primorskii krai, south Sakhalin.

HOSTS. Unknown.

ETYMOLOGY. The specific name is a noun and dedicated to my youngest son Petr.

Genus *Stethynium* Enoch, 1909

Stethynium Enoch, 1909: 452. Type-species: *Stethynium triclavatum* Enoch, 1909 (Somerset, England), by monotypy.

Stethynium: Debauche, 1948: 139; Annecke & Doult, 1961: 8; Trjapitzin, 1978: 521; Schauff, 1984: 48; Huber, 1987: 828; Noyes & Valentine, 1989: 53; Yoshimoto, 1990: 44; Triapitsyn & Huber, 2000: 614.

COMMENTS. Huber (1987) gave a detailed diagnosis and a redescription of *Stethynium* based on the non-Australian species and also provided a list of references on this genus. *Stethynium* includes 52 valid species known to date, the majority of which were described by A. A. Girault from Australia.

Host records exist only for a few species of *Stethynium*, these are summarized by Huber (1986) and include Cicadellidae and Membracidae (Homoptera) as well as Tettigoniidae (Orthoptera). Among those, records from various Cicadellidae seem to be the most reliable and backed by voucher specimens. In the Australasian region, species of *Stethynium*, rather than of the related genus *Anagrus* Haliday, 1833, could be the most important egg parasitoids of small leafhoppers (Triapitsyn, 2001). The record of a *Stethynium* reared from eggs of Membracidae in South America (Schauff, 1984) is incorrect; I examined several specimens in the National Museum of Natural History, Washington, D.C., USA, on which that record was based, and determined that they belong to *Schizophragma* Ogloblin, 1949, a genus which is known to be associated with Membracidae (Huber, 1987). Besides, there have not been any confirmed records of the presence of *Stethynium* in South America.

***Stethynium triclavatum* Enoch, 1909**

Stethynium triclavatum Enoch, 1909: 452, pl. XII, figs. 1-5 (lectotype - ♀, designated by Huber, 1987: 829 (Somerset, England) [Nat. Hist. Mus., London], not examined).

Stethynium triclavatum: Debauche, 1948: 140; Kryger, 1950: 94; Trjapitzin, 1978: 521; Huber, 1987: 829; Beardsley & Huber, 2000: 19; Triapitsyn & Huber, 2000: 614.

Stethynium faunum Girault, 1911: 298 (holotype - ♀, Hendrix, Illinois, USA [Illinois Nat. Hist. Survey, Champaign, USA], not examined). Synonymized with *S. triclavatum* by Huber, 1987: 829.

MATERIAL. **Russia:** Krasnodarskii krai, near Krasnodar, 11-12.VIII 2001, 1 ♀. Moscow region, Pushkino district, Mamontovka, E. Shouvakhina: 1-10.VIII 2000, 1 ♀, 3 ♂; 10-20.VIII 2000, 1 ♂; 20-31.VIII 2000, 1 ♂. Primorskii krai, Ussuriysk district, Gornotayozhnoye: 6-14.IX 1999, 1 ♂; 21-26.VIII 2000, 1 ♂ (M. Michailovskaya) [UCRC, ZIN]. Sakhalin Island: 2-3 km E Sokol, 10.VIII 2001, 3 ♂ (N. Minakawa); 6 km E Sokol: 31.VII 2001, 3 ♀, 1 ♂; 16.VIII 2001, 4 ♀, 1 ♂ (D. Bennett, T. Anderson) [CAS]. **Belgium:** Antheit (Corphalie): 28.VII-11.VIII 1989, 1 ♀; 11-25.V 1990, 1 ♀; 28.IX-12.X 1990, 1 ♀ (R. Detry) [ISNB, UCRC]. **Bermuda** (United Kingdom): Southampton Parish, 25.XII 1999-1.I 2000, 2 ♀ (J. Munro). **Canada:** British Columbia, Summerland, coll. 21.III 2000, em. 20.IV 2000 ♀, 1 ♂ (ex. leafhopper eggs on Siberian elm) (D. Lowery). **China:** Beijing, Fragrant Hills, 23-24.VII 2002, 3 ♀, 1 ♂ (M. Buffington). **Egypt:** Alexandria, VI 2001, 1 ♀, 1 ♂ (ex. *Empoasca* sp. eggs on beans) (M. Abd-El-Fattah) [UCRC]. **France:** Département Gironde, Sainte Colombe, 44°54'N, 00°02'W: 30.VII 1998, 1 ♀, 2 ♂; 13.VIII 1998, 1 ♀, 1 ♂; 17.IX 1998, 1 ♀; 9.VII 1999, 1 ♀, 2 ♂; 17.VIII 2000, 7 ♀, 8 ♂ (M. van Helden) [ENITA, UCRC]. **Greece:** Thessalia, Larisa Co., Ayiokambos, 39°43'N, 22°52'E, 7.III 2001, 1 ♀ (A. Kapranas). **USA:** California, San Luis Obispo Co., Santa Margarita, 15.IX 1998, 1 ♀, 2 ♂ (J. Pinto) [UCRC]. Florida, Dade Co., Miami, 29.X 1991, 1 ♀ (on *Crotalaria* sp.) (F. Bennett) [FSCA]. Washington, Clallam Co., Agnew, 24-28.VII 1997, 1 ♂ (J. Pinto) [UCRC].

DIAGNOSIS. See Huber (1987) who redescribed and illustrated *S. triclavatum*.

