

**GALL MIDGES, *CELTICESIS* SPECIES,
(DIPTERA: CECIDOMYIIDAE) ON HACKBERRIES,
CELTIS SPP., (CANNABACEAE) OF TURKEY,
WITH DESCRIPTION OF NEW SPECIES**

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ABSTRACT: In Turkey four species of gall midges, *Celticis* spp. (Diptera: Cecidomyiidae) on Hackberries, *Celtis* spp., (Cannabaceae) were found in several parts of Turkey. The species are: *Celticis caucasica* Gagné on *Celtis caucasica* in Antakya, Hatay, *C. kayserinensis* n.sp. in Talas, and Melikgazi, Kayseri, *C. erzincanensis* n.sp. on *Celtis tournefortii* in Bahçeyazı village, Erzincan, *C. malatyanensis* n.sp. on *Celtis glabrata* in Yaka village, Malatya. The new species and their galls were described and illustrated.

KEY WORDS: Gall midges, *Celticis*, hackberries, *Celtis* spp., Turkey.

In Turkey three species of Hackberries, *Celtis* spp. (Cannabaceae) were recorded in the flora of Turkey by Davis (1984) from several parts of Turkey. Gagné (1983) described the genus *Celticis* by combining 10 Nearctic species and stated that the Hackberries, *Celtis* spp. (Cannabaceae), are hosts in North America. They cause complex leaf and twig galls of sometimes bizarre shape on *Celtis* spp. (Gagné, 1989).

In the eastern Palearctic, Moser (1965) firstly recorded *Celticis* (as *Phytophaga*) known from Japan which extends the range of *Celticis* into the Old World, and Yukawa & Tsuda (1987) described *Celticis japonica* (Diptera: Cecidomyiidae) as leaf gall-inducer on *Celtis sinensis* Persoon var. *japonica* (Planchon) Nakai in Kagoshima Prefecture, Kyushu, Japan.

Gagné & Moser (1997) stated that *Celticis* has not yet been found in relatively well-collected Europe may mean that it became extinct there during the Pleistocene, as might have the gall midges on beech in North America.

For presence of *Celticis* in Turkey, Gagné & Moser (1997) stated that Dr. Moser obtained from Prof. K. Browicz of the Institute of Dendrology, Kornik, Poland, galled leaves of *Celtis thournefortii* Lam. collected in Hisarcık, Kayseri, Turkey. They described the gall as follow: on the upper surface of the leaf galls are about 1.5 mm in height and width and consist of an outer, raised ring and a central, rounded cone protruding from the center of the ring, and on the lower surface of the leaf the gall is a simple convexity about 1.0 mm in height by 1.5 mm in width. Second instars of a presumably undescribed species of *Celticis* were extracted from these galls. This new record extends the natural range of *Celticis* into the western Palearctic. The galls and the larvae excised from them are deposited in the National Museum of Natural History, Washington, DC.

Gagné & Moser (2013) stated the genus is well-represented in Japan by at least three species (S. Sato & J. Yukawa, in litt.), but was previously known elsewhere in the Palearctic Region only from *Celtis* leaf galls found in Turkey. Only second instar larvae from those galls were available, so nothing was done

with them in Gagné & Moser (2013) beyond substantiating the presence of *Celticecis* in Turkey.

Recently, Gagné & Doğanlar (in press) described the first species, *Celticecis caucasicae* Gagné of the genus (Diptera: Cecidomyiidae) on *Celtis caucasica* (Cannabaceae) from Hatay, Turkey.

The aim of this work is the review of *Celticecis* species found in several parts of Turkey, including the species recorded as galls and larvae in Kayseri before, describe the new ones, and gave their distributions and some biological data.

