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The species of *Oopristus* Steffan, 1968 (Hymenoptera: Torymidae: Toryminae: Monodontomerini) of Turkey, with descriptions of two new species

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Abstract: The species of *Oopristus* Steffan, 1968 (Hymenoptera: Torymidae: Toryminae: Monodontomerini) of Turkey were studied. *Oopristus turkestanicus* (Skriptshinsky, 1929) was reared from the eggs of *Apodiphus amygdali* (Germar, 1817) (Hemiptera: Pentatomidae) in Balcalı, Adana, as a new record for Turkey. Additionally, 2 new species of the genus, *O. tayfursokmeni* Tarla and Doğanlar, sp. nov., and *O. erganicus* Tarla and Doğanlar, sp. nov., were described. The species were also reared from eggs of *A. amygdali* collected in Antakya, Hatay province, and Ergani, Diyarbakır province, respectively. The diagnostic characters of the species were illustrated and an identification key to species of the genus was provided.

Key words: *Oopristus*, species, descriptions, key, Turkey

Türkiye'nin *Oopristus* Steffan, 1968 (Hymenoptera: Torymidae: Toryminae: Monodontomerini) türleri ve iki yeni türün tanımlanması

Özet: Türkiye'nin *Oopristus* Steffan, 1968 (Hymenoptera: Torymidae: Toryminae: Monodontomerini) türleri çalışılmıştır. *Oopristus turkestanicus* (Skriptshinsky, 1929) Türkiye'de ilk kez Balcalı, Adana'da toplanan *Apodiphus amygdali* (Germar, 1817) (Hemiptera: Pentatomidae) yumurtalarından elde edilmiştir. Buna ek olarak, cinsin iki yeni türü, *O. tayfursokmeni* Tarla ve Doğanlar, sp. nov. ve *O. erganicus* Tarla ve Doğanlar, sp. nov., bulunarak tanımlanmıştır. Bu türlerden ilki Antakya, Hatay'dan, ikincisi ise Ergani, Diyarbakır'dan toplanan *A. amygdali* yumurtalarından elde edilmiştir. Türlerin ayırt edici karakterlerinin resimleri verilmiş ve cinsin türleri için bir teşhis anahtarı oluşturulmuştur.

Anahtar sözcükler: *Oopristus*, türler, tanımlar, anahtar, Türkiye

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Introduction

The genus *Oopristus* was described by Steffan (1968) with its type species, *O. safavii* Steffan, as a monotypic new genus of the subfamily Monodontomerini (Hymenoptera: Chalcidoidea: Torymidae) from Iran. Later, Bouček (1978), in his revision of the nonpodagrionine Torymidae with enlarged hind femora, placed *Oopristus* in the tribe Crysochalcisini. Bouček, 1978, moved *Chalcis turkestanica* Skriptshinsky, 1929 to *Oopristus* as *O. turkestanicus*, and stated that *O. safavii* Steffan, 1968 was a synonym of *O. turkestanicus*. He gave its distribution as Iraq, Iran, Uzbekistan, and Pakistan, and its hosts as *Apodiphus amygdali* (Germar, 1817), *Sarju eremica* (Hoberlandt, 1959) (Hemiptera: Pentatomidae), and some pentatomid eggs laid on several trees. Grissell (1995) discussed the diagnostic characters of *Oopristus* and compared it with other genera related to the genus in Torymidae, stating that *Oopristus* should be placed in Monodontomerini rather than Crysochalcisini and giving the recognition of the genus. Narendran (1994) and Noyes (2009) gave the same data provided by Bouček (1978).

In the current work, the diagnostic characters of the species of *Oopristus* were studied by adding 2 new species, the species were compared with each other, and an identification key for the species was provided.

