New records and synonymy in Xyphosiini and Tephritini (Diptera Tephritidae Tephritinae) from the Far East of Russia

Новые находки и синонимия Xyphosiini и Tephritini (Diptera Tephritidae Tephritinae) Дальнего Востока России

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КЛЮЧЕВЫЕ СЛОВА: Diptera, мухи, мухи-листокрылки, Tephritidae, Tephritini, Xyphosini, Россия, Дальнний Восток, систематика, фауна.

ABSTRACT. Diagnosis of the Xyphosini is redefined; the tribe includes Ictericidae Hering, and Xyphosia R.-D. Merzomyia Korneyev, nom.n., is proposed as a replacement name for Westernmannia Lioy. Merzomyia westermannia (Meigen, 1826) comb.n., M. licenti (Chen in: Zia et Chen, 1938) comb.n. and M. mongolica (Korneyev, 1990) comb.n. are included in this genus Tephritis heringi Korneyev comb.n., is a replacement name for Tephritis multiguttata Hering, 1953, junior secondary homonym of Tephritis multiguttata (Becker, 1913) (= Euribia multiguttata Becker, 1913). The following synonymy is established: Dioxyna bidentis (Robineau-Desvoidy, 1830) = Paroxyxa cheni Zia, 1937, syn.n., Campiglossa luxorientis (Hering, 1940) = Paroxyxa melanochroa Hering, 1941, syn.n., Tephritis okera (Shinji, 1940) = Tephritis ismene Hering, 1953, syn.n., non Rondani, 1871, Tephritis sonchina Hering, 1937 = T. mandschurica Hering, 1953, syn.n., Trupanea guttistella Hering, 1951 = Trupanea collina Ito, 1984, syn.n. The following species are recorded from the Far East Russia for the first time: Ictericodes depuncta Hering, comb.n. (= Ictericidae depuncta, Acinia depuncta auctt.), Tephritis cometa cingulata Hering, T. jocaste Hering, T. sonchina Hering, Trupanea convergens Hering, Tephritis pterostigma Hering, Trupanea guttistella Hering, Tephritis okera (Shinji), T. majuscula Hering et Ito, Tephritis hyosciami (L.), Xyphosina atrata (Wang) comb.n. placed to Homoeotricha atrata (Wang) comb.n.


Introduction

The main taxonomic and faunistic works dealing with Tephritinae of the Russian Far East were referred to in my previous papers [Korneyev, 1986, 1987, 1990]. Also, the Palearctic species of the genus Urophora (tribe Myopitini) have been revis-

When treating material from the collections of Zoological Institute (St.-Petersburg), of Zoologi-
cal Museum of the Moscow University and of Schmalhausen Institute of Zoology (Kiev), and preparing a chapter of Dipteran volume for "The Keys for Identification to Insects of the Soviet Far East", several species of the subfamily Tephritinae were added to the list of species known already from this region.

The following acronyms are used for the institutions where the collections are located: DEI — Project Entomologische (Deutsches Entomologisches Institut), Eberswalde-Finow; SIZK — Schmalhausen Institute of Zoology, National Academy of Sciences of Ukraine, Kiev; NHML — Natural History Museum, London (formerly British Museum (Natural History)); UOP — University of Osaka Prefecture, ZISP — Zoological Institute, Russian Academy of Sciences, St.-Petersburg; ZMUM — Zoological Museum of the Moscow University.

Subfamily Tephritinae

Tribe Xyphosini Hendel, 1927

REMARKS. Hendel [1927] originally included in the Xyphosini, besides Xyphosia R.-D., also Acinia R.-D. (now assigned to Tephritini), and Icterica Lw. The Palaeartic species placed in the latter genus are now treated under Ictericodes Hering and Merosymja Korneyev, nom.n.(see below). The New World tribe Acrotaeniini [Foote et al., 1993] apparently is closely related.

Ictericodes is the only Palaeartic genus closely related to Xyphosia. Another genus obviously belonging here is Icterica Loew (see below). The diagnosis of Xyphosini must be redefined as follows.

DIAGNOSIS. Anterior and posterior orbital bristles of same colour (plesiomorphic). Outside Tephritinae, in Tephritinae: Terellini, in the genera, related to Jamesomyia Quisenberry and Hypendium Loew, and in Acurini posterior or is black to light yellow, as the anterior one, whereas in the remaining Tephritinae p or is white (except in Myopitini having only one or).