MATERIAL AND METHOD

In 2012 and 2013, *Celtis* spp. and galls on them were surveyed in 12 regions of Turkey. The regions and dates are: Hatay: Altınözü, Hanyolu village and , Antakya, Şenköy village in the period from May to October, 2011-2013, Erzin, and Antakya from September-October, 2012; Adana: City center, in September, 2012; Kozan, Marançeçili village in 06. October, 2012; Mersin: Tarsus, Günyurdu village in 09 September, 2012; Kayseri: Talas, Çaybaşı Bağları on 25. July, and on 06. October, 2012, Melikgazi, Beğendik Bağları on 25. July, 2012; Erzincan: Bahçeyazı village, on 26. July, 2012, and on 03. November, 2012; Malatya: Kale, on 15. October, 2012; Center, Yaka village, 27. October, 2012 (Dr. Aziz Gül); Diyarbakır: Çermik on 15. October, 2012 (Dr. M. Duman); Sinop: Durağan, Kaplangu village on 05. November, 2012 (Mr. Abdullah Kılınçer). The galls of the *Celticecis* species were collected only from Hatay in 2011-2012, and from Kayseri, Erzincan and Malatya in 2012.

Some galls were measured and some of them dissected to obtain specimens of larvae and pupae. To rear adult midges, fallen galls containing mature larvae were collected in July from twigs of trees, and in October from the ground under host trees at several places in the collecting site recorded above, and they brought to laboratory. The galls were placed on the soil in a plastic pot (25 cm in diameter and 30 cm depth). The pots were placed on the soil in open condition through the following winter in the garden of Mustafa Kemal University. In March, 2011 and 2012 the overwintered galls were transferred from the pots to cages (30x30x70 cm in size) in the laboratory. Daily emerged midges were collected and put into vials with 96% ethyl alcohol.

Some of the galls, collected from different localities in September, were segregated each kind and wrap them together in soft paper sheets, put into a refrigerator at 2-3° C and 60-70% relative humidity. They were left there until mid-March, when tree buds begin to burgeon, almost one month before the normal date of leafing. The galls were taken out from the refrigerator, given moisture slightly and placed into large clear plastic bags. Within 1-2 weeks the adults come out were collected by fine brush and put into vials with 96% ethyl alcohol (R. Gagné, 2012, in litt.).

The life history of the gall midges was studied by occasional dissection of the galls collected from the localities. The time of fall of mature galls was surveyed from September to November in 2011 and 2012 in Hanyolu, Hatay and in July and October in Kayseri, Erzincan and Malatya by detecting of fallen galls on leaves.

In preparing microscope slides, the xylene-Canadian balsam method was used. The Holotype and some paratypes were deposited in the Insect collection of Research Station of Biological Control, Adana; 3 females and 3 males paratypes were deposited in the National Museum of Natural History (USNM), Washington, D.C., USA.

Morphological terminology follows Gayné (1983 and 2009).

RESULTS AND DISCUSSION

Celticecis Gayné 1983

Celticecis Gayné, 1983: 436-438. Type species: *Celticecis celtiphyllia* (Felt). Proc. Entomol. Soc. Wash., 85 (3): 435-438.

Gayné (1983) gave the description of the genus in detail, and gave diagnostic characters distinguishing it from the genus, *Mayetiola* Kieffer, and listed 10 species from Nearctic Region.

By the work four species of *Celticesis*, three of which are new to science were found in Kayseri, Erzincan and Malatya, the other was recently described by Gagné & Doğanlar (in press). The Turkish species have the following characters: First through fourth tergites with anterior pair of trichoid sensilla, single row of posterior setae, 0 lateral setae, and scattered scales; an anterior pair of trichoid sensilla on each of the adult abdominal sternites absent; larval papillae have the loss of two dorsals, two ventrals and two pleurals on the abdomen, and also lost two laterals and two pleurals on the thoracic segments. The third instar spatula with one triangular point as that of species in the *spiniformis* group. Pupae with distinct antennal horns; clypeus with 4 papillae in the center of sclerite. Abdomen dorsally and ventrally setulose, except bare in inter segmental areas as stated by Gayné (1983).

The identification key for the species is provided as follows:

