

A review of Holarctic species of the genus *Tyndarichus* Howard, 1910 (Hymenoptera: Encyrtidae)

Обзор голарктических видов рода *Tyndarichus* Howard, 1910 (Hymenoptera: Encyrtidae)

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KEY WORDS: Hymenoptera, Encyrtidae, *Tyndarichus*, hyperparasitoids, Lepidoptera, Holarctic.
КЛЮЧЕВЫЕ СЛОВА: Hymenoptera, *Encyrtidae*, гиперпаразитиды, Lepidoptera, Голарктика.

ABSTRACT. A key to six known Holarctic species of the genus *Tyndarichus* Howard, 1910 (Hymenoptera: Encyrtidae), four Palearctic and two Nearctic, and their synopsis are provided. Members of this genus with known hosts are hyperparasitoids of Lepidoptera.

РЕЗЮМЕ. В статье приводятся определительная таблица шести известных голарктических видов рода *Tyndarichus* Howard, 1910 (Hymenoptera: Encyrtidae), четырёх палеарктических и двух неарктических, и дан также их обзор. Виды этого рода с установленными хозяевами являются гиперпаразитидами чешуекрылых насекомых (Lepidoptera).

Introduction

This contribution was prompted by necessity to study hyperparasitoids to avoid introduction of them together with primary parasitoids in programs of classical biological control of insect pests.

The article is dedicated to the memory of famous Russian entomologist Nikolay Vasilievich Kurdyumov (1885–1917), in connection with the centenary of his death. His photography (Fig. 1) has been taken in USA in 1909 [Howard, 1930], it was never published in our country.

Acronyms of the depositories of specimens studies are as follows:

CSF — Department of Entomology, California Academy of Sciences, San Francisco, USA;

HMNHB — Hungarian Natural History Museum, Budapest, Hungary;

UCRC — Entomology Research Museum, University of California, Riverside, USA;

UHF — Department of Agricultural and Forest Zoolo-

gy, University of Helsinki, Finland;
UNAM — National Autonomous University of Mexico, Mexico City;

USNM — Museum of Natural History, Washington, DC, USA;

ZIN — Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia;

ZMUK — Zoological Museum, University of Copenhagen, Denmark.

F — the abbreviation for a funicular segment of female antenna.



Fig. 1. N.V. Kurdyumov, photography taken in 1909 in USA [from Howard, 1930].

Рис. 1. Н.В. Курдюмов, фотография, снятая в 1909 г. в США [по: Howard, 1930].

Genus *Tyndarichus* Howard, 1910

Type species: *Tyndarichus navae* Howard, 1910, by original designation.

Howard, 1910: 5–7; Mercet, 1921: 652–654; Gordh, Trjapitzin, 1981: 44–45, 47–48; Kaul, Agarwal, 1985: 39–40; Trjapitzin, 1989: 318–319; Fatima, Shafee, 1993: 72, 74–75; Trjapitzin, Ruiz-Cancino, 2001: 215–217.

SYSTEMATIC POSITION. According to Trjapitzin [1989], the genus *Tyndarichus* belongs to the subtribe Tyndarichina Erdős et S. Novicky, 1955 of the tribe Cheiloneurini Hoffer, 1955.

NOTES. *Tyndarichus kuriri* (Fahringer, 1944) has been described from Croatia [In: Kurir, 1944: 581]. It parasitized *Anastatus disparis* (Ruschka, 1920)* (Hymenoptera: Eupelmidae) in eggs of the gypsy moth *Lymantria dispar* Linnaeus, 1758. Trjapitzin [1989: 209] supposed that the species might belong to the genus *Oobius* Trjapitzin, 1963, however it may be uncertain. Bouček [1977] reported that the type materials of this species were not found in Zagreb where believed to be deposited. Thus, generic position of *T. kuriri* Fahringer, 1944 remains not cleared up.

Outside the Holarctic, three species of *Tyndarichus* were described from India, viz: *T. keralensis* (Hayat, 2003), *T. nitidulus* Hayat, 2003 and *T. xesus* Hayat et Khan, 2014. One species — *T. particornis* (Girault, 1924) — was described from Australia. Their biology is unknown.

KEY TO HOLARCTIC SPECIES OF *TYNDARICHUS* (FEMALES)

- 1(6). F1, or F5–F6, or only F6 more or less light.
 2(3). Only F6 light. Width of the vertex about $\frac{1}{4}$ of maximum width of head. Apex of scutellum smooth. [Funicular segments of antenna very short (Fig. 3)]. 1.2–1.8 mm 4. *T. navae*
 3(2). F5–F6 light. Width of vertex about $\frac{1}{3}$ of maximum width of head. Apex of scutellum sculptured.
 4(5). Scape of antenna (Fig. 4) strongly broadened, 2–2.2 x as long as wide; pedicel as long as F1–F5 taken together. 1–1.4 mm 2. *T. ibarraei*
 5(4). Scape of antenna (Fig. 6) not strongly broadened, more than 3x as long as wide; pedicel as long as F1–F3 taken together. 1.5–1.8 mm 3. *T. melanacis*
 6(1). All funicular segments of antenna dark.
 7(8). Scape of antenna (Fig. 7) strongly broadened. 1.1–1.7 mm 6. *T. scaurus*
 8(7). Scape of antenna not broadened.
 9(10). F5–F6 transverse (Fig. 8); antennal clava 2x as long as wide. [Body length not indicated in description]
 1. *T. americanus*
 10(9). F5–F6 quadrate; antennal clava 4x as long as wide. 1.08 mm 5. *T. parolourgos*

Synopsis of species

1. *Tyndarichus americanus* Gordh et Trjapitzin, 1981
Fig. 8.

Gordh, Trjapitzin, 1981: 45–47, 48; Zuparko, 2015: 53–54.

MATERIALS EXAMINED. USA: Wisconsin, Door Co., 31.VIII.1931 (M.H. Dooner), 3 ♀♀ (holotype and paratypes) [USNM]; Utah, Uintah Co., on white sweet clover *Melilotus albus* (Fabaceae), 11.VII.1974 (G.E. Bohart), 1 ♀ (paratype) [G.E. Bohart collection]; California, Los Angeles Co., Angeles Crest, Highway, Arroyo Seco, Switzer Station, 1000 m, VII.1977 (Paul H. Arnaud, Jr.) 1 ♀ [CSF].

* *Anastatus disparis* (Ruschka, 1921) is a synonym of *A. japonicus* Ashmead, 1904.

DISTRIBUTION. USA (Wisconsin, Utah, California).
 BIOLOGY. According to Zuparko [2015], in California — hyperparasitoid of *Agrotis ypsilon* (Hufnagel, 1766) (Noctuidae) via polyembryonic encyrtid *Copidosoma celenae* Howard, 1885.

2. *Tyndarichus ibarraei* Trjapitzin et Ruíz, 2001
Figs 4–5.

Trjapitzin, Ruíz-Cancino, 2001: 217–218.

MATERIALS EXAMINED: Mexico: Tamaulipas, Miquihua, bosque pino-encino, 28.IV.1996 (J.S. Ibarra), 1 ♀ (holotype) [UNAM]; Michoacán, 16 mi W Jacona, 1 ♀ (paratype), [UCRC].

DISTRIBUTION. Mexico.

BIOLOGY. Unknown.

3. *Tyndarichus melanacis* (Dalman, 1820)
Figs 2, 6.

[*Encyrtus melanacis*, *Microterys melanacis*; syn.: *E. jancirus* Walker, 1837, synonymy by Bouček, Graham, 1978: 94; *T. ignotus* Mercet, 1947, only ♀, synonymy by Noyes, 1981: 185].

Dalman, 1820: 345 (*Encyrtus*); Walker, 1837: 46–47 (*E. jancirus*); Mayr, 1876: 703, 717 (*Encyrtus*); Thomson, 1876: 167–168 (*Microterys*); Mercet, 1921: 654–655, 1947: 462 (*T. ignotus*); Nikol'skaya, 1952: 462; Erdős, 1957: 373; Nikol'skaya, 1963: 475; Erdős, 1964: 307–308; Trjapitzin, 1978: 312; Noyes, 1981: 185; Herthetvzian, 1986: 87; Trjapitzin, 1989: 319.

MATERIALS EXAMINED: Spain: San Rafael. VII.1922 (C. Bolívar), 1 ♀ (det. Mercet) [USNM]. Denmark: E-Jutland, Mols, Skovbjerg, 56°13'N, 10°33'E (Munk) [ZMUK]. Finland, 1 ♀ [UHF]. Germany: Handelsberg b. Fürstenwalde, 18.VIII.1927 (M. Ude S.), 2 ♀♀ [HMNH]; München – Nymphlg – Brunnenhal, 14.VI.1961 (F. Bachmaier), 1 ♀ (det. Bachmaier) [ZIN]. Austria: Piesting (Tschek), 1 ♀ (det. Mayr) [USNM]. Russia [ZIN, mainly collected by V.A. Trjapitzin, other collectors and depositories are mentioned, also in materials from the former USSR, labels in Russian]: Leningrad oblast': Repino, sands, 29.V.1976, 1 ♀; Pskov oblast': Pushkinskiye Gory, forest, 25.VIII.1971, 2 ♀♀; Yaroslavl oblast': Breytovo district, Petrovskoe – Musino, forest, 31.VII.1966 (E.Ya. Shuvakhina), 1 ♀; Kostroma oblast': Manturovo district, Ugor, mixed forest, 21.VIII.1984, 1 ♀; Davydovo, bank of the river Unzha, on oak *Quercus robur*, 23.VIII.1984, 1 ♀; Shilovo, 24.VIII.1984, 1 ♀. Moscow: Pedagogical insectary of Zoological garden, from caterpillar of *Sesia apiformis* Clemens (Sesiidae), autumn of 1928 (V. Karpov), 2 ♀♀; Moscow oblast': Pushkino district, Cherkizovo, bank of the river Klyaz'ma, in grass, 30.VIII.1998 (E.Ya. Shuvakhina), 1 ♀; Murashki near Cherkizovo, bank of the river Klyaz'ma, collected on birch (*Betula*), hawthorn (*Crataegus*) and willow (*Salix*), 27.VIII.1998, 1 ♀; railway station Klyaz'ma, 3.IX.1994, 2 ♀♀; Mamontovka [now a district of town Pushkino], a hill near railway station, 23.VIII.1971, 1 ♀; 5.IX.1976 (E.Ya. Shuvakhina), 2 ♀♀, 11.IX.1981, 3 ♀♀; 2.IX.1986, 2 ♀♀; forest beyond cemetery, 28.VIII.1988, 1 ♀; on linden *Tilia cordata*, 6.IX.1994, 6 ♀♀; settlement Sosnovka, near brook Vetelka, 11, 13.IX.2003, 10 ♀♀; 12.IX.2007, 2 ♀♀; Kaluga oblast': Spas-Zagorye, on trees and shrubs, 6.IX.1978, 2 ♀♀; Shemyakino, 5, 6.IX.1978, 3 ♀♀; 7.VIII.1979, 1 ♀; 25, 26.VII.1981, 3 ♀♀; Verkhnyaya Vyrka, 2.VIII.1979, 1 ♀; Nizhnaya Vyrka, 1.VIII.1979, 1 ♀; Sivkovo, 16.VIII.1977, 5 ♀♀; 18, 21.VIII.1978, 15 ♀♀, 1 ♂; 27.VII.1979, 1 ♀; 9, 11, 12, 18, 28.VIII.1979, 18 ♀♀; Golotskoye, 15.VIII.1979, 2 ♀♀; Gorenskoye, 2.VIII.1979, 1 ♀; Optina Pustyn', 16.VIII.1979, 1 ♀; Nizhny Novgorod oblast': Dzerzhinsk, 22.VIII.1983, 2 ♀♀; Arzamas district, Staraya Pustyn', 24.VIII.1983, 11 ♀♀; Kirov oblast': Falenki, from caterpillar of *Agrotis* sp. (Noctuidae) on winter rye *Secale cereale*, 19.VII.1976 (M.S. Malysheva), 3 ♀♀, 1 ♂; the same, on caterpillar of sixth instar of *A. segetum* Denis et Schiffermüller, 1 ♀ (the parasitoid pierced the caterpillar with ovipositor and licked of its haemolymph); Lipetsk oblast': [natural reserve] Galichya Gora, on birch *Betula pendula*, 29.VIII.1978, 7 ♀♀; Voronezh oblast': Ertli' district, village Jatsheyka, 24.VIII.1980 (V.N. Fursov), 1 ♀; Ramon' district, Starozhivotinnoye, 13.VIII.1980, 3 ♀♀; Ramon', VNIIZR, 4.VIII.1980, 1 ♀, 7.VII.1981, 1 ♀; Aydarovo near Ramon',



Fig. 2. *Tyndarichus melanacis*, female habitus [from Erdős, 1964].

Рис. 2. *Tyndarichus melanacis*, габитус самки [по: Erdős, 1964].

17.VII.1974, 1 ♀; Ulyanovsk oblast': Ulyanovsk, Zavolzhye, forest, on oak *Quercus robur*, 13.VIII.1994, 1 ♀; Shilovka S of Ulyanovsk, game reserve, 14.VIII.1994; Crimea: Mezhgorye, oak-hornbeam forest, 15.IX.1980 (D.R. Kasparyan), 3 ♀♀; Stavropol kray: Essentuki (Belyi Ugol'), slopes of hills, 21.VII.1960 (E.S. Sugonjaev), 1 ♀; Karachaevo-Cherkesia: Arkhyz, subalpine zone, 2000–2200 m, 1.VIII.1960 (E.S. Sugonjaev), 2 ♀♀; Daghestan, 15 km S of Sergokala, 14–16.VII.1983 (I.M. Kerzhner), 1 ♀; Altay kray: Lebyazhye (near town Rubtsovsk), Zone forest experiment station, 6.VIII.1948 (M.N. Nikol'skaya), 2 ♀♀ and many ♀♀ in alcohol. Moldavia: Tynovo, on apple-tree *Malus domestica*, 2.VII.1958 (V.I. Talitzky), 1 ♀; Strasheny, forest, 19.V.1962 (V.I. Talitzky), 1 ♀. Georgia: Bakuriani, 15.VI.1958, 1 ♀; 13.IX.1982 (D.R. Kasparyan), 1 ♀; [without indication of locality], from caterpillars of *Zeuzera pyrina* (Linnaeus) (Cossidae), series of ♀♀. Armenia: Dilizhan, 17.VIII.1979 (Vásárhely), 1 ♀ [HMNH]; Tsakhkadzor, oak forest, on *Quercus*, 22–23.VIII.1956, 1 ♀. Azerbaijan: Pirkuli, 22 km of Shemakha, forest, 2.V.1972 (D.R. Kasparyan), 1 ♀. Kazakhstan: mountains Tastau in western Tarbagatay, 30 km NE of Blagodarny, 13.VII.1978 (E.P. Nartshuk), 1 ♀. Kyrgyzstan: Dzhahalabad, Kara-Kysmak ravine, 42°06'N, 71°33'28" E, 2500 m, 18.VI.1999, vacuum 99.56.01. (C.H. Dietrich), 1 ♀ [UCRC].

DISTRIBUTION. Spain, Italy, England, Denmark, Norway, Sweden, Finland, Germany, Austria, Czech Republic, Slovakia, Hungary, Montenegro, Romania, Bulgaria, Russia, Estonia, Lithuania, Poland, Moldavia, Ukraine, Georgia, Armenia, Azerbaijan, Kazakhstan, Kyrgyzstan.

BIOLOGY. Data on hosts of *T. melanacis* are scant. Its species had been reared from caterpillars of some Lepidoptera: in Moscow — *Sesia apiformis* (Clerck, 1755) (Sesiidae), in Kirov oblast' — *Agrotis segetum* (Denis et Schiffermüller,

1775) (Noctuidae), and in Georgia — *Zeuzera pyrina* (Linnaeus, 1761) (Cossidae). Without any doubt, the species is hyperparasitoid via polyembryonic encyrtids of the genus *Copidosoma* Ratzeburg, 1841. Data on rearing of *T. melanacis* in Mozambique as hyperparasitoid of coccids (Homoptera: Coccoidea) on citrus cultures [Castel-Branco, 1950] are erroneous. It was a mistake of identification.

NOTE. According to the classification of Gorodkov [1984], *T. melanacis* is a species with boreal montane distribution.

4. *Tyndarichus navae* Howard, 1910

Fig. 3.

Howard, 1910: 5; Howard, Fiske, 1911: 153, 171, 182–183; Nikol'skaya, 1952: 452; 1963: 475; Tachikawa, 1963: 158–159; Liao, 1978: 95–96; Liao et al., 1987: 181; Trjapitzin, 1989: 318–319; Trjapitzin, Paik, 1996: 98–99.

DISTRIBUTION. Japan, North Korea, South Korea, China, Indonesia, Germany, Sweden.

BIOLOGY. In Japan and South Korea, *T. navae* is an internal hyperparasitoid in eggs of the gypsy moth *L. dispar*, and also *L. fumida* (Butler, 1877) (Lymantriidae). In China it was reared from eggs of *L. dissoluta* Swinhoe, 1903. Together with the primary egg parasitoid *Ooencyrtus kuvanae* (Howard, 1910), *T. navae* had been introduced into USA against *L. dispar* (Howard, Fiske, 1911). However it, probably, did not acclimatize there, otherwise it must be mentioned in the review of Noyes et al. [1997]. Surprisingly, Hedqvist [2003] noted presence of *T. navae* in Sweden, and Hayat [2012] in Germany.

5. *Tyndarichus paralourgos*
(Springate et Noyes, 1990)

Springate, Noyes, 1990: 222–224 (*Parechthrodryinus*); Hayat, 2012: 174.

DISTRIBUTION. England.

BIOLOGY. Unknown.

6. *Tyndarichus scaurus* (Walker, 1837)

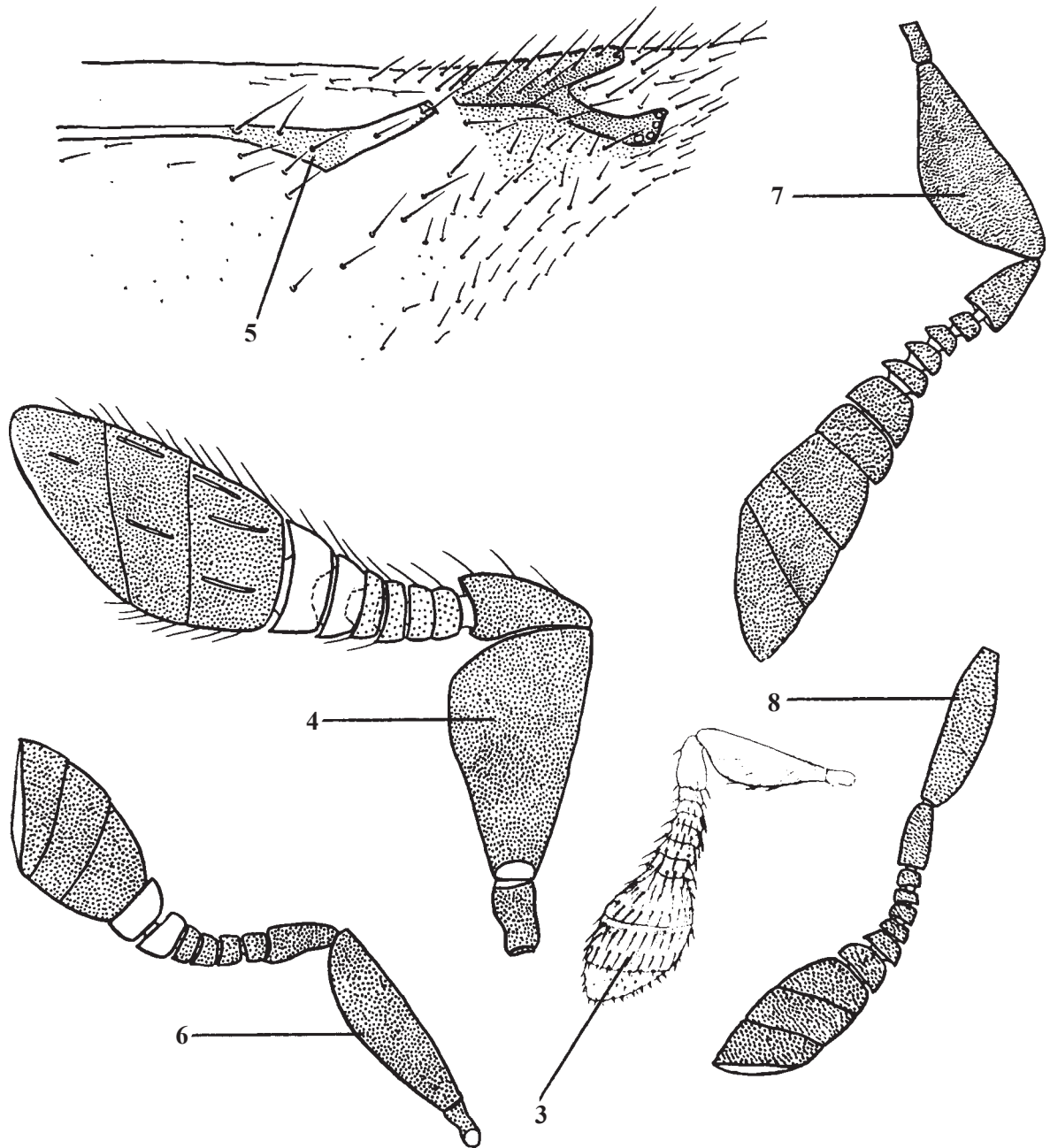
Fig. 7.

[*Encyrtus scaurus*; syn.: *E. genetyllis* Walker, 1848, synonymy by Bouček, Graham, 1978: 94].

Walker, 1837: 45–46 (*Encyrtus*); 1848: 223 (*E. genetyllis*);

Mayr, 1876: 716, 717 (*Encyrtus*); Nikol'skaya, 1952: 462; Eady, 1960: 669; Nikol'skaya, 1963: 475; Erdős, 1964: 307, 308; Stadnitzky et al., 1978: 139–140; Trjapitzin, 1978: 312; 1989: 319.

MATERIALS EXAMINED: England: Suffolk, Dunwich, ex larva [of *Eupithecia castigata* Hübner (Geometridae), 2.V.1929 (K.G. Blair), 1 ♀ [det. J. Waterston] [USNM]; Surrey, Box Hill (near Dorking), herbaceous vegetation, 28.VII.1982 (E.E. Grissell), 1 ♀ [USNM]; Globham Common, sweeping oak [*Quercus*], 26.VIII.1982 (E.E. Grissell), 1 ♀ [USNM]; Richmond Park, on *Q. robur*, 21.VII.1975, 1 ♀ [det. J.S. Noyes]. Denmark: E. Jutland, NG 36, Viulf Skov, 29.VIII.1984 (T. Munk), 1 ♀ [ZMUK]. Finland: 1 ♀ [UNF]. Poland: (leg. W.J. Puławski): Wrocław, 24.VI, 17.IX.1961, 2 ♀♀, 1 ♂; Pracze, 15 km NW Wrocław, 27.VIII.1961, 2 ♀♀ [ZIN].



Figs 3–8. Parts of female body of *Tyndarichus* species: 3 — *T. navae* [from Hovard, Fiske, 1911]; 4–5 — *T. ibarrai*; 6 — *T. melanacis*; 7 — *T. scaurus*; 8 — *T. americanus*; 5 — venation of the fore wing; 3–4, 6–8 — antennae.

Рис. 3–8. Части тела самок *Tyndarichus*: 3 — *T. navae* [по: Hovard, Fiske, 1911]; 4–5 — *T. ibarrai*; 6 — *T. melanacis*; 7 — *T. scaurus*; 8 — *T. americanus*; 5 — жилкование переднего крыла; 3–4, 6–8 — усики.

Austria: Piesting [river] (Tscheck), "*scaurus*" [det. G. Mayr], also the label: *Encyrtus scaurus*, homotype [det. Gahan] [USNM]. Russia [in ZIN, collected by V.A. Trjapitzin, other collectors and depositories are mentioned, also in materials from the former USSR]: Kaliningrad oblast': Yantarny, on sea-buckthorn *Hippophae rhamnoides*, 27.VIII.1992, 1 ♀; Leningrad oblast': vicinities of Vyborg, 27.V.1982, 1 ♀; Roshchino, ship grove, bank of the river Lindulovka, 26.IX.1971, 1 ♀; Komarovo, 4.VIII.1984, 1 ♀; railway station Kurort near Sestroreck, 15.VIII.1986, 3 ♀♀; Olgino, border of forest, 19.IX.1971, 1 ♀; Kolyasovo near Vartemyaki, 9.VIII.1986, 1 ♀; Mozhayskaya, 18.IX.1980, 1 ♀; Sablino, end of VI, 1 ♀; Novgorod oblast': Stegnovo, from caterpillar of *Eupithecia abietaria* Goeze, the host was collected 25.VIII, parasitoids issued in laboratory 15.IX.1967 (G.V. Stadnitsky), 1 ♀, 1 ♂; Kostroma oblast' (Manturovo district): Ugory, mixed forest, 21.VIII.1984, 2 ♀♀; Davydovo, on oak [*Quercus robur*], 23.VIII.1984, 1 ♀; Moscow, park of Timiryazev Agricultural Academy, 27.VII.1960, 1 ♀; Moscow oblast': Zagorsk [now: Sergiev Posad] district, Mitropolye, forest (Piceetum herbosum), 20.VIII.1970, 2 ♀♀; Pushkino district: Levkova Gora – Zeleny Gorodok, 25.VII.1979, 1 ♀; Cherkizovo, park near church, on linden *Tilia cordata*, 27.VIII.1988, 1 ♀; Mamontovka [now a district of town Pushkino], a hill near railway station, 23.VIII.1971, 1 ♀; the same place, 21.VIII.1980, 1 ♀; settlement Sosnovka, near brook Vetelka, 9.IX.2006, 2 ♀♀; Pavlovo-Posad district, Electrogorsk, field, in grass, 21.VIII.1998 (E.Ya. Shuvakhina), 1 ♀; Kaluga oblast': Shemyakino, 21.VIII.1981, 1 ♀; Dvortsy, 25 km W of Kaluga, 30.VII.1980, 1 ♀; Navoloki, 25 km O of Kaluga, 29.VII.1980, 3 ♀♀; Sivkovo, 27, 31.VII.1980, 4 ♀♀; Penza oblast': Virga, mixed forest, 6.IX.1977 (E.N. Khlopunov), 1 ♀; Ulianovsk oblast': Ulianovsk, Zavolzhye, bank of water reservoir, 11, 13.VIII.1994, 4 ♀♀; Crimea, forest near Angarsky pass, 10.IX.1971 (D.R. Kasparyan), 1 ♀; Karachaevo-Cherkesia, Teberda, 20.VIII.1936 (M.N. Nikol'skaya), 1 ♀; Novosibirsk oblast': right bank of the river Eltsovka, VII.1965 (Yu. Korshunov), 10 ♀♀; Irkutsk oblast': Padun on the river Verkhnyaya Tunguska [now: Angara], N 39 985, 1867 (Czekanowski), 1 ♀; Balagansk, from caterpillar of *Semiothisa coninuaria* (Eversman) (Geometridae), 19.VI.1974 (A. Pleshanov), 8 ♀♀; Buryatia: Naushki by Kyakhta, pine forest, 24.VIII.1962 (K.B. Gorodkov), 1 ♀; Chita oblast': Olovyanskoye, water-meadow of the river Onon, 9.VII.1971 (D.R. Kasparyan), 1 ♀; Primorsky kray: Slavyansk district, apiary (12 km from the settlement (O.V. Kovalev), 1 ♀; 40 km O of Chuguyevka, 25.VIII.1978 (D.R. Kasparyan), 1 ♀; Khorol district: Petrovka, slope of hill with bushes and motley grass, 1.VIII.1961 (M.A. Kozlov), 1 ♀; Suptinsky Natural Reserve, black fir-tree forest with hornbeam, 1.VIII.1961, 1 ♀; bay Tachingon, oak forest, 18.VIII.1961 (M.A. Kozlov), 1 ♀; Laso district: Kievka, 24.VIII.1961, 1 ♀; Suchan [now: Partizansk] district, Peretino, 23.VII.1961, 1 ♀; Kangauz, from a caterpillar of Lepidoptera, 29.VII.1972 (V.S. Kuslitsky), 3 ♀♀; Vladivostok, Academic campus, 27.VI.1961 (E.Ya. Shuvakhina), 1 ♀; Khasan district: source Narva, 4.VIII.1978 (D.R. Kasparyan), 1 ♀; near the lake Khasan, on oak *Quercus dentata*, 12.IX.1961 (O.V. Kovalev), 1 ♀; Kamchatka oblast': Malokurilskoye on the island Shikotan (Kurils), 21.VIII.1971 (D.R. Kasparyan). Estonia: Kuura, 20 km S of Võro, 11.VI.1989, 1 ♀. Belorussia: Minsk district: from caterpillars of Tortricidae, 1968 (A. Moiseenko), 1 ♀, 1 ♂. Moldavia and Dnestr Moldavian Republic [Pridnestrovskaya Moldavskaya Respublika]: Bendery, forest, 1967 (V.I. Talitzky), 1 ♀. Armenia: Tsakhkadzor, oak forest, 23.VII.1956, 1 ♀.

NOTE. In Primorsky kray of Russia, one female of *Tyndarichus scaurus* has been caught on light of quartz lamp [Sharkov, 1985].

DISTRIBUTION. Ireland, England, France, Netherlands, Denmark, Norway, Sweden, Finland, Germany, Austria, Czech Republic, Slovakia, Hungary, Italy, Romania, Russia, Estonia, Lithuania, Poland, Belorussia, Moldavia, Dnestr Moldavian Republic, Georgia, Armenia, Mongolia, China.

BIOLOGY. *Tyndarichus scaurus* had been reared usually from caterpillars of Geometridae, mainly belonging to the genus *Eupithecia* Curtis, 1825. In Irkutsk oblast' of Russia it issued from *Semiothisa coninuaria* (Eversman, 1852), and in Sweden — *Cidaria ocellata* (Linnaeus, 1758). However, in

Norway it was noted as reared from *Ypsolopha asperella* (Linnaeus, 1761) (Ypsolophidae) on apple-tree *Malus domestica*. There are only two publications on hyperparasitism of *T. scaurus*: 1) in Russia (Leningrad oblast' and Karelia) it develops as endoparasitoid of polyembryonic encyrtid *Copidosoma* sp. in caterpillars of *Eupithecia abietaria* (Goeze, 1781) on spruce *Picea abies* [Grebenschikova, 1973; Stadnitsky et al., 1978]. These authors expressed an opinion that development of *T. scaurus* is also polyembryonic, but this question remains unsettled without embryological studies. 2) In Netherlands it is parasitoid of *Copidosoma sosares* (Walker) in caterpillars of the parsnip moth *Depressaria pastinacella* (Duponchel, 1837)* (Oecophoridae) on leaves of *Pastinaca sativa* (Apiaceae) [Hardy, 1996].

NOTE. According to classification of Gorodkov [1984], *T. scaurus* is a species with boreal montane distribution.

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* *Depressaria pastinacella* (Duponchel, 1837) is a synonym *D. radiella* (Goeze, 1783)

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