Materials and methods

The specimens of *Oopristus* spp. were reared from eggs of *A. amygdali* collected in Adana and Hatay provinces by Ş. Tarla and in Ergani, Diyarbakır province, by C. Gözüaçık. The new species were reared from egg batches collected from leaves of *Platanus orientalis* L. and *Acacia* sp. in Hatay, Antakya, in August and September, 1999-2001, and from leaves of *Punica granatum* L. in Ergani, Diyarbakır, in August of 2008. *O. turkestanicus* was reared from egg batches collected from leaves of *Acer* sp., *Acacia* sp., *P. orientalis*, and *Populus alba* L. in Balcalı and Sepici, Adana, June-August, 2001. The

first 2 authors were responsible for the taxonomic works. Part of hypopygial terminology follows Doğanlar (1986, 1987), and the other morphological terminology follows Grissell (1995). The examined specimen was deposited in the collection of the Insect Museum of the Plant Protection Department, Agriculture Faculty, Mustafa Kemal University, Antakya, Hatay, Turkey. Abbreviations used in the key and descriptions are: C = claval segment, F = funicular segment, OOL = ocello-ocular distance, POL = distance between posterior ocelli, mv = marginal vein, st = stigmal vein, pmv = postmarginal vein.

Results and discussions

Genus *Oopristus* Steffan

Oopristus Steffan 1968: 212. Type species: *Oopristus safavii* Steffan (original designation and monotypic, MHNG, MNHN).

Distributions: Iraq, Iran, Uzbekistan, Pakistan (Bouček, 1978; Narendran, 1994; Grissell, 1995; Noyes, 2009).

Hosts: Reared from eggs of *A. amygdali* and *S. eremica* (Bouček, 1978; Narendran, 1994; Grissell, 1995; Noyes, 2009).

Recognition: Body as Figure 1a for female and Figure 1b for male. The diagnostic characters were given by Grissell (1995) as follows: within Monodontomerini, *Oopristus* is recognized by the absence of a frenal line, the enlarged hind femur having an outer row of small teeth and an inner row of small bumps, the curved hind tibia that is apically truncate, the recessed clypeus, the absence of an occipital carina, basal end of scape protuberant and bearing a tuft of setae, either sides of clypeus with projecting tubercles, a fringe of setae projecting downward from ventral edge of clypeus, and the prepectus extremely small and scarcely visible. The characters are more pronounced in females than males. The characters of the genus were also given by several other authors (Steffan, 1968; Bouček, 1978; Narendran, 1994).

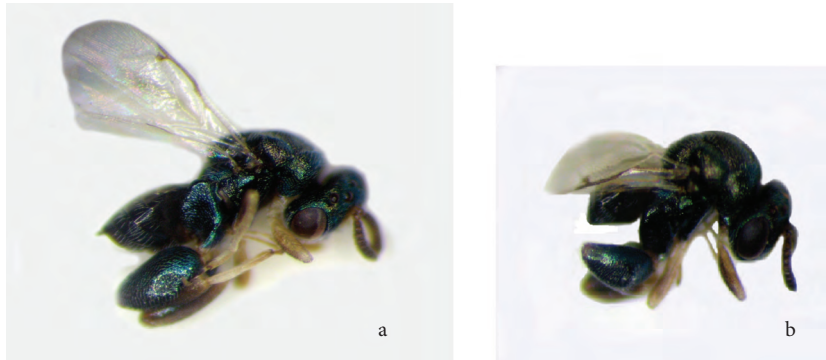


Figure 1. *Oopristus tayfursokmeni*, a-b, body: a, female; b, male (scale bar = 0.125 mm).