Key to species of *Celticecis* from Turkey

- 1-Galls covered with dense cottony fibers on upper side of leaf; 2nd instar larval spatula cruciate; anterior tooth large; the shaft broad, well-developed in mature second instars (Fig.2, I a); 3rd instar larval spatula reduced to narrow, acute tooth and narrow, indistinct, shaft barely wider and longer than tooth (Fig.2, I b); pupae having space between antennal horn about 3.3 times length of horn itself in ventral view (Fig. 3 b); male genitalia with gonocoxit having sparse long setae ventrally, dorsally almost bare, only with two long setae (fig.5, a); genital base broad as in Fig. 6, I,a,b,d; cerci short, almost as long as breadth; gonostyli with 2-3 setulae dorsally, 4-5 basally on venter; aedeagus blunt apically; male sternite 6-8 with two rows of setae, on anterior and posterior parts (Fig.7, a); female genitalia as in fig.8, I, with hypoproct longer than breadth.....*C. caucasicae* Gagné, 2013
- Galls without dense cottony fibers; 2nd and 3rd instar larval spatula reduced to narrow, acute tooth, their shaft variable (Fig.2, II-IV); pupae having space between antennal horn at least 6 times length of horn itself in ventral view (Fig. 3 e, h, I); male genitalia with gonocoxit having dorsally and ventrally with some long setae; shape of genital base and cerci variable; male sternite 6-8 with more setae; female genitalia as in fig.8, II-IV, with hypoproct almost as long as breadth2
- 2- Galls about 1.5 mm in height and width and consist of an outer, raised ring and a central, rounded cone protruding from the center of the ring on the upper surface of the leaf; 2nd instar larval spatula with spherical shaft, its diameter about twice length of tooth (Fig.2, II a); 3rd instar larval spatula with ellipsoidal shaft, about 2.3 times as long as tooth (Fig.2, II b); pupae having space between antennal horn about 9 times length of horn itself in ventral view (Fig. 3 e); male thorax and scutellum as fig. 5 e, f; male genitalia with gonocoxit having sparse setae dorsally and ventrally (Fig.5 b); genital base indistinct as in Fig. 6, II,a,b; cerci short, shorter than breadth (Fig. 6, II, c,e); male sternite 6-8 with many, dense, short setae, on anterior half (Fig.7, b); female genitalia as in fig. 8, II.....*C. kayserinensis* n. sp.

- Galls conical, at least 5 mm in height and 1.5 mm width and consist of an outer, only slightly raised ring on the upper surface of the leaf; 2nd and 3rd instar larval spatulae with short conical shaft (Fig. 2, III- IV); pupae having ratio between the space between antennal horn and length of horn itself in ventral view variable (Fig. 3 h, l); male genitalia with gonocoxit having dense setae dorsally and ventrally (Fig. c,d); setal pattern of male sternite 6-8 variable.....3
- 3- 2nd instar larval spatula with short conical shaft, about half length of tooth (Fig. 2, III a); 3rd instar larval spatula with short tooth, about 1.3 times as long as its basal breadth, shaft distinct, basally indistinct, about 2.3 times as long as tooth (Fig. 2, III b); pupae having space between antennal horn at least 6 times length of horn itself in ventral view (Fig. 3 e, h); male genitalia with gonocoxit basally almost bare (Fig. 5 c); genital base triangular as in Fig. 6, III,a,b,d; cerci long, almost 2.5 times as long as breadth (Fig. 6, III, c); male sternite 6-8 with only two rows of setae on anterior site (Fig. 7, c); female genitalia as in fig. 8, III.....*C. erzincanensis* n. sp.
- 2nd instar larval spatula unknown; 3rd instar larval spatula with long tooth, about 1.5 times as long as its basal breadth, shaft narrow, indistinct basally, about as long as tooth (Fig. 2, IV b); pupae having space between antennal horn at least 7 times length of horn itself in ventral view (Fig. 3, l); male genitalia with gonocoxit basally setose (Fig. 5 d); genital base Y-shaped as in Fig. 6, IV,a; cerci long, almost twice as long as breadth (Fig. 6, IV, f); male sternite 6-8 with some, sparse, long setae on anterior half (Fig. 7, b); female genitalia as in fig. 8, IV.....*C. malatyanensis* n. sp.

Celticecis caucasicae Gagné

(Figs. 1a-c; 2, 1a,b; 3b; 4a,b; 5, 1a; 6, 1a,b,d; 7a; 8, I)

Celticecis caucasicae Gagné, 2013: 312; Holotype. —Male, emerged III-2012 from *Celtis caucasica*, Hanyolu, Antakya, Hatay, Turkey, M. Doğanlar, deposited in USNM, Washington, D.C., USA. Other material examined, all deposited in USNM.