DISTRIBUTION. Russia (*Moscow region, *Krasnodarskii krai, Primorskii krai, *Sakhalin Island); Belgium, *Bermuda (United Kingdom), Canada, *China, Denmark, England, *Egypt, France, Germany, *Greece, Hawaiian Islands (USA), ?India, Italy, ?Nepal, ?Pakistan, Romania, Switzerland, USA; *S. triclavatum* is likely to occur throughout the Holarctic region. The records of this species from several Oriental countries (Huber, 1987; Hayat, 1992), listed above with a question mark, need confirmation because the specimens representing them might be easily confused with *S. empoascae* Subba Rao, 1966, as discussed below.

HOSTS. *Empoasca vitis* (Goethe, 1875) and *Eupteryx atropunctata* (Goeze, 1778) (Homoptera: Cicadellidae) (Huber, 1987; Duverney et al., 1992; Hermann & Eichler, 2000; etc.) in Europe and other, undetermined, species of *Empoasca* Walsh, 1862. Among other mymarids, Habib et al. (1972) recorded an undetermined *Stethynium* species in Egypt, which could be *S. triclavatum*, from several leafhopper hosts but did not specify any exact host-parasitoid associations.

COMMENTS. The specimens from Moscow region, Primorskii krai, and Sakhalin Island were collected in Malaise traps and the specimen from Krasnodarskii krai was captured in a yellow pan trap.

***Stethynium empoascae* Subba Rao, 1966, stat. resurr.**

Stethynium sp.: Subba Rao et al., 1965: 105.

Stethynium empoascae Subba Rao, 1966: 189, 191, pl. V [the figures are mislabeled as "*Lymaenon empoascae*"] (holotype - ♀, Delhi, India [Indian Agric. Res. Inst., New Delhi, India], not examined).

Stethynium triclavatum: Huber, 1987: 829 (synonymy).

MATERIAL. **Australia:** Queensland: Brisbane, Nundah, ("ex. eggs of *Austroasca alfalfae* on *Ricinus communis*"): 30.V 2000, 3 ♀; 9-15.VI 2000, 3 ♀ (C. Freebairn); Mundubbera: 27.V 1997, 8 ♀, 2 ♂ ("ex. eggs of *Austroasca alfalfae* on *Ricinus communis*"); 17-31.III 2000, 9 ♀ ("from yellow sticky traps in *Ricinus communis*"); 12-17.V 2000, 2 ♀ ("MT nr. *Ricinus communis*"); 2.VI 2000, 13 ♀, 1 ♂ ("ex. leafhopper eggs on castor oil, *Ricinus communis*") (C. Freebairn) [QDPI, UCRC]. **India:** Karnataka, Bangalore District ("ex. *Empoasca signata* (Haupt) on castor bean"): Bangalore, 27-29.V 1984, 11 ♀, 2 ♂ (S. K. Rajeshwami); Budigere, 6-7.V 1984, 9 ♀, 4 ♂ (S. Rajeshwami); Yelahanka, CIBC-Indian Station: 2-3.XI 1984, 4 ♀, 6 ♂; 29.XII 1984, 6 ♀, 11 ♂ (S. Rajeshwami) [UCRC].

DIAGNOSIS. *S. empoascae* is extremely similar morphologically to the lighter-colored specimens of *S. triclavatum* to the point that it may be impossible to distinguish them in some countries (like China, Egypt, India, Nepal, Pakistan, etc.) where both species can potentially occur. Yet the females of *S. empoascae*, which could be a tropical species, seem to have more orange on the head, mesosoma, and metasoma than the majority of the European specimens of *S. triclavatum*, which supposedly occurs in the countries with a more temperate climate. Although adult *S. triclavatum* vary in size, color, and shape of the forewing and length of the marginal cilia on the forewing, the majority of the Palaearctic specimens of *S. triclavatum*, which I have examined, have the marginal cilia on the forewing shorter than the maximum width of the forewing. In the Indian and Australian specimens of *S. empoascae*, the marginal cilia on the forewing are about as long as the maximum width of the forewing (Fig. 26, p. 850 in Huber, 1987). Also, the chaetotaxy on the forewing blade behind the venation is slightly different in these two species: this area is more setose in the European specimens of *S. triclavatum*. It must be noted that besides the color, the features mentioned in Subba Rao's diagnosis of *S. empoascae* (Subba Rao, 1966) do not help to distinguish his species from *S. triclavatum*. Ultimately, only molecular studies or more costly cross-breeding experiments will help to decide if these two forms belong to the same species or not. For the time being, however, I believe that the most reasonable temporary solution to the problem of *S. empoascae* would be reinstating it as a valid species name; Dr. John T. Huber (personal communication) has also agreed with this conclusion.

DISTRIBUTION. *Australia (Queensland), India.

HOSTS. *Amrasca biguttula biguttula* (Ishida, 1913) (Kapadia & Mittal, 1995), *A. devastans* (Distant, 1918) (Subba Rao, 1966; Subba Rao et al., 1965, 1968), *Empoasca libyca* (De Bergevin et Zanon, 1922) [= *E. signata* (Haupt, 1927)], and ?*Empoasca* sp.

in India as well as *Austroasca alfalfae* (Evans, 1940) in Queensland, Australia (Homoptera: Cicadellidae).

COMMENTS. This species was reared in India and Australia from different leafhopper hosts on the same plant, castor oil (or bean), *Ricinus communis* L. It must be noted here that it is very likely that the same species as *S. empoascae* had been described earlier from Queensland, Australia, by A. A. Girault and that name would have the priority over *S. empoascae*. At this point, however, and until all previously described species of *Stethynium* are carefully revised, associating the specimens of *S. empoascae* with any of Girault's species is impossible due to the extremely poor condition of the types of his species from Australia.

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