Key to the species of *Oopristus*

- 1 Female.....2
- Male.....4
- 2 First funicular segment of female antenna (Figures 2a and 3a) with at most 3 distinct linear sensilla, basal cell of forewing (Figures 2c and 3c) on upper side having basal and cubital veins with 3 or 4 setae; distance between base of stigmal vein and base of wing at most 1.46 times as long as distance between base of stigmal vein and tip of wing; projecting tubercles of clypeus long or short; hypopygium (Figures 2f and 3f) with anterior margin V-shaped or straight3
- First funicular segment of female antenna with 7 distinct linear sensilla (Figure 4a), basal cell of forewing (Figure 4c) on upper side with at most 2 setae basally; distance between base of stigmal vein and base of wing 2.02 times as long as distance between base of stigmal vein and tip of wing; projecting tubercles of clypeus long (Figure 4e); hypopygium with anterior margin double C-shaped (Figure 4f) .. *Oopristus ergonomicus* sp. nov.
- 3 First funicular segment of antenna with 3 distinct linear sensilla (Figure 2a); forewing (Figure 2c) with distance between base of stigmal vein and base of wing at most 1.46 times as long as distance between base of stigmal vein and tip of wing; projecting tubercles of clypeus long (Figure 2e); hypopygium with anterior margin straight, at the level of anterior margin of median lobe (Figure 2f)..... *Oopristus turkestanicus* (Skriptshinsky)
- First funicular segment of antenna with 2 distinct linear sensilla (Figure 3a); forewing (Figure 3c) with distance between base of stigmal vein and base of wing at most 1.24 times as long as distance between base of stigmal vein and tip of wing; projecting tubercles of clypeus short (Figure 3e); hypopygium with anterior margin broad V-shaped, median lobe long, 0.46 times as long as broad (Figure 3f)..... *Oopristus tayfursokmeni* sp. nov.
- 4 Antenna with F1 at most 0.62 times as long as F2 (Figure 3b); basal cell of forewing closed (Figure 3c); projecting tubercles of clypeus short (Figure 3e).....*Oopristus tayfursokmeni* sp. nov.
- Antenna with F1 at least 0.9 times as long as F2 (Figures 2b and 4b); basal cell of forewing closed or almost bare; projecting tubercles of clypeus long (Figures 2e and 4e).....5
- 5 Basal cell of forewing (Figure 2c) with at least 6 or 7 setae; distance between base of stigmal vein and base of wing 1.46 times as long as distance between base of stigmal vein and tip of wing; antenna with scape apically narrower than base, club 1.93 times as long as broad (Figure 2b).....
- *Oopristus turkestanicus* (Skriptshinsky)
- Basal cell of forewing (Figure 4c) almost bare, at most 2 setae basally, distance between base of stigmal vein and base of wing 2.02 times as long as distance between base of stigmal vein and tip of wing, antennae with scape almost quadrangular, club 1.73 times as long as broad (Figure 4b)..... *Oopristus ergonomicus* sp. nov.

***Oopristus turkestanicus* (Skriptshinsky, 1929)**
(Figures 2a-2g.)

Chalcis turkestanica Skriptshinsky, 1929: 322. Lectotype female (designated by Bouček, 1978: 105), Tashkent, Uzbekistan (Zoological Institute, Saint Petersburg, Russia); 2 female paralectotypes, same data (Grissell, 1995).

Oopristus safavii Steffan, 1968: 212-215. Holotype female, Tehran, Iran (Museum d'Histoire Naturelle, Geneva, Switzerland); % female paratypes same data (MHNG, MNHN; 1 male MNHN). Synonymized by Bouček, 1978: 105.

Taxonomy: Bouček (1978) moved *turkestanica* from *Chalcis* to *Oopristus*.

Hosts: Type series of *O. safavii* was reared from eggs of *A. amygdali*. Bouček (1978) reported the species from the eggs of *S. eremica* in Pakistan and from unspecified pentatomid eggs in Iraq and Pakistan.

Distributions: PALARCTIC: Uzbekistan, Iran, Iraq, Turkey (new record); ORIENTAL: Pakistan (Noyes 2009).