Diagnosis: Galls covered with dense cottony fibers on upper side of leaf; 2nd instar larval spatula cruciate; anterior tooth large; the shaft broad, well-developed in mature second instar (Fig. 2, 1a); 3rd instar larval spatula reduced to narrow, acute tooth and narrow, indistinct, shaft barely wider and longer than tooth (Fig. 2, 1b); pupae having space between antennal horn about 3.3 times length of horn itself in ventral view (Fig. 3b); male genitalia with gonocoxit having sparse long setae ventrally, dorsally almost bare, with only two long setae (Figs. 5, 1, a); genital base broad as in figs. 6, 1a,b,d; cerci short, almost as long as breadth; gonostyli with 2-3 setulae dorsally, 4-5 basally on venter; aedeagus blunt apically; male sternit 6-8 with two rows of setae, on anterior and posterior parts (Fig. 7a); female genitalia as in fig. 8, I, with hypoproct longer than breadth.

Description:

Galls: Described by Gayné in Gayné & Doğanlar, 2013, and figured in this work as figs. 1,a-c.

Adults: Described in detail by Gayné in Gayné & Doğanlar, 2013. Some additional characters as follows: Male antenna as seen figs. 4a-b. Male genitalia with gonocoxit having sparse long setae ventrally, dorsally almost bare, only with two long setae (Fig. 5a); genital base broad as in figs. 6, 1a,b,d; cerci short, almost as long as breadth; gonostyli with 2-3 setulae dorsally, 4-5 basally on venter; aedeagus blunt apically; male sternit 6-8 with two rows of setae, on anterior and posterior parts (Fig. 7a); female genitalia as in fig. 8, I, with hypoproct longer than breadth.

Pupa: pupae having space between antennal horns about 3.3 times length of horn itself in ventral view (Fig. 3b).

Larva: 2nd instar larval spatula cruciate; anterior tooth large; the shaft broad, well-developed in mature second instar (Fig. 2, 1a); 3rd instar larval spatula

reduced to narrow, acute tooth and narrow, indistinct, shaft barely wider and longer than tooth (Fig. 2, Ib).

Material examined: 20 females; 10 Males, 15-22. III. 2012, emerged from *Celtis caucasica*, Hanyolu, Antakya, Hatay, Turkey, M. Doğanlar; 27 females, 21 males, 20. III-02.IV.2013, same data stated in 2012; 10 pupae, 9 III. instar larvae, and many galls with II. instar larvae, collected from same locality in 2013. All of the specimens were deposited in the Insect collection of Research Station of Biological Control, Adana.

Distribution: Hanyolu, Altınözü and Şenköy, Antakya, Hatay, Turkey.

Hosts: *Celtis caucasica*.

***Celticecis kayserinensis* Doğanlar n. sp.**

(Figs. 1g-i; 2, IIa,b; 3e; 4c-d; 5b; 6 IIa-e; 7b; 8 II)

Diagnosis: Galls about 1.5 mm in height and width and consist of an outer, raised ring and a central, rounded cone protruding from the center of the ring on the upper surface of the leaf; 2nd instar larval spatula with spherical shaft, its diameter about twice length of tooth (Fig. 2, IIa); 3rd instar larval spatula with ellipsoidal shaft, about 2.3 times as long as tooth (Fig. 2, IIb); pupae having space between antennal horn about 9 times length of horn itself in ventral view (Fig. 3e); male genitalia with gonocoxit having sparse setae dorsally and ventrally (Fig. 5b); genital base indistinct as in figs. 6, IIa,b; cerci short, shorter than breadth (Figs. 6, IIc, e); male sternite 6-8 with many, dense, short setae, on anterior half (Fig. 7b).

Description:

Gall (Figs. 1g-i). Galls about 1.5 mm in height and width and consist of an outer, raised ring and a central, rounded cone protruding from the center of the ring on the upper surface of the leaf.

Adult. Female: body 1.8-2.0 mm; wing 2.0 mm; male. body 1.6-1.7 mm, wing 1.7 mm Antenna with 12 flagellomeres in the both sexes (n=10). Male antenna as seen figs. 4c-d. Wing length: male, 1.7 mm (n=10); female, 2.0 mm (n=10). Male abdomen: First through fourth tergite with anterior pair of trichoid sensilla, single row of posterior setae, fifth through seventh tergite with two rows of posterior setae; male sternite 6-8 with many, dense, short setae, on anterior half (Fig. 7b); terminalia with gonocoxit having sparse setae dorsally and ventrally (Fig. 5b); genital base indistinct as in figs. 6, IIa,b; cerci short, shorter than breadth (Figs. 6, IIc, e). Female abdomen: similar to that of *C. caucasicae*, except hypoproct almost spherical, as long as breath (Figs. 8, IIa-e).

Pupa: pupae having space between antennal horn about 9 times length of horn itself in ventral view (Fig. 3e).

Larva: 2nd instar larval spatula with spherical shaft, its diameter about twice length of tooth (Fig. 2, IIa); 3rd instar larval spatula with ellipsoidal shaft, about 2.3 times as long as tooth (Fig. 2, IIb).

Material examined: Holotype, male, (on slide), Turkey: Kayseri, Talas, Çaybaşı Bağları, 20. III. 2013, emerged from leaf gall on *Celtis thouneforti* (M. Doğanlar), deposited in the Insect collection of Research Station of Biological Control, Adana. Paratypes: 27 Females; 17 Males, same data as Holotype, 11.-25. III. 2013; Melikgazi, Beğendik Bağları, 8 females; 5 Males, 12-18. March, 2013, emerged from leaf gall on *Celtis glabrata* (M. Doğanlar). 8 pupae, dissected in March 2013; 12 III. instar larvae, and many galls with III. instar larvae collected from same locality in September 2012 and many galls with II. instar larvae, collected from same locality in July 2012. All of the specimens were deposited in the Insect collection of Research Station of Biological Control, Adana.

Distribution: Turkey: Kayseri, Talas, Çaybaşı Bağları; Melikgazi, Beğendik Bağları.

Hosts: *Celtis thouneforti* (mainly), *Celtis glabrata* (rarely).

***Celticecis erzincanensis* Doğanlar n. sp.**

(Figs. 1d-f; 2, IIIa,b; 4e-f; 3e,h; 5c; 6, IIIa-d; 7c; 8, III)

Diagnosis: Galls conical, at least 5 mm in height and 1.5 mm width and consist of an outer, only slightly raised ring on the upper surface of the leaf; 2nd instar larval spatula with short conical shaft, about half length of tooth (Fig. 2, IIIa); 3rd instar larval spatula with short tooth, about 1.3 times as long as its basal breadth, shaft distinct, basally indistinct, about 2.3 times as long as tooth (Fig. 2, IIIb); pupae having space between antennal horn at least 6 times length of horn itself in ventral view (Figs. 3e,h); male genitalia with gonocoxit basally almost bare (Fig. 5c); genital base triangular as in figs. 6, IIIa,b,d; cerci long, almost 2.5 times as long as breadth (Fig. 6, IIIc); male sternite 6-8 with only two rows of setae on anterior site (Fig. 7c); female genitalia as in fig. 8, III.

Description:

Gall (Figs. 1d-f). Galls conical, at least 5 mm in height and 1.5 mm width and consist of an outer, only slightly raised ring on the upper surface of the leaf.

Adult. Body: female: 1.5-1.6 mm; male: 1.3-1.4 mm. Wing: female: 1.6 mm. male: 1.5 mm. Similar to *C. caucasicae*, except as follows: Male antenna as in figs. 4e-f; male genitalia with gonocoxit basally almost bare (Fig. 5c); genital base triangular as in figs. 6, IIIa,b,d; cerci long, almost 2.5 times as long as breadth (Fig. 6, IIIc); male sternite 6-8 with only two rows of setae on anterior site (Fig. 7c); female genitalia as in fig. 8, III.

Pupa: pupae having space between antennal horn at least 6 times length of horn itself in ventral view (Fig. 3e,h).

Larva: 2nd instar larval spatula with short conical shaft, about half length of tooth (Fig. 2, IIIa); 3rd instar larval spatula with short tooth, about 1.3 times as long as its basal breadth, shaft distinct, basally indistinct, about 2.3 times as long as tooth (Fig. 2, IIIb).

Material examined: **Holotype, male**, (on slide), Turkey: Erzincan, Bahçeyazı village. 18. III. 2013, emerged from leaf gall on *Celtis thouneforti* (M. Doğanlar), deposited in the Insect collection of Research Station of Biological Control, Adana. Paratypes: 9 females; 11 Males, same data as Holotype, 11.-25. III. 2013; 6 pupae, dissected in March 2013; 4 II. instar larvae, dissected on July, 2012; 9 III. instar larvae, dissected on March, 2013 and many galls with III. instar larvae collected from same locality in September 2012 and many galls with II. instar larvae, collected from same locality in July 2012. All of the specimens were deposited in the Insect collection of Research Station of Biological Control, Adana.

Distribution: Turkey: Erzincan, Bahçeyazı village.

Hosts: *Celtis thouneforti*.

***Celticecis malatyanensis* Doğanlar n. sp.**

(Figs. 1k-m; 2, IVb; 3l; 4g,h; 5d; 6, IVa,f; 7b; 8, IV)

Diagnosis: Galls conical, at least 5 mm in height and 1.5 mm width and consist of an outer, only slightly raised ring on the upper surface of the leaf; 2nd instar larval spatula unknown; 3rd instar larval spatula with long tooth, about 1.5 times as long as its basal breadth, shaft narrow, indistinct basally, about as long as tooth (Fig. 2, IVb); pupae having space between antennal horn at least 7 times length of horn itself in ventral view (Fig. 3l); male genitalia with gonocoxit basally setose

(Fig. 5d); genital base Y-shaped as in fig. 6, IVa; cerci long, almost twice as long as breadth (Fig. 6, IVf); male sternite 6-8 with some, sparse, long setae on anterior half (Fig. 7b); female genitalia as in fig. 8, IV.

Description:

Gall (Figs. 1k-m). Galls conical, at least 5 mm in height and 1.5 mm width and consist of an outer, only slightly raised ring on the upper surface of the leaf.

Adult. Body: female: 1.7-1.9 mm; male: 1.6-1.7 mm. Wing: female: 1.7 mm. male: 1.6 mm. Similar to *C. caucasicae*, except as follows: Male antenna as in figs. 4g,h. Male genitalia with gonocoxit basally setose (Fig. 5d); genital base Y-shaped as in Fig. 6, IVa; cerci long, almost twice as long as breadth (Fig. 6, IVf); male sternite 6-8 with some, sparse, long setae on anterior half (Fig. 7b); female genitalia as in fig. 8, IV.

Pupa: pupae having space between antennal horn at least 7 times length of horn itself in ventral view (Fig. 3l).

Larva: 2nd instar larval spatula unknown; 3rd instar larval spatula with long tooth, about 1.5 times as long as its basal breadth, shaft narrow, indistinct basally, about as long as tooth (Fig. 2, IVb).

Material examined: Holotype, male, (on slide), Turkey: Malatya, Akyaka village, 22. III. 2013, emerged from leaf gall on *Celtis glabrata* (M. Doğanlar), deposited in the Insect collection of Research Station of Biological Control, Adana. Paratypes: 7 females; 10 Males, same data as Holotype, 11.-25. III. 2013; 8 pupae and 9 III. instar larvae, dissected in March, 2013, and many galls with III. instar larvae collected from same locality in September 2012. All of the specimens were deposited in the Insect collection of Research Station of Biological Control, Adana.

Distribution: Turkey: Malatya, Akyaka village.

Hosts: *Celtis glabrata*.

ACKNOWLEDGEMENTS

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Figure 1. Galls of *Celticecis* species in Turkey. a, d, g, k. upper side; b, e, h, l. lower side; c, f, i, m. galls with larva.

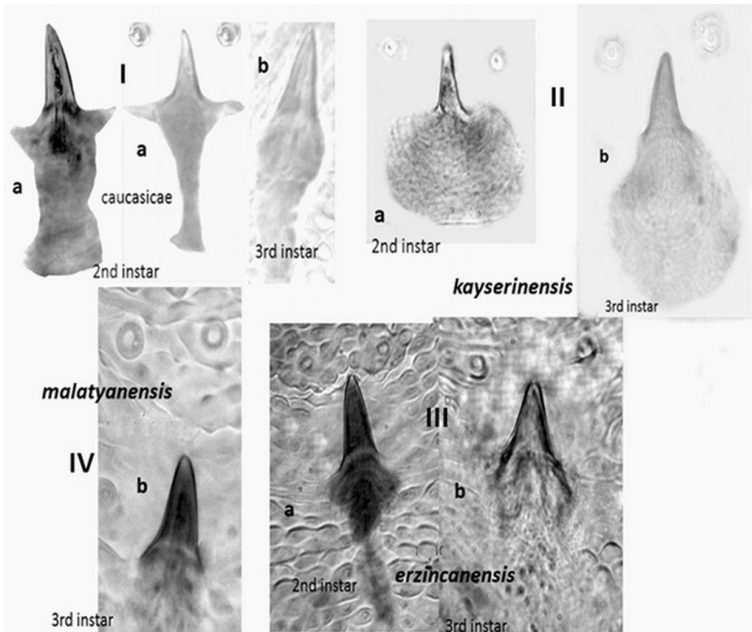


Figure 2. Larval spatulae and associated papillae of *Celticecis* species in Turkey. a. second instar larvae; b. 3rd instar larvae.

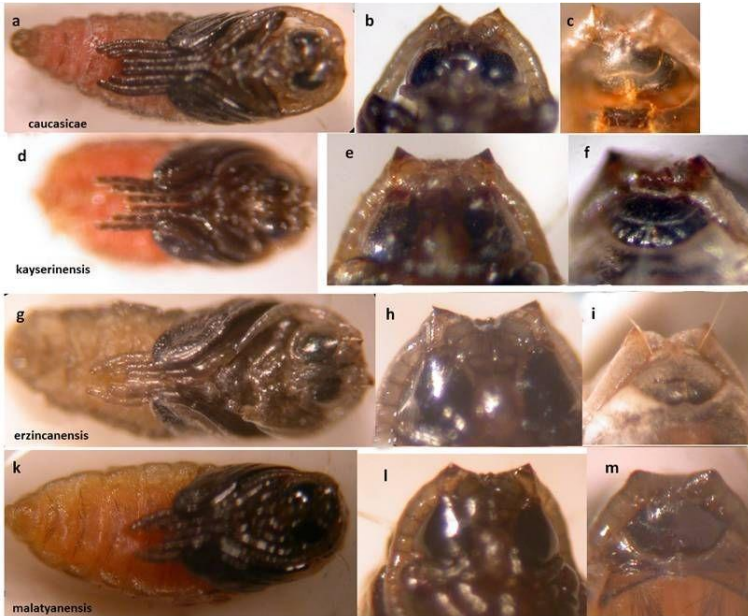


Figure 3. Pupae of *Celticecis* species in Turkey. a, d, g, k. pupae, in ventral view; b, e, h, l. antennal horn, in ventral view; c, f, I, m. antennal horn, in dorsal view.

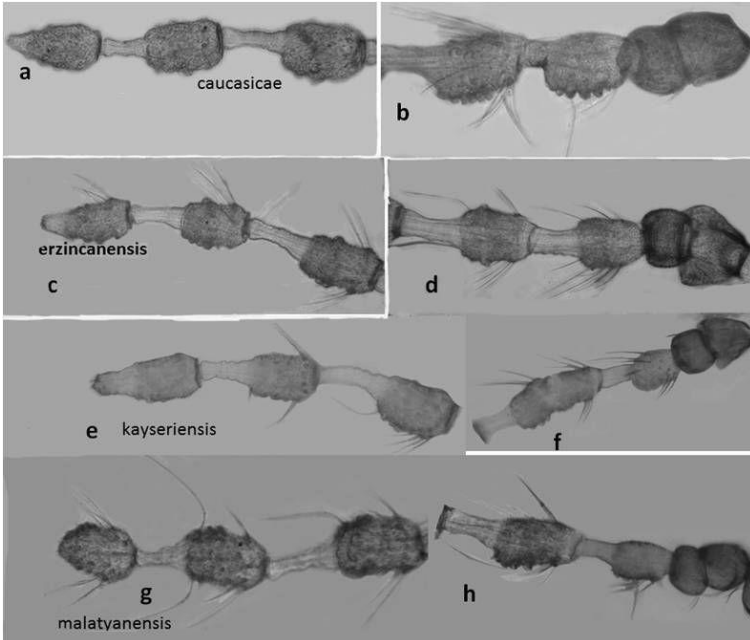


Figure 4. Male antennae of *Celticecis* species in Turkey. a, c, e, g. apical 3 segments; b, