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A REVIEW OF *EURYTOMA PISTACIAE* SPECIES GROUP (HYMENOPTERA, EURYTOMIDAE), WITH DESCRIPTION OF TWO NEW SPECIES

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A Review of *Eurytoma pistaciae* Species Group (Hymenoptera, Eurytomidae), with Description of Two New Species. Zerova M. D., Seryogina L. Ya. — *Eurytoma pistaciae* species group is reviewed to include eight species, of them six Palaearctic (*E. pistaciae* Rondani, *E. spinipes* Kalina, *E. tokatensis* Doganlar, *E. narendrani* Zerova, sp. n., *E. doganlari* Zerova, sp. n., *E. ochraceipes* Kalina), the latter one also in the Oriental Region and two species (*E. arabica* Risbec and *E. tibiaspinae* Zerova) known from the Afrotropical Region. *E. doganlari* sp. n. and *E. narendrani* sp. n. are described. A key to all species belonging to pistaciae species group is provided.

Key words: Hymenoptera, Chalcidoidea, *Eurytoma*, *pistaciae* species group.

Обзор видов группы *Eurytoma pistaciae* с описанием двух новых видов (Hymenoptera, Eurytomidae). Зерова М. Д., Серегина Л. Я. — Дан обзор видов группы *Eurytoma pistaciae*, включающей в себя восемь видов. Шесть из них (*Eurytoma pistaciae* Rondani, *E. spinipes* Kalina, *E. tokatensis* Doganlar, *E. narendrani* Zerova, sp. n., *E. doganlari* Zerova, sp. n., *E. ochraceipes* Kalina) известны из Палеарктики, но *E. ochraceipes* обнаружен также в Ориентальной области; два вида (*E. arabica* Risbec и *E. tibiaspinae* Zerova) известны из Афротропической области. Описаны *E. doganlari* sp. n. и *E. narendrani* sp. n. Приведена таблица для определения видов группы *Eurytoma pistaciae*.

Ключевые слова: Hymenoptera, Chalcidoidea, *Eurytoma*, группа *pistaciae*.

Species of the genus *Eurytoma* having long setae on hind tibiae are united by pistaciae group (Zerova, 1978, 1995; Kalina, 1970; Doganlar, Çam, 1991). V. Kalina (1970) included 3 European species (*Eurytoma pistaciae* Rondani (as *E. setigera* Mayr), *E. spinipes* Kalina and *E. ochraceipes* Kalina) to this group, and later Doganlar (Doganlar, Çam, 1991) described *E. tokatensis* from Turkey. Two addional species from the Palaearctic Region, *E. doganlari* sp. n. and *E. narendrani* sp. n. are described below. *E. arabica* Risbec and *E. tibiaspinae* Zerova are known from the Aftotropical Region (Zerova, Seryogina, van Harten, 2008; Delvare, 1988).

The material discussed in the present work including the types of new species is deposited in the collection of the Schmalhausen Institute of Zoology of the National Academy of Sciences of Ukraine (Kyiv).

pistaciae species group

Diagnosis. Eyes non-carinated, mesosternal keel absent, post-genal keel distinct but not very high, marginal vein longer than postmarginal one, rarely equal to it, female abdomen with short petiolus, abdominal tergites without sculpture or indistinctly punctate on sides (except in *E. arabica*), antennal flagellum of male 4- or 5-segmented, mostly with long pubescence.

Hind tibia very long setose, setae at least as long as, or usually longer than tibia width (as long or nearly as long as tibia width in other *Eurytoma*). Body length usually not exceeding 3 mm, some specimens of *E. pistaciae* and *E. ochraceipes* (rarely) reaching 4 mm.

Comments. Number of hind tibial setae is species-specific in this group, however, *E. pistaciae*, *E. tokatensis* and *E. ochraceipes* differ by some variability of the number

of setae. Even specimens of one series, bred from galls of the same host may have 2 or 3 setae. Moreover, in species with constant number of setae (e. g., three setae in *E. spinipes*), their lengths vary (tabl. 1). In spite of this, the third setae, as a rule, is shorter than two main setae. Body colouration black or fuscescens, wings not darkened.

Hosts. Mainly Cynipidae. As Z. A. Fedotova noted on a label, *E. ochraceipes* was reared from galls of Cecidomyidae on *Ceratoides papposa* (Chenopodiaceae). For some species collected by net sweeping from dry motley grass, host plants are not known.

Key to species of *Eurytoma pistaciae* group
Таблица для определения видов группы *Eurytoma pistaciae*

1(2). Fourth abdominal tergite of female rounded and broadened in lateral view, with deep and dense punctation, abdomen rounded. Hind tibia with 2 long setae. Funicular segments of female antennae square. Postmarginal vein 1.24 times as long as radial (fig. 4, *6–8*). ..... *E. arabica* Risbec

2(1). Fourth abdominal tergite of female not rounded and broadened in lateral view, without deep punctation, smooth or with faint punctation on the sides of tergites, mainly on fourth tergite.

3(6). All flagellar segments of female antenna conspicuously longer than width; male flagellum 5-segmented; legs except coxae yellow. Flagellum of male antenna 5-segmented.

4(5). Female abdomen longer than mesosoma (in lateral view); propodeum with fine punctation without median furrow; hind tibia with four long setae, somewhat shorter than width of tibia and not as strong as in other allied species. Male flagellum 5-segmented with long white pubescence (fig. 3, *7–12*). .... *E. doganlari* Zerova, sp. n.

5(4). Female abdomen rounded, narrowed apically, as long or a little longer than mesosoma; propodeum with thin longitudinal median furrow; hind tibia with 3, rarely 2 strong setae. Male flagellum with 5-segments and short yellowish-brown pubescence (fig. 3, *1–6*). ..... *E. ochraceipes* Kalina

6(3). Only first flagellar segment of female antenna conspicuously longer than wide, 2–5 flagellar segments a little longer than wide, square or transverse. Legs dark brown. Female antenna 4 or 5 segmented.

7(8). Mesonotum and basal half of scutellum almost flat; lower edge of mesopleuron near mid coxa with small tooth; female abdomen oval; hind tibia with 3 long strong setae, lower one strongest and longer than tibia width, sometimes middle one reduced (fig. 1, *7–12*). ..... *E. tokatensis* Doganlar

8(7). Mesonotum and basal half of scutellum distinctly convex dorsally.

9(10). Hind tibia with one distinctly long seta; first flagellar segment of female antenna somewhat longer than wide, 4–5 transversal, female abdomen slightly longer than mesosoma (fig. 4, *1–5*). .... *E. tibiaspinae* Zerova

10(9). Hind tibia with two or three setae.

11(12). Female abdomen S-like curved, some longer than mesosoma, lateral some compressed, epipygium upturned, somewhat longer than high laterally; male antenna 4-segmented. Hind tibia with 2, rarely with 3 strong setae (fig. 1, *1–6*). ..... *Eurytoma pistaciae* Rondani (= *setigera* Mayr) *

12(11). Female abdomen not S-like curved, epipygium not longer than its height.

13(14). The fifth flagellar segment of female antenna square. Fore coxa with conspicuous deepening in lower third of external part. Male antenna 4-segmented (fig. 2, *1–7*). ..... *E. spinipes* Kalina

14(13). All flagellar segments of female antenna slightly longer than wide, fore coxa without deepening on external part. Male antenna 5-segmented (fig. 2, *8–13*). ..... *E. narendrani* Zerova, sp. n.

Eurytoma narendrani Zerova, **sp. n.** (fig. 2, *8–13*)

Material. Holotype ♂, Russian Federation, Far East, Primorskiy Kray, "Gornotaezhnaya" Station, reared from the galls of *Neuroterus* sp. (Cynipidae) on the leaf plate of *Quercus mongolica*, 23.04.1983 (Zerova). Paratypes: 1 ♂, 3 ♀, same labels as holotype.

Female. Length of body 2.5–2.7 mm (holotype — 2.7 mm). Head and mesosoma black, abdomen black with brown tint on lateral part of tergites, extended part of ovipositor yellow, scapus yellow, pedicellus and flagellum yellow-brown; wings hyaline, venation brown. Head and thorax with a dense pitted sculpture.

Head at dorsal view wider than prothorax, almost twice as long as wide (53 : 26); POL approximately twice as long as OOL (16 : 7), gena non-protuberant, postgenal keel high and sharp. Head in frontal view 1.39 as wide as high. Eye bare, longitudinal diameter of eye 1.29 times as long as length of genae; clypeus not delimited, its external margin with very little, weakly noticeable undercut; face and vertex with dense punctated sculp-

* Z. Boček (1977) erroneously used the name Eurytoma pistacina Rondani instead of Eurytoma pistaciae Rondani. Following Bouček, this mistake was repeated by Doganlar (1991) and Zerova (1995). The correct name was indicated by Noyes (2004).

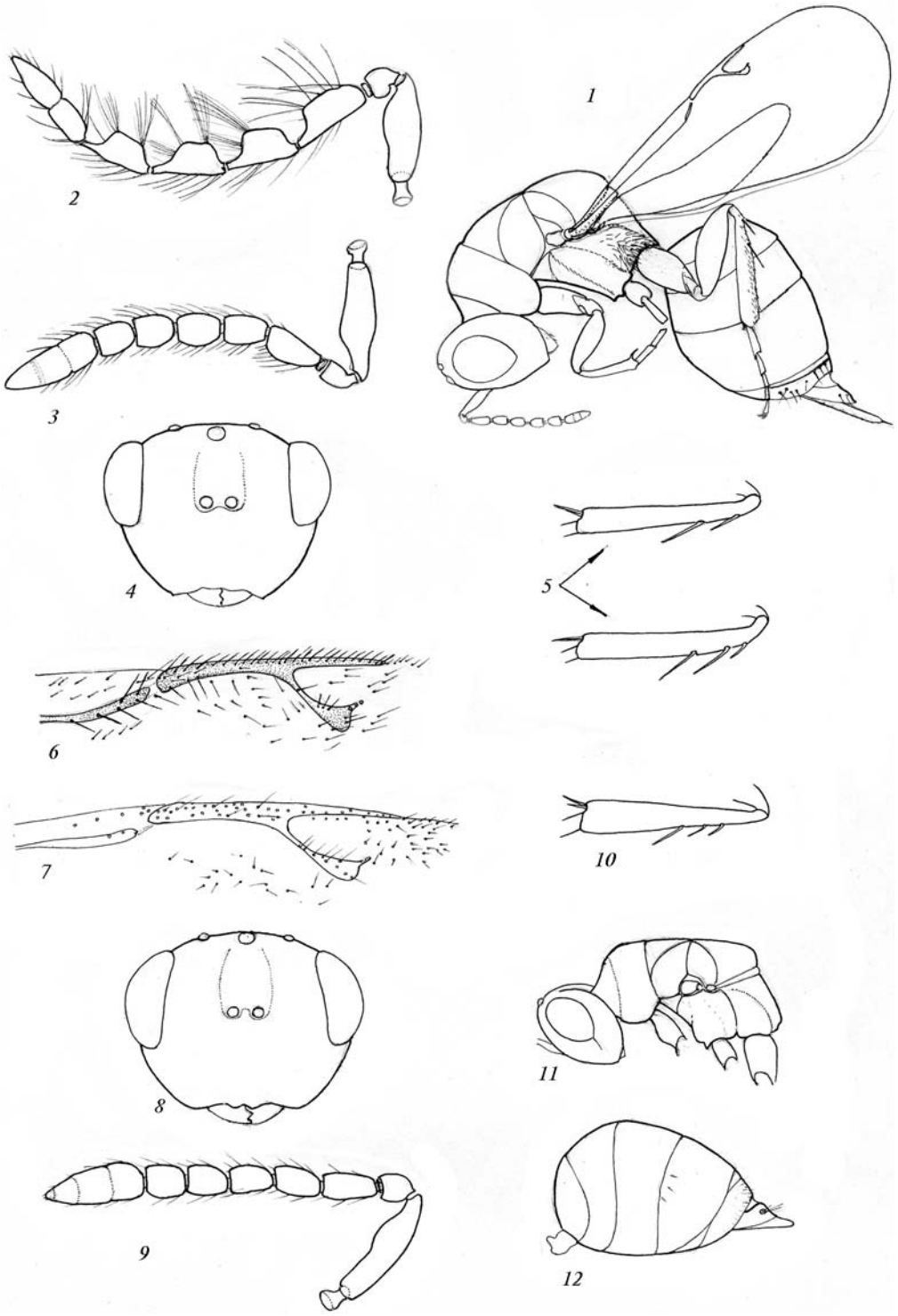

Fig. 1. *Eurytoma pistaciae* (*1–6*), *E. tokatensis* (*7–12*): *1* — female, lateral view; *2* — antenna, male; *3*, *9* — antenna, female; *4*, *8* — head, female; *5* — hind tibia (variability of setae); *6*, *7* — forewing venation; *10* — hind tibia; *11* — head and mesosoma, lateral view; *12* — female's abdomen, lateral view.

Рис. 1. *Eurytoma pistaciae* (*1–6*) и *E. tokatensis* (*7–12*): *1* — самка, вид сбоку; *2* — усик самца; *3*, *9* — усик самки; *4*, *8* — голова спереди; *5* — задняя голень (изменчивость количества щетинок); *6*, *7* — жилкование передних крыльев; *10* — задняя голень; *11* — голова и мезосома сбоку; *12* — брюшко самки (вид сбоку).

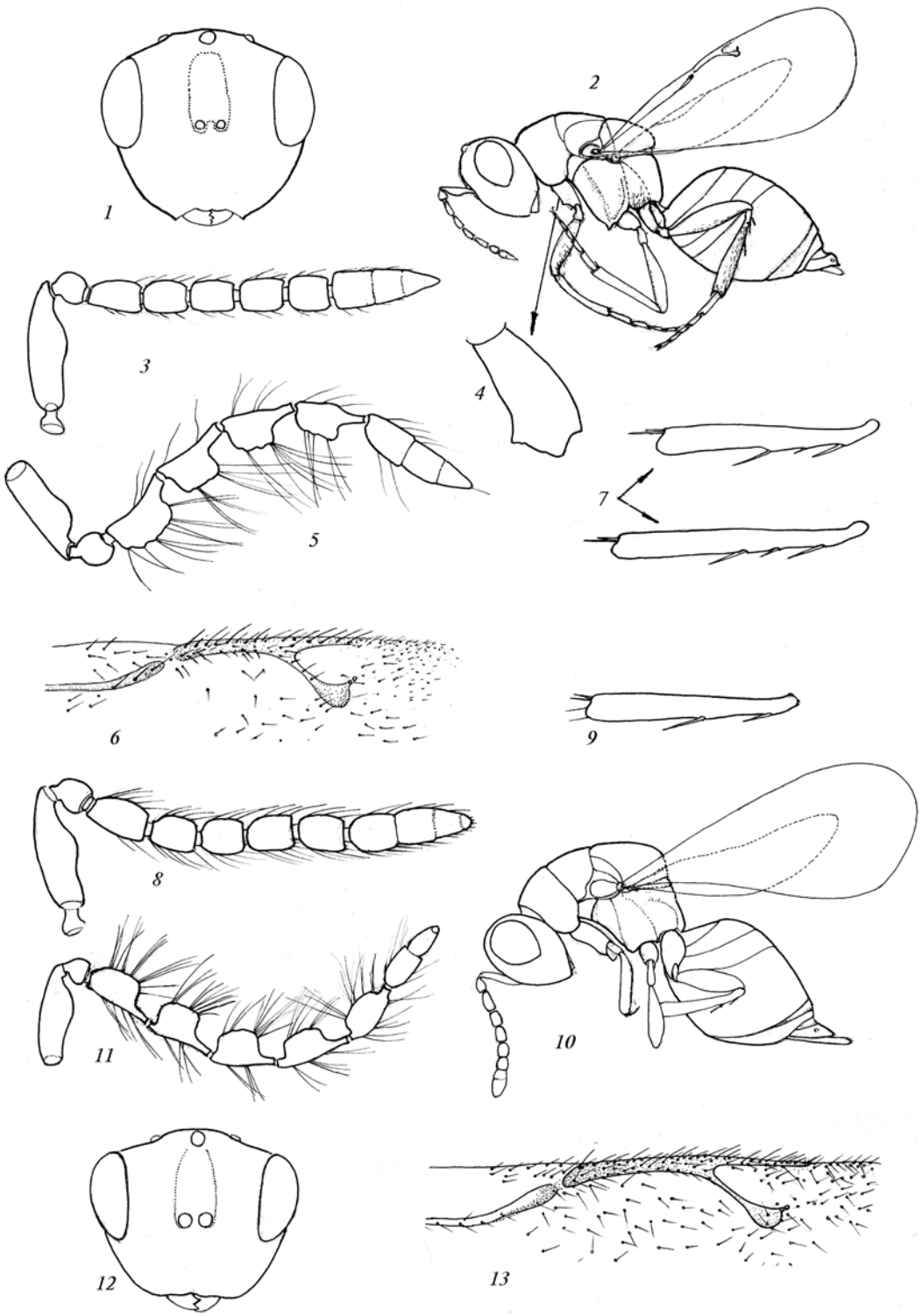

Fig. 2. *Eurytoma spinipes* (*1–7*), *E. narendrani* sp. n. (*8–13*): *1*, *12* — head, frontal view; *2*, *10* — female, lateral view; *3* — antenna female; *4* — fore coxa; *5*, *11* — antenna, male; *6*, *13* — forewing venation; *7* — hind tibiae (variability); *8* — antenna, female; *9* — hind tibia.

Рис. 2. *Eurytoma spinipes* (*1–7*) и *E. narendrani* sp. n. (*8–13*): *1*, *12* — голова спереди; *2*, *10* — самка, вид сбоку; *3* — самка, вид сбоку; *4* — передний тазик; *5*, *11* — усик самца; *6*, *13* — жилкование передних крыльев; *7* — задние голени (изменчивость); *8* — усик самки; *9* — задняя голень.

Table 1. Biological features and distribution of species of *pistaciae* group
Таблица 1. Биология распространения видов рода *Eurytoma* группы *pistaciae*

Eurytoma species	Biological features	Distribution	Reference
E. arabica Risbec, 1951	Reared from pods of *Acacia arabica*, *A. seyal*, *Indigofera* sp. n	Africa, Senegal	Risbec, 1951; Delvare, 1988; Zerova, Seryogina, van Harten, 2008
E. doganlari Zerova, sp. n.	Reared from stems of *Echinops ritro* with eggs of *Oecanthus pellucens*	South-eastern part of Ukraine	–
E. narendrani Zerova, sp. n.	Reared from gall of *Neuroterus* sp. (Cynipidae) on leaves of *Quercus mongolica*	Russian Far East	–
E. ochraceipes Kalina, 1970	Reared from Cecidomyiidae galls on *Ceratoides papposa* (Chenopodiaceae)		
	South of Palearctic, Viet-Nam, Yemen	Kalina, 1970; Zerova, 1995	
Eurytoma pistaciae Rondani, 1877 (= *setigera* Mayr, 1878)	Reared from *Diplolepis mayri* (Cynipidae) and from *Megastigmus pistaciae* (Torymidae) in pods of *Pistacia mutica*	South of the Palearctic Region	Kalina, 1970; Zerova, 1995
E. spinipes Kalina, 1970	Bred from galls of *Biorhiza pallida* (Cynipidae) on *Quercus* spp.	Europe	Kalina, 1970
E. tibiaspinae Zerova, 2008	Host unknown	Yemen	Zerova, Seryogina, van Harten, 2008
E. tokatensis Doganlar, 1991	Host unknown	Turkey, South-eastern part of Ukraine	Doganlar, Çam, 1991; Zerova (collection)

ture, more shallow than on dorsal surface of thorax, pubescence on face and vertex absent. Scrobal depression shallow, with parallel lateral edges, narrowly bordered. Antennae inserted slightly above middle of face; scapus reaching middle ocellus, at middle part visibly protuberant; pedicellus rounded, almost as long as wide; anellus very little and flatten; all five flagellar segments slightly longer than wide, all of almost equal length, excepl 1st segment somewhat longer than subsequent ones; club some wider than flagellum, 3-segmented; pubescence very short, addpressed hardly visible.

Mesosoma bulging, prothorax (from above) approximately 3 times as wide as long; mesocutum visibly longer than prothorax and nearly as long as scutellum; dorsal surface of thorax densely punctated; punctation clearer than on head; pubescence nearly absent. Middle part of propodeum with wide oval, very finely sculptured area, on its sides with larger sculpture. Sides of mesothorax at mesepisternum with very shallow sculpture (same as on propodeum), and at mesepimeron shining, with unclear striation.

Fore wing hyaline. Costal cell with very short, but dense pubescence, basal cell bare; basal part of wing disk without pubescence, but in distal 3/4 part with very short and sparse light pubescence; ratio of marginal, postmarginal and radial veins — 47 : 32 : 27; hind coxa with shallow sculpture, more visible on the posterior longitudinal part; hind femur with longitudinal line of short setae; hind tibia with two long setae somewhat longer than tibia width.

Abdomen 1.34 times as long as mesosoma; abdominal tergites 1–5 smooth and shining, tergites 6–7 with unclear sculpture and separate setae; abdominal tergite 4 longest.

Male (fig. 2, 11). Body length 1.5–1.9 mm. Similar to female, differing by darker legs. Sculpture of head and thorax same as in female. Antenna with weakly expanded scapus, 5-segmented flagellum and 2-segmented club; all segments of flagellum of special rectangular shape, with long stems; pubescence with dense setae, setae at least 1.5 times

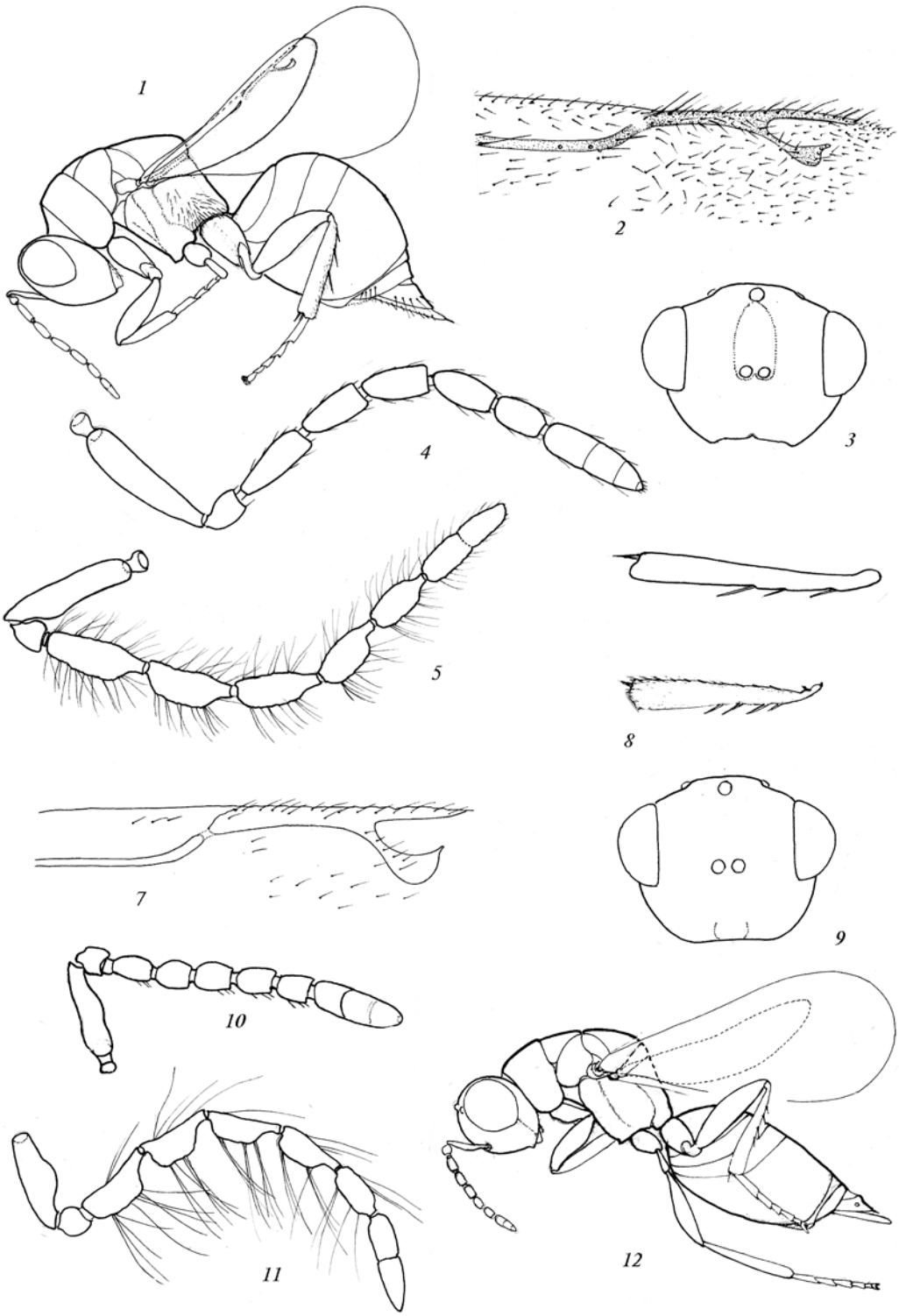

Fig. 3. *Eurytoma ochraceipes* (*1–6*), *E. doganlari* sp. n. (*7–12*): *1*, *12* — female, lateral view; *2* — forewing venation; *3*, *9* — head, frontal view; *4*, *10* — antenna, female; *5*, *11* — antenna, male; *6*, *8* — hind tibia; *7* — forewing venation.

Рис. 3. *Eurytoma ochraceipes* (*1–6*) и *E. doganlari* sp. n. (*7–12*): *1*, *12* — самка, вид сбоку; *2* — жилкование передних крыльев; *3*, *9* — голова спереди; *4*, *10* — усик самки; *5*, *11* — усик самца; *6*, *8* — задняя голень; *7* — жилкование передних крыльев.

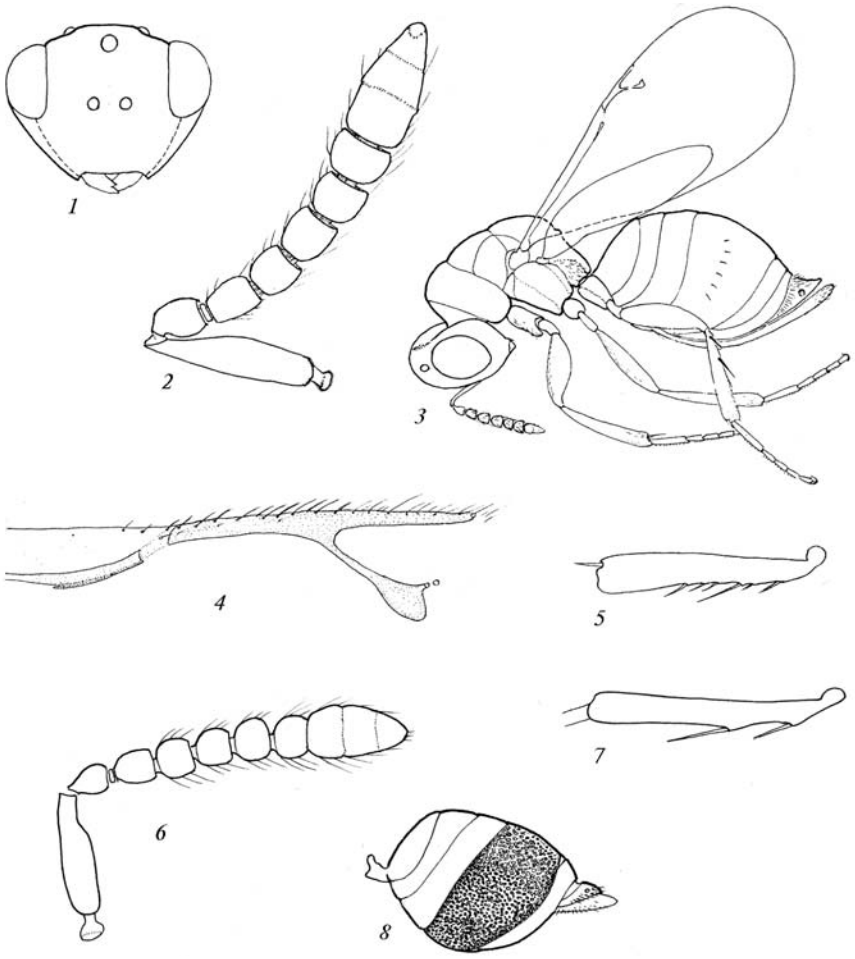

Fig. 4. *Eurytoma tibiaspinae* (*1–5*), *E. arabica* (*6–8*): *1* – head, frontal view; *2*, *6* — antenna, female; *3* — female, lateral view; *4* — forewing venation; *5*, *7* — hind tibia; *8* — female abdomen.

Рис. 4. *Eurytoma tibiaspinae* (*1–5*) и *E. arabica* (*6–8*): *1* — голова спереди; *2*, *6* — усик самки; *3* — самка, вид сбоку; *4* — жилкование передних крыльев; *5*, *7* — задняя голень; *8* — брюшко самки.

as long as width of antennal segments. The length of petiolus of abdomen is equal to the length of hind coxae (at lateral view).

Comments. The new species is similar to *E. spinipes*, but differs by longer abdomen, absence of cavity at the anterior edge of fore coxa and 5-segmented flagellum of male antenna with more protuberant segments and long pubescence on segments.

Etymology. New species is named after well-known Indian chalcidologist Professor T. C. Narendran.

Eurytoma doganlari Zerova, **sp. n.** (fig. 3, *7–12*)

Material. Holotype ♂, Ukraine, Donetsk, Volodarskiy Region, Nazarovka vill., "Kamyani Mohily" Nature Reserve, emerged from stems *Echinops ritro* (Asteraceae) with egg clutches of tree crickets *Oecanthus* sp. (Orthoptera: Oecanthidae), coll. 25–28.10.2007 (Fursov). Paratypes: ♂, ♀, same labels as holotype.

Female. Length of body 1.9–2 mm (holotype — 1.9 mm). Body elongated, with abdomen elongated with sharpen top apically; head and mesosoma black, abdomen slightly lighter — brown-black; all coxae black, other parts of legs dark-yellow; scapus of antenna rather yellow-brown; flagellum yellow; wings hyalinae, veins very light, almost white; the top of ovipositor light yellow. Head and thorax with shallow sculpture, nearly without pubescence; abdomen smooth, shining.

Head from above considerably wider than prothorax, almost twice as wide as its length (39 : 21); POL : OOL ratio 10 : 3; temples weakly protuberant. Head in frontal view 1.34 times as wide as high; gena weakly protuberant; longitudinal diameter of eye 1.6 times as long as length of genae; postgenal keel low, thin; eye bare, weakly protuberant, unbordered; clypeus smooth, shining, external margin straight; face and vertex with shallow cellular sculpture, without pubescence. Facial cavity oval, shallow, unbordered. Antennae inserted at middle of face, scapus long, but not reaching the middle ocellus, length to width ratio 30 : 7; pedicellus round, anellus strongly flatten; all antennal segments elongated, of almost same length, pubescence very rare, short, light and addressed

Mesosoma long, not bulging in profile, with long prothorax and weakly sloping propodeum. Pronotum (from above) approximately twice as wide as long, and as long as mesoscutum; dorsal surface of thorax with shallow sculpture; sides of mesothorax on mesepisternum with very small and shallow sculpture and at mesepimeron with nearly smooth surface. Propodeum weakly sloping, with thin, shallow sculpture, without middle carina.

Fore wing hyaline with very rare, light, short pubescence clearly expressed on distal part of wing disk, basal and costal cells bare; ratio of marginal, postmarginal and radial veins lengths 25 : 20 : 10. Hind coxa with unclear punctation.

Metasoma with abdomen visibly longer than mesosoma (42 : 34, at lateral view); all tergites without sculpture, their surfaces smooth and shining; extended part of ovipositor as long as tergite 7 (at lateral view).

Male. Length 1.5 mm. Colouration of body and sculpture as in female, scapus black, visibly prominent at middle; flagellum yellow-brown, 5-segmented, antennal segments of almost same length, rectangularly protuberant, with short, but distinct stems. Pubescence of flagellum very thin, long, hairs on segments approximately twice as long as width of segment; hairs very light, thin. Petiolus slightly longer than hind coxa (in profile).

Comments. *E. doganlari* sp. n. differs from other species of *pistaciae* group by having 4 long setae on the hind tibia (instead of 3 or two). In addition, setae are shorter than at other species of *pistaciae* group and nearly as long as width of tibia, and also they are very light and thin. New species is similar to *E. ochraceipes* in its colouration and structure of female antenna with elongated antennal segments, but differs from *E. ochraceipes* by longer abdomen and structure of clypeus with straight external margin; flagellar segments of antenna in both sexes by new species are shorter than in *E. ochraceipes*.

Etymology. The species is named after well-known Turkish chalcidologist Professor Micktat Doganlar.

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