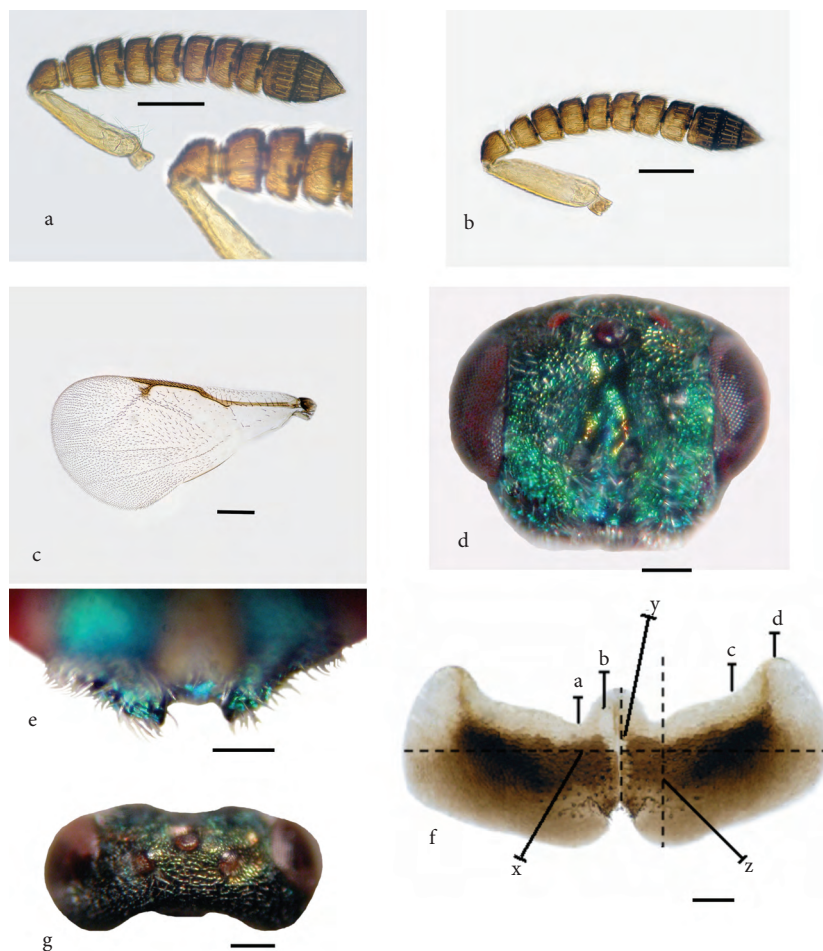


Figure 2. *Oopristus turkestanicus*: a-b, antenna: a, female; b, male; c, forewing; d, head in frontal view; e, clypeus with 2 projecting tubercles; f, hypopygia (a, anterolateral incision; b, median lobe; c, anterior median incision; d, anterolateral margin; x, width; y, distance between anterior margin of median lobe and posterior edge of median sclerotized area; z, height); g, head in dorsal view (scale bar = 0.125 mm, except forewing (d) scale bar = 0.25 mm).

Materials examined: 29 females and 10 males, Balcalı, Adana, Turkey, 37°03'26"N, 35°21'36"E, June-August 2001, and 6 females and 6 males, Sepici, Adana, Turkey, 37°00'28"N, 35°20'08"E, June 2001, reared from the eggs of *A. amygdali* collected from leaves of *Acer* sp., *Acacia* sp., *P. orientalis*, and *P. alba* by Ş. Tarla, deposited in the Insect Museum of the Plant Protection Department, Agriculture Faculty, Mustafa Kemal University, Antakya, Hatay, Turkey.

Redescription.

Female: Length 1.60-2.10 mm. Body metallic bluish-green, except pedicel and funicula brown, club dark brown, scape and legs pale yellow, except mid and hind coxae and hind femur concolorous with thorax; hind tibiae and pretarsi brown. Wings hyaline and venation pale brown.

Body with dense white pubescence, head in dorsal view (Figure 2g) slightly narrower than mesoscutum (46 : 49); 1.67 times as broad as long; in frontal view 1.31 times as broad as tall (Figure 2d); eye 1.64 times as long as wide; malar space 0.43 times as long as eye length; POL 2.50 times OOL; projecting tubercles on either sides of clypeus long, tooth-shaped (Figure 2e); antennae (Figure 2a) inserted at level of lower margin of eyes; scrobe excavated, scape short, not reaching median ocellus, basal part wider than apical, 4.67 times as long as width at base and 5.25 times width at apical; length of pedicellus and flagellum combined 2.66 times as long as length of scape, pedicellus longer than wide (24 : 22); annellus transverse and 4.50 times as wide as long; funicular segments distinctly transverse, equal each other, twice longer than wide, with linear sensilla in a single row on each segment, F1 with 3 sensilla, others with 6 or 7 sensilla; club almost as long as 3.5 of the 4 preceding segments combined, about 1.56 times as long as broad.

Mesosoma 1.19 times as long as broad; pronotum about 3.73 times as broad as medial length; mesonotum finely reticulated; scutellum with the same reticulated sculpture as mesoscutum and about as long as broad, distinctly raised above propodeum; propodeum with flattened median area having fine reticulation and about 2.53 times as wide as long; nucha smooth; callus with long dense setae. Forewing (Figure 2c) 3.00 times as long as wide; distance between base of stigmal vein and base of wing 1.46 times as long as distance between base of stigmal vein

and tip of wing; costal cell 10.60 times as long as wide, with basal cell almost bare, upper side having basal vein with 4, cubital vein with 2-4 setae basally. Relative measurements of forewing: submarginal vein 25, marginal vein 16, postmarginal vein 8, stigmal vein 5, costal cell (l / w) 35 / 3.30. Hind femora bearing more than 14 teeth on outer margin, hind tibia curved, with apical spine as long as second tarsal segment.

Metasoma 1.22 times as long as wide, basal 2 terga with hind margin incised medially, ovipositor almost hidden, slightly exerted. Hypopygium (Figure 2f) with anterior margin almost broad V-shaped; median lobe long, 0.46 times as long as wide, 2.48 times as broad as long, distance between anterior margin of median lobe and posterior edge of median sclerotized area 0.6 times as long as hypopygium; anterior lobe 0.18 times as long as hypopygium.

Male: Length 1.30-1.50 mm. Very similar to female except as follows: antennae (Figure 2b) with funicular segments less transverse, having longer hairs, with 5 or 6 linear sensilla; metasoma shorter than mesosoma.

Host: All of the specimens were reared from the eggs of *A. amygdali* collected from leaves of *Acer* sp., *Acacia* sp., *P. orientalis*, and *P. alba*.

Comments: After comparing the specimens of *O. turkestanicus* from Turkey with the descriptions of the species given by several authors (Steffan, 1968; Bouček, 1978; Grissell, 1995), it was determined that the characters obtained from Turkish specimens fit very well with the diagnostic characters of the species. This is the first record for the species from Turkey. Some of the new characters were found by studying morphologies of the hypopygium, antennae, and wings.

***Oopristus tayfursokmeni* Tarla and Doğanlar, sp. nov.** (Figures 3a-3g.)

Type material: Holotype, female, Antakya, Hatay, Turkey, 36°13'12"N, 36°09'61"E, 12. ix. 1999 and 19. viii. 2001 reared from the eggs of *A. amygdali* collected from leaves of *P. orientalis* and *Acacia* sp. by Ş. Tarla, deposited in the Insect Museum of the Plant Protection Department, Agriculture Faculty, Mustafa Kemal University, Antakya, Hatay, Turkey. Paratypes: 6 females, 1 male. Holotype: 1 male, 5 females, 19. viii. 2001, reared from the eggs of *A. amygdali* collected from leaves of *Acacia* sp. by Ş. Tarla.

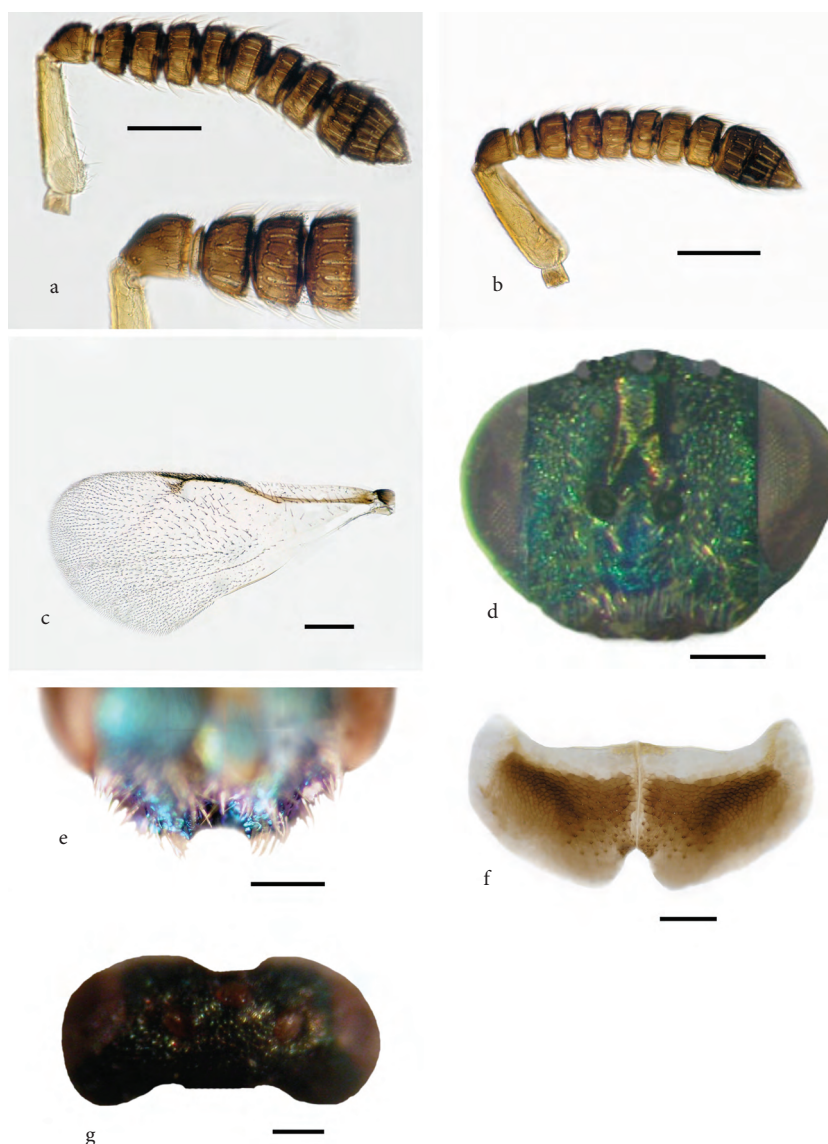


Figure 3. *Oopristus tayfursokmeni*: a, b, antenna: a, female; b, male; c-f, female; c, forewing; d, head in frontal view; e, clypeus with 2 projecting tubercles; f, hypopygia; g, head in dorsal view (scale bar = 0.1250 mm, except forewing (c) scale bar = 0.25 mm).

Diagnosis: *Oopristus tayfursokmeni* sp. nov. has short projecting tubercles of clypeus in both sexes; female antennae having F1 with 2, F2 with 3 linear sensilla; male antennae with F1 about half the length of F2; hypopygium with anterior margin straight, the latter combined with anterior margin of median lobe (Figure 3f).

Description: Similar to *O. turkestanicus* except as follow:

Female: Body as seen Figure 1a. Length 1.65-1.75 mm; fore coxae concolorous with mesosoma; base of gaster pale brown ventrally.

Head (Figures 3d and 3g) in frontal view 1.23 times as broad as tall; malar space 0.39 times as long as eye length; POL twice OOL; projecting tubercles on either sides of clypeus short, tooth-shaped (Figure 3e); antennae (Figure 3a) with scape 3.08 times as long as width at base and 5.69 times width at apical; length

of pedicellus and flagellum combined 3.08 times as long as length of scape; pedicellus quadrate; funicular segments distinctly transverse, equal each other, twice longer than wide, with linear sensilla in a single row on each segment; F1 with 3 sensilla, others with 6 or 7 sensilla; club almost as long as 3.5 of the 4 preceding segments combined, about 1.44 times as long as broad.

Mesosoma 1.44 times as long as broad; pronotum about 2.66 times as broad as long medially; forewing (Figure 3c) 2.53 times as long as wide; distance between base of stigmal vein and base of wing 1.24 times as long as distance between base of stigmal vein and tip of wing; costal cell 9.67 times as long as wide. Relative lengths of veins of forewing: submarginal vein 22, marginal vein 13, postmarginal vein 7, stigmal vein 4, subcostal cell 30 / 3.10.

Metasoma 1.41 times as long as wide. Hypopygium (Figure 3f) with anterior margin straight, the latter combined with anterior margin of median lobe, 2.53 times as broad as long; distance between anterior margin of median lobe and posterior edge of median sclerotized area 0.64 times as long as hypopygium; anterior lobe 0.19 times as long as hypopygium.

Male: Body as seen Figure 1b, length 1.4-1.5 mm. Antenna (Figure 3b) with first funicular segments about 0.62 times as long as second funicular segment and distinctly shorter than pedicellus; F1 with 2, F2 with 3 linear sensilla.

Host: All of the specimens were reared from the eggs of *A. amygdali* collected from leaves of *P. orientalis* and *Acacia* sp.

Etymology: The name is derived from the name of the first president, Tayfur Sökmen, of Hatay State, after it was separated from Syria.

Comments: *Oopristus tayfursokmeni* sp. nov. is very similar to *O. ergonomicus* sp. nov. and *O. turkestanicus*, but differs from them in having the projecting tubercles of clypeus short in both sexes (in *O. ergonomicus* sp. nov. and *O. turkestanicus*, the projecting tubercles of clypeus are long in both sexes); female antennae having F1 with 2, F2 with 3 linear sensilla (in *O. turkestanicus* female antennae having F1 with 3, F2 with 6, and *O. ergonomicus* sp. nov. having F1 and F2 with 6 linear sensilla); male antennae with

F1 about half the length of F2 (in *O. ergonomicus* sp. nov. and *O. turkestanicus*, male antennae with F1 almost equal to length of F2); hypopygium with anterior margin straight, the latter combined with anterior margin of median lobe (in *O. ergonomicus* sp. nov. and *O. turkestanicus*, median lobe triangularly separated from anterior margin of hypopygium).

***Oopristus ergonomicus* Tarla and Doğanlar, sp. nov.** (Figures 4a-4g.)

Type materials: Holotype, female, Ergani, Diyarbakır, Turkey, 38°14'65"N, 39°41'55"E, 11. viii. 2008, reared from the eggs of *A. amygdali* collected from leaves of *Punica granatum* L., leg. Celalettin Açıkgöz, deposited in the Insect Museum of the Plant Protection Department, Agriculture Faculty, Mustafa Kemal University, Antakya, Hatay, Turkey. Paratypes: 12 females, 1 male, same data as holotype; 1 female, Çermik, Diyarbakır, 28. vii. 2003, Leg. H. Bolu, swept from leaves of *Amygdalus* sp.; 1 female, reared from the eggs of *A. amygdali* collected from leaves of *P. orientalis* by Ş. Tarla in Diyarbakır, 15. viii. 2001.

Diagnosis: *Oopristus ergonomicus* sp. nov. has forewings with basal cell including basal and cubital veins bare; female antennae having F1 and F2 with 6 linear sensilla; male antennae having F1 with 5 linear sensilla; hypopygium with anterior margin double C-shaped (Figure 4f).

Description: Similar to *O. turkestanicus* except as follows:

Female: Length 2.00-2.15 mm. Body metallic green.

Head (Figures 4d and 4g) in dorsal view 2.00 times as broad as long; eye 1.57 times as long as wide; POL twice OOL; clypeus as seen Figure 4b; antennae (Figure 4a) with scape with basal part wider than apical, 3.36 times as long as width at base and 5.88 times width at apical; F1 with 6 sensilla, others with 6 or 7 sensilla; club about 1.40 times as long as broad.

Mesosoma 1.44 times as long as broad, pronotum 4.80 times as broad as length medially, propodeum 3.08 times as wide as long. Forewing (Figure 4c) 2.63 times as long as wide; distance between base of stigmal vein and base of wing 2.02 times as long as distance between base of stigmal vein and tip of wing; costal cell 10.85 times as long as wide; basal cell almost bare, with only 1 or 2 setae basally. Relative

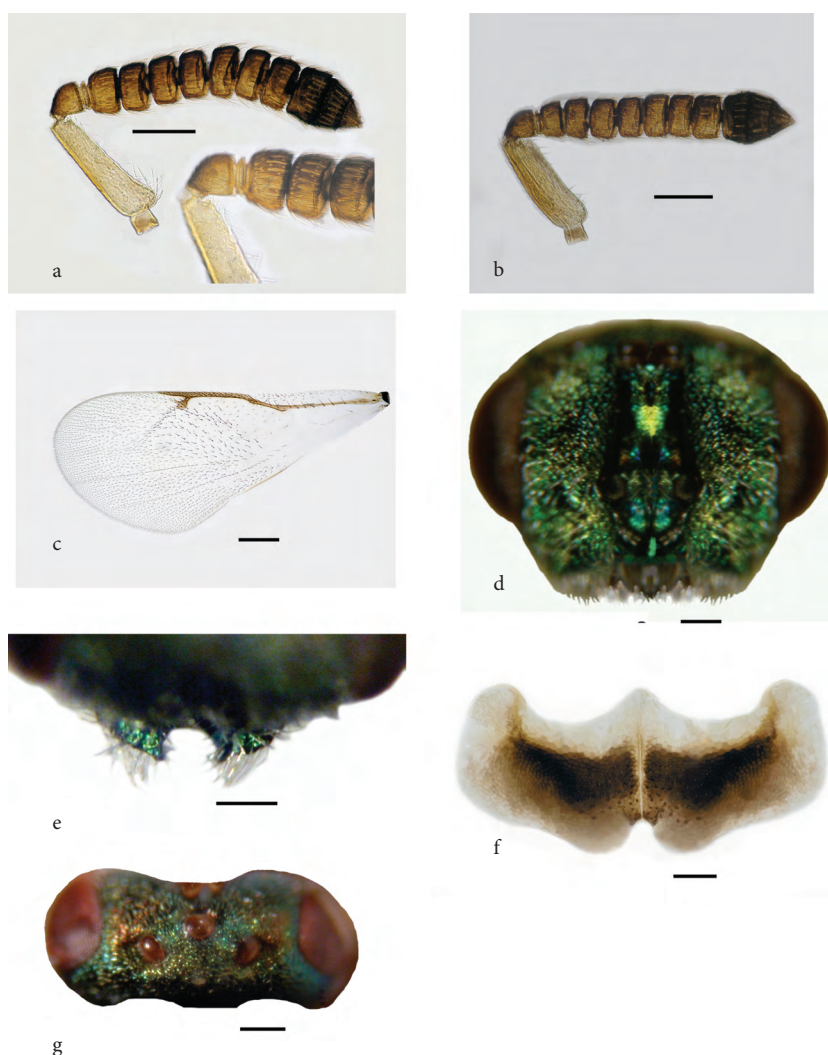


Figure 4. *Oopristus erganicus*: a, b, antenna: a, female; b, male; c-f, female; c, forewing; d, head in frontal view; e, clypeus with 2 projecting tubercles; f, hypopygia; g, head in dorsal view (scale bar = 0.1250 mm, except forewing (c) scale bar = 0.25 mm).

measurements of forewing: submarginal vein 29, marginal vein 18, postmarginal vein 9, stigmal vein 4.5, costal cell (l / w): 38 / 3.5.

Metasoma: Hypopygium (Figure 4f) with anterior margin double C-shaped; median lobe distinct, broad, 0.2 times as long as wide, 2.72 times as broad as long; distance between anterior margin of median lobe and posterior edge of median sclerotized area 0.78 times as long as hypopygium; anterior lobe 0.21 times as long as hypopygium.

Male: Length 1.60 mm. Very similar to female except as follows: antennae (Figure 4b) funicular segments having longer hairs, with sparser linear sensilla, 5 or 6 on each segment.

Host: The eggs of *A. amygdali*, collected from leaves of *P. granatum*.

Etymology: The name is derived from the name of the town, Ergani, from which the specimens were obtained.

Comments: *Oopristus ergonomicus* sp. nov. is very similar to *O. tayfursokmeni* sp. nov. and *O. turkestanicus*, but differs from them in having forewings with basal cell including basal and cubital veins (in *O. tayfursokmeni* sp. nov. and *O. turkestanicus*, basal cell with basal and cubital veins having 3 or 4 setae); female antennae having F1 and F2 with 6 linear sensilla (in *O. turkestanicus*, female antennae having F1 with 3, F2 with 6, and *O. tayfursokmeni* sp. nov. having F1 with 2, F2 with 3 linear sensilla); male antennae having F1 with 5 linear sensilla (in *O. tayfursokmeni* sp. nov. and *O. turkestanicus*, male antennae having F1

with 3 linear sensilla); hypopygium with anterior margin double C-shaped (in *O. tayfursokmeni* sp. nov., hypopygium with anterior margin straight, the latter combined with anterior margin of median lobe, and *O. turkestanicus*, hypopygium with anterior margin broad V-shaped).

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