All head and body bristles and setae are yellow (apomorphic). Most Tephritidae have bristles black to dark brown, except in Acidoxantha Hendel (Tryptetinae) and in some species of Tereelia R.-D. and Acinia R.-D. In Xyphosini and Acrotaeniini all bristles are yellow, neither black, nor white. It can be either a synapomorphy of Xyphosini + Acrotaeniini, or a homoplasy.

Scapular bristles slightly longer than mesonotal setae. In most Tephritidae, other than Tephritinae (except Pliorecepta Korneyev, Cephalophyia Hering, and Malica Richter) scapular bristles are large, 2-5 times longer than other mesonotal setae; this state is presumed plesiomorphic; in Pliorecepta, Tephritinae: Terellini, Xyphosini, Acrotaeniini, Myopitini, and in the genera related to Jamesomyia, they are only 1.5 times longer than setae, so this character is presumed apomorphic. Furthermore, in Oedaspini, Eutretini, Schistopterini and Tephritini there is no distinctive scapular bristles at all, and it is hypothesized to be an advanced state comparing to Xyphosini and allied taxa. For the genera of Xyphosini this character is believed to be a synapomorphy.

Vein R\textsubscript{4+5} setulose below (and usually above) to RM (plesiomorphic). Outside Tephritinae there is R\textsubscript{4+5} setulose below and above in Blepharonconurina, Acanthoneurina, Trypetinae: Gastrozoniini, and in some other taxa, so this state is presumed to be plesiomorphic. Inside Tephritinae, this character state is found in all Xyphosini, Acrotaeniini, Cecidocharina, Acinia, Dithyryca Randini, Paracantha Loew, Pseudasicina, Platessa Bezzi, same Tephritis Latrellie and Trupanea Schrank. It is absent in many non-related or remote genera of Tephritinae, including all Terellini. In the case of Terellini it is the synapomorphy of the tribe, but the weight of this character is extremely low due to numerous homoplasy.

Wing pattern reticulate (apomorphic). Most Tephritidae beyond Tephritinae have striate or so-called "acuroid" type of wing pattern, and the reticulate type of pattern found in few genera of Acanthoneurinae and other subfamilies is apparently derived of the other two types. In the Terellini and Acrotaeniini, as well as in Myopitini and Cecidocharini wing pattern is striate, whereas in Oedaspini, Tephrellini and genera, allied to Jamesomyia the reticulate pattern is found in few species and is considered to appear independently. The reticulate pattern is widespread in the Eutretini/Schistopterini/Terellini complex. The latter taxa are the most advanced clade of Tephritinae that might be a derivative of the Xyphosini, but not its ancestral group. Therefore, the reticulate pattern is considered here to be a synapomorphy of Xyphosia R.-D., Ictericoles Hering, and Icterica Lw. The weight of this character is very low.

Glands of aedeagus large (plesiomorphic), without sclerotized apicodorsal rod (apomorphic), with simple tubular acrophallos (apomorphic); scape of aedeagus without additional lobe (= ligula: Korneyev, 1983) (apomorphic). The aedeagus with large glans, sclerotized apicodorsal rod, 2(3) semitubular sclerites of acrophallos and precapical lobe of the scape is common in Acanthoneurinae, Trypetinae: Gastrozoniini and Tephritinae: Terellini. These states characters are plesiomorphic. Xyphosini, Acrotaeniini and the rest of Tephritinae possess advanced states of aedeagus characters (except the size of glans various) and are presumed to be the main monophyletic stem of Tephritinae opposite to Terellini.

Aculeus apex blunt, rounded and broad (plesiomorphic). The blunt apex of aculeus is known for many Acanthoneurinae, Phytalmiinae, laying eggs into decaying wood and plant matter, and in Trypetinae: Gastrozoniini, one of the most primitive feeders of living plant tissues. Terellini, Xyphosini, and Acrotaeniini also possess blunt aculeus that obviously cannot pierce plant tissues, and use it for oviposition between florets in composite flower-heads. This state of character is obviously plesiomorphic in Tephritinae, whereas the acute piercing ovipositors in the remaining tribes of this subfamily is of an apomorphic state, though probably liable to homoplasy.

Larvae of Pliorecepta, all Terellini. Xyphosia and Stenopa (Tephritinae) have the reticulate pattern of the "facial mask" well-developed and similar in details; Jamesomyia and Procestidchuarii also have reticulate pattern, but no details are known. It has not been described for other Tephritinae, and is absent at least in Urophora. Such pattern is presumed a synapomorphy of Pliorecepta and Tephritinae, secondary reduced in larva of advanced plant-feeding species. It is the synapomorphy of Tephritinae and does not show close relationships between Xyphosini and other taxa of the subfamily.
Figs 1-13. Icterica seriata (1,4,7,9), Orotava cribrata (2,5,8,12) and Merzomyia licenti (3,6,11,13), male (1-8) and female (9-13) terminalia (1-3 — glans of aedeagus, 4-6 — epandrium, 7-8 — basiphalus, right view; 9-11 — aculeus, ventral view (a — apex, enlarged), 12-13 — spermatheca).

The diagnosis includes mostly plesiomorphic characters, but at least uniformly yellow (neither white, nor black) bristles (including posterior occellar, all postocular, posterior notopleural, and anepimeral bristles), and the reticulate wing pattern are considered herein to be the synapomorphy. Palearctic Xyphosia and Ictericodes, as well as Nearctic Icterica, fit here. The New World genera of Acrotaeniini [Foote et al., 1993] are close to them in many characters, including peculiar similarities of spermathecae and aculeus shape. The only sufficient difference is mostly striate, not reticulate wing pattern; this character is of low value.

Hereof the three latter Holartic genera are considered to belong to the same tribe, and closely related to the New World genera assigned to the Acrotaeniini, derived or sister group of Xyphosini.

Icterica Loew, 1873

REMARKS. This generic name was misapplied to some Palearctic species now transferred in Ictericodes Hering, Pseudacinia Korneyev, and Merzomyia Korneyev, nom. n. It was treated among the "unplaced Tephritinae" by Foote et al. [1993]. The two Nearctic species, Icterica seriata (Lw.) and J. circinata (Lw.) possess all the diagnostic characters of the Xyphosini, including genital structures (Figs 1,4,7,9). See also remarks under Merzomyia below.

Ictericodes depuncta (Hering), comb.n.

Hering, 1936: 184 (Icterica); Chen in: Zia, Chen, 1938: 107 (Acinia depunctata, error); Foote, 1984: 70 (Acinia)


DISTRIBUTION. Far East of Russia (new record), China (vicinities of Harbin).

Tribe Tephritini

Group of genera allied to Sphenella

REMARKS. This group belongs to Tephritini. Monophyly of the Old World Sphenella group of genera is supported by their strict association with host plants of the tribe Seneconae and the number of frontal bristles reduced to two. Other traits of the group are the very characteristic structure of aedeagus, the presence of extremely or moderately long posterior prongs, associated with the flanges of epandrium in most genera,
assigned to this group by Munro [1957], Freidberg [1987] and Freidberg and Hancock [1989]. One more Afrotropical species, namely Parafeutreta Munro, possessing all the essential characters of the group, was omitted from these works. Recently, Freidberg and Kaplan [1992] placed this genus in the Sphenella group. It is close to Paratephritis Shiraki. Phylogeny and classification of the group need further analysis.

**Merzomyia** Korneyev nom.n.


**DIAGNOSIS.** Yellow-brown flies of moderate size, with dark brown wings with numerous irregular yellow dots and few hyaline spots on them. Eyes uniformly green in living specimens. Head slightly higher than, or as high as long; arista short pubescent; 2 fr, 2 or, posterior or white; postorbital row with intermixed 4-8 long white bristles and 10-12 short black bristles; labelium longer than 0.7 of parastomal cavity length. Thorax sparsely microtomentose, subshining including scutum and scutellum; mesonotal setae white and moderately dense, not forming pattern of setulose and bare areas. Chaetotaxy complete; bristles brown to black, including p apl, except anepm white; dc between asa, level and transverse suture; 4 scnt. Wing elongate; 2 costal spurs 3 times longer than surrounding setae; vein R, setulose to R-M above and below; lower squama slightly longer than upper one. Hindfemora without anterovelar row of bristles, at most, with 6-7 smaller subapical. Abdominal terga very sparsely microtomentose, white setulose at most in posteriorly, black setulose in anteriorly. Female tergum 6 shorter than tergum 5. Male terminalia: epandrium wide, with flanges serrate and no prong-like lobes above them; aedeagus with rather long tube of acrophanus and reduced tali-like posterior extension of the glans (flagellum) (Fig. 3). Female terminalia: styngesternum 7 fine brown or yellow setulose; aculeus rather broad, very gradually pointed apically, with subapical step and rounded apex; two round spermathecae without papillae.

**REMARKS.** The European *Trypetta westermannii* Mg. was placed by Loew [1862] into *Oxyphora* R.-D., 1830 (now treated as possible junior synonym of *Oxyra* R.-D.). Later, when Loew established *Icterica* [Loew, 1873], for two Nearctic species, he noted, that “it will appear more natural to withdraw Oxyphora Westermann from the genus Oxyphora and to form a new genus for it, together with the above described Trypetta seriata Lw., 1862 ... This genus may be called Icterica.” Therefore, he originally included Trypetta westermannii into *Icterica*.

Coquillett [1910] has designated the Nearctic *Trypetta seriata* Lw. as a type-species of *Icterica* Lw. This designation was accepted by Hendel [1914] in the key to the of fruit-fly genera of the World. Nevertheless, later Hendel [1927] has erroneously designated the Palearctic *Trypetta westermannii* Mg. as the type-species of *Icterica*; and it was noted already by Foote and Freidberg [1981].

Recently, all Palearctic species assigned to *Icterica* were withdrawn from it and placed into *Orotava* Frey [Korneyev, 1990]. Dr. Bernhard Merz (Zürich) has
found that these species have isolated position and are not congeneric with the type species of Orotava (person al communication). In a further cladistic analysis (Norrbom, Korneyev, in preparation) these species were shown to be a monophyletic group, corresponding to the genus Westernmannia Liey, and not closely related to either Orotava or other genera of the Sphenella group. As the name of this genus is preoccupied, a new name is being established here.

ETYMOLOGY. This genus is named after Dr. Bernhard Merz in recognition of his contribution to the systematics of European Tephritinae. The generic name is derived from his name, and Greek _muia_ (fly). The gender is feminine.

RELATIONSHIPS. This genus belongs to the Sphenella group of genera, fitting the diagnosis in the following autapomorphic characters: labelia moderately elongate rather than capitate, epandrium broadened ventrally in posterior view, and larvae associated with plants from the genus Senecio s.lat. or closely related to it. Merzonymia is considered to be the sister-group to the remaining genera, because of having no additional synapomorphies with any other genera of the group and lacking characteristic Sphenella-like structure of aedeagus (with the short semitubular paired slerctites of acrohallus, evolving basal portion of ejaculatory duct, therefore extending beyond their apices as a membranous tube). The latter character is presumed to be the synapomorphy of the remaining genera, also secondarily modified in Orthoschithoides Feidberg, Pseudophorella Feidberg & Hancock and in some species of Telateles Munro. Merzonymia may also be considered a rather derived member, than the sister-group, because there is no sufficient evidence, that its acrohallus structure cannot be derived from the Sphenella-like one. Autapomorphies of Merzonymia are the following: abdominal terga (at least 2-4) black setulose anteriorly, acrohallus simple, elongate tubular, completely sclerotized, tale-like dorso-caudal flagellum reduced, papillae on spermatheca completely lacking.

Merzonymia fits near diagnosis of Parafruitreta in the following features: wing pattern mostly dark brown with yellow dots and few hyaline spots, no hyaline bands or wedges, _R₁₊₅_ setulose above beyond _R-M_ vein, hindfemora without anterovernal row of bristles, surstyli with serrate flanges, but without prong-like posteriorly directed process, differing in body colour yellow rather than brown, wing conspicuously elongate, and in all the characters listed above as its autapomorphies.

Orotava Frey resembles Merzonymia in the wing pattern mostly dark reticulate, the anterovernal row of bristles on hindfemora lacking, surstyli without prong-like process and aculeus with subapical steps, differing in all postorbitals black, _R₁₊₅_ bare, wing pattern with more or less distinct subapical crossband composed of confluent hyaline spots, different structure of aedeagus and elongate and papillate spermatheca.

Icetrica Loew shares with Merzonymia the yellow body color, elongate brownish wing with yellow confluent dots and _R₁₊₅_ vein setulose above and below at least to _R-M_ crossvein. It differs well in the following characters: all the bristles, including posterior or, longer postorbital and anepimeral bristles, and all small setae yellow, _de_ in line with _asa_, epandrium not broadened ventrally, flanges lacking or, if present, never serratate, aculeus without subapical steps, spermathecae moderately elongate, densely papillose; larvae in flowerheads of _Bidens_ spp. (tribe Coreopsisidae). From these characters I consider Icetrica to be a member of the tribe Xyphosini (Tephritinae), not Tephritini.


Group of genera allied to Campiglossa

*Dixya bidentis* (R.-D.)


According to Zia, _P. cheni_ was described from a female specimen deposited in collection of "Agricultural Dept. of Nanking University". It was not available for examination. Nevertheless both original description and the specimen from China mentioned above show that _P. cheni_ does not differ from _D. bidentis_ and I treat them as synonyms.

_Homoerotricha atrata_ (Wang) comb. n.

Wang, 1990: 296, 303 (Gomaxysa).

This species possesses all the characters of _Homoerotricha_ Hering, as defined by Korneyev (1993), including wing pattern, head and wing shape and especially the extremely long labella. It fits very close to _H. arisanda_ (Shiraki) from Taiwan and _H. procusa_ (Dirbekl. Dirbekova) from Mongolia, differing mainly in the presence of additional sausage-like hyaline spot just behind the stigmatic apex. It was described from a single male from the Inner Mongolia. The three species are extremely similar, but synonymization is pending until additional materials are available.

_Campiglossa luxorientis_ (Hering)


The holotype of _P. melanochroa_ exhibits melanistic autumnal form of _P. luxorientis_ mentioned by Korneyev [1990: 455]. Some specimens from _Heteropappus_ have intermediate wing pattern and body coloration.

Group of genera allied to Tephritis

_Tephritis_ Latreille, 1804

REMARKS. More than 30 species of this genus have already been recorded from eastern China, Korea, Japan,
and the Russian Far East, and approximately a dozen of species are known to occur in the bordering regions of western and central China, Mongolia and Siberia. The systematics of the European species of *Tephritis* were rather confused until recently, and a provisional review of East Palaearctic species shows, that more than one third of specific names are possible synonyms. No comprehensive keys exist, and many species are not recognizable from their original descriptions. Therefore, a complete revision of the Far East species of *Tephritis*, involving the examination of all known type specimens, is necessary, but I suppose that the preliminary revision-
ary data given below add more to the knowledge of this genus.

Merz [1992] recognized species groups in the genus; during the present study, several species were found to have very similar structure of female terminalia and host-plant associations, despite of differences in wing pattern that had been previously used as a main taxonomic character. Thus, the species of the Far East are arranged into the species groups below.

Group of species related to Tephritis dilacerata

DIAGNOSIS. Wing pattern: cell R₃ with 3 hyaline spots; cell SC with hyaline or yellow spot; crossvein R-M with 2-4 hyaline dots or hyaline area around it; tergosternum 7 with very few white setae above; aculeus rather short, weakly sclerotized, except dorsal-basal portion, somewhat blunt apically, without subapical steps (Fig. 30). Larvae in flowerheads of Sonchus spp. (Lactuceae).

The following species are included: T. dilacerata Lw. (Europe to Kazakhstan), T. formaosa Lw. (Europe), T. kovalevi Korunyev & Kameneva (Central Asia; Tien-Shang), and T. sonchina Hering (the Far East).

Tephritis sonchina Hering Figs 18, 30.


MATERIAL EXAMINED. T. sonchina SYNTYPES: ♂, ♀; CHINA: "Charbin, 1936", "Tephritis sonchina m. det. M.Hering 1937" and "Type" (red paper square) (DEI) (syntypes of this series are also located in Zoologische Staatsammlung, München and in NHML, but were not studied). T. mandscharica HOLOTYPE ♂; CHINA: "Type" (on red-boarded circle), "Type" (on red paper square), "Charbin, Mandschurei, 11-17. VII. 1951 (W.Alin), Tephritis mandscharica m. det. M.Hering 1951 Holotype" (MNHML).


REMARKS. All the examined specimens have very similar wing pattern, resembling that of T. crepidis Hendel (Fig. 18) (in the West Palaearctic species of the dilacerata group apical brown dots are isolated and do not form the apical fork). T. alini was described from a male specimen (not examined), that was said to have the wing pattern also very similar to T. crepidis, and scutellum reddish brown, that fits well T. sonchina too. As this species was described from a male, it cannot be securely identified and placed in the dilacerata group until the Far East fauna will be completely examined. Thus, in the meantime I prefer to treat the two as separate species.

Group of species related to Tephritis cometa

DIAGNOSIS. Wing pattern: cell R₃ with 3 hyaline spots; cell SC without hyaline or yellow spot; crossvein R-M with 2-4 hyaline dots or hyaline area around it, or without; tergosternum 7 with numerous white setae above in basal half; aculeus sclerotized, long, slightly contracted subapically, sharply pointed apically, without subapical steps or apical incision (Figs 28, 29). Larvae in flowerheads of Cirsium spp. (Cardueae).

The following taxa are included: T. cometa Lw. (Europe to Kazakhstan), T. cometa cingulata Hering (The Far East), T. cometa israelis Freidberg (Israel), and T. majuscula Hering & Ito (The Far East). T. koreacola Kwon is also associated with Cirsium sp. and said to be very close to T. majuscula [Kwon, 1985: 91]. This species has wing pattern more similar to T. femorata Chen and T. jocaste Hering, and therefore, may belong elsewhere; female terminalia were not examined. No other species associated with Asteraceae-Cardueae were found to be closely related.

Tephritis cometa cingulata Hering Figs 14, 29.


REMARKS. Differs from the nominate subspecies in having the well-developed yellow pattern behind the stigma (Fig. 14) and longer ovipositor (Fig. 28). Previously recorded only from China (vicinity of Harbin) and Mongolia (South Gobi). The latter record apparently needs further confirmation. Freidberg (pers. commun.) says that T. cometa israelis Freidberg apparently might be a junior synonym of T. cometa cingulata.

Tephritis majuscula Hering et Ito Figs 16, 17, 28.


Group of species related to Tephritis leotoonitis

DIAGNOSIS. Wing pattern: cell R₃ with 3 (in some specimens only 2) hyaline spots; cell SC with or without hyaline spot; crossvein R-M with or without 2-4 hyaline dots or hyaline area around it; tergosternum 7 with few white setae above; aculeus sclerotized, moderately long, neither contracted subapically, nor sharply pointed

aphically, without subapical steps, but with conspicuous, very deep apical incision (Fig. 31). Host plants: Leontodon, Picris and Atractylodes spp. (Lactuceae).

The following species are included: T. leontodontis Degge, T. trunctata Lw., T. fallax Lw., T. marianae Mezz (all from Europe), and T. okera Shinji (Japan, the Far East Russia).

Tephritis okera (Shinji) Figs 22, 31.


MATERIAL EXAMINED. T. ismene. HOLOTYPE: ♀: CHINA: "Type" (red-boarded paper circle), "Type" (red paper square), "Tigrovaja Pid/ Manchuria/ 19VIII1951 W.Alm", "Tephritis ismene m. Type/ det. M.Hering 1951"; PARATYPES: ♂: "Altotype" (red paper square) and ♀: "Paratype" (red paper square), other labels as in the holotype (NHML).

Non-type Material. JAPAN: Honshu, Nagano, Yatsugatake, 1260 m height, on Artemisia, 11.08.1949, 2 ♀ (Ito) (Tephritis separata Rondani, 1871 Det. Ito, 1957) (LUP) RUSSIA: Kharabovskiy Kray: Sobolevo, 20 km S of Viazemsky, 29.07.1978, ♀, 2 ♀ (Kasparyan) (ZISP); Primorskiy Kray: Gorno-Tayzhinaya Stanysiva, 31.08.1978, ♀ (Kasparyan) (ZISP); ibid, ex Picris koreana, 50.12-11.1987, ♀ (Zerova) (SJIZK); Kamieniuska, 20.08.1984, ♀, 21-22.09.1987, 4 ♀, 2 ♀ (Shatalkin) (ZJMUM), ibid, 18.08.1987, ♀ (Kostyukov) (SJIZK); Vladivostok, "valley of the Suputinka river", 30.08.1963 (Nartshik); Khasan distr., Narva spring SW of Barabash, 4.08.1978, ♀ (Kasparyan) (ZISP); S-Kuriles: Kunashir: Troyavskoye, Sernovodsk, 12.06.1968, 16.06-10.08.1973, ♀, 6 ♀ (Nartshik, Kerzhner, Kasparyan) (ZISP); Stolbchatyi cape, 29.06.1985, 2 ♀, 2 ♀ (Churkin) (ZJMUM).

REMARKS. I have not found any conspicuous differences between the type specimens of T. ismene, and T. cf. separata from Ito's collection, and T. okera specimens redescribed by Ito, so I consider them to be conspecific. Moreover, the true T. separata Rd. from Europe, recently redescribed by Merz[1992] has the tergal ratio of tergesternum 7.1.5 times longer than in T. okera, and different shape of aculeus apex. In this respect I cannot consider this species to be a senior synonym of T. okera, and resurrect the latter from synonymy. T. okera has the aculeus apex deeply incised apically, as in T. marianae Mezz which is associated with Leontodon hispidus in Switzerland. It somewhat differs from the latter species in the wing pattern by lacking the hyaline spot in pterostigma (except one female from Kunashir) and by some other details. A few specimens of T. okera do not differ from T. mariannae conspicuously, and further study is required to clarify the relationships between these species.

Group of species related to Tephritis separata

DIAGNOSIS. Wing pattern: cell R4, with 3 hyaline spots; cell sc with or without hyaline spot; crossvein R-M with or without 2-4 hyaline dots or hyaline area around it; tergesternum 7 with few or without setae; aculeus sclerotized, moderately long, neither contracted subapically, nor sharply pointed, but narrowed apically, without subapical steps, but with conspicuous, but not deep apical incision (Fig. 33). Host plants: Leontodon and Picris spp. (Lactuceae).

The following species are included: T. separata Rond., T. divisa Rond., and T. mutabilis Mezz (Europe).

Tephritis sp. cf. sinensis Chen


REMARKS. This species corresponds to the description of T. ramulosa Chen, and also fits the description and figures of European T. separata Rond. The available material is too meagre to identify this species, and at most it may be considered to belong to this group.

Group of species related to Tephritis pterostigma

DIAGNOSIS. Wing pattern: cell R4, with 3 (in some specimens only 2) hyaline spots; cell sc without hyaline or yellow spot, very often with basal hyaline incision; crossvein R-M never with 2-4 hyaline dots or hyaline area around it; tergesternum 7 with numerous white setae above in basal 1/2-2/3; aculeus sclerotized, moderately long, neither constricted subapically, nor sharply pointed apically, without subapical steps, but with shallow apical incision (Figs 34, 35). Host plants unknown.

The following taxa are included: T. pterostigma Chen (China, the Russian Far East), T. femoralis Chen (the Far East), T. bipartita Hendel (China: Jiangsu), T. triangula Ito (Japan), T. jocaste Hering (the Far East), T. koreacola Kwon (Korea), and T. heringi nom.n. (south eastern China).

Tephritis heringi Korneyev nom.n.


REMARKS. Hering overlooked homonymy of this species, described after two males from south eastern China with the species described by Becker from Iran and transferred into Tephritis by Hendel [1927].

Tephritis sp. cf. pterostigma Chen

MATERIAL EXAMINED. Amurskaya oblast: Korsakov, 100 km W of Svetodnyi, 14.20.1958, 2 ♀, ♀ (ibid, Samoan peninsula, 408.1939, ♀ (G.Zinovev); Simonovoyi, 29-30.05, 4-8.906.1958, 18.21-09.1958, 10 ♀, ♂ (Kerzhner, G.Zinovev); Klimoutsy, 26.05, 2-25.06, 24-27.09.1958 (G.Zinovev, Borisova) (ZISP); Primorskiy Kray: Kamieniuska ("Suputinka zapovednik"), 24.10.1968, ♀ (Gorodkov); Vladivostok, Sernovodsk, 27.10.1978, ♀ (Gorodkov); Khasan distr., Andrueyevka, 8.08.1978, ♀ (Kasparyan) (ZISP); Ryazanovka, 906.1989, ♀ (Shatalkin) (ZJMUM).

REMARKS. The specimens listed above share the possession of additional third hyaline spot in cell R4, and distinctive pale brown grid pattern covering more than 2/3 of cell cu, and extending into the anal lobe (Fig. 25), and also in having the tergesternum 7 moderately long, densely covered with white setae on its basal half, and in the aculeus slightly flattened, with the subapical steps and shallow apical incision (Fig. 34). T. pterostigma (Fig. 23). T. consimilis Chen (Fig. 24), T. bipartita Hendel, T. triangula Ito, T. heringi Korneyev and possibly T. koreacola Kwon (Fig. 27) fit here well, differing in minute details of the wing patterns. None of the type specimens of these species were available for study; female terminalia not dissected; moreover, T. heringi was described from the males.

All these names mentioned above may belong either to one species or to the group of closely related species.
and I am unable to resolve the problem of this extremely confused possible synonymy.

*Tephritis jocaste* Hering


REMARKS. The specimens listed above share the possession two hyaline spots in cell R₄ (Fig. 19), ovipositor with tergosternum 7 densely white setulose and aculeus more or less conspicuously angulate in apical third (Fig. 35). Abdominal coloration varies from broadly yellow to completely black, wing pattern sometimes with yellow dots, or completely dark brown with hyaline spots. *T. femoralis* and *T. shansiana* fit well some variants of the wing pattern and body coloration in the series from the Russian Far East, but aculeus shape was not examined in the specimens from Ordos, Kansu, and Shansi. Therefore, I consider these species only as possible senior synonyms of *T. jocaste*.

Group of species related to *Tephritis angustipennis*

DIAGNOSIS. Wing pattern: cell R₄ with 2 hyaline spots; cell sc without hyaline or yellow spot; crossvein R-M with or without hyaline dots or hyaline area around it (Fig. 32); tergosternum 7 with numerous white setae above in basal 1/2-2/3; aculeus sclerotized, moderately short, neither contracted subapically, without subapical steps or apical incision (Fig. 32). Host plants: *Pteris*, *Tanacetum*, and *Artemisia* spp. (Asteraceae).


Species of unresolved position

*Tephritis hyosciami* L.


An occasionally introduced species, previously recorded only from Europe. Associated with *Carduus* thistles.

Group of genera allied to *Trupanea*

This group is represented in the Palaearctic East Asia by some species of subcosmopolitan genus *Trupanea* Schrank (most of the New World species need re-examination of their generic position), and three more species of *Ureliasosa* (Allocrepidae) V. Richter and *Dorana* V.Richter, the latter two are restricted to Transbaikalia, Mongolia, and China (Kansu).

*Trupanea amoeoa* (Frauenfeld)


*Trupanea convergens* Hering

MATERIAL EXAMINED Amurskaya oblast: Simonovo, 11.06, 12.07.1959, ♂♂ (Kerzhner); Klimoutsy, 22.05, 8.23.06, 13.07.1959, ♀ ♀ (G.Zinovjew, Borisova) (ZISP).

*Trupanea sp.*


Though these specimens have somewhat distinct wing pattern, they are apparently only the males of the previous species.

*Trupanea guatistella* Hering


MATERIAL EXAMINED. *guttistella* HOLOTYPE ♀ CHINA: "Type" (red boarded circle), "Type" (red paper square), "Cissabrin, Mandshurei, 11.11.1949", "Trupanea guttistella m. det M.Hering 1930, Holotype"; PARATYPE ♀ "Type" (red boarded circle), "Type" (red paper square), ibid, 2007.04.1943, "Trupanea guttistella m. det. M.Hering, 1930, Allotype" (NHML). *T. collina* PARATYPES: ♀ JAPAN: Honshu, Sinano: Siga-Koegan, 1600 m, on Anaphalis, 11.09.1953 (Ito) (red handwriten label with ball-point pen) "Allotypey Trupanea collina Ito"; ♀ JAPAN: Tsubu-Giha, Takayama, 25.07.1954 (Kodama) (with blank blue rectangle) (UPO).


REMARKS. Wing pattern of both the mainland specimens and of the specimens from Kurile Islands are rather variable and also sexually dimorphic. Males are very similar to the type specimens of *T. guttistella* and females correspond to *T. collina*. The specimens from southern Primorskiy Kray more often have wing pattern with the hyaline spots between the rays in cell M (≈ M₅) partially or completely confluent, as it was figured in the monograph on Japanese tephritids [Ito, 1984: Figs 374-375].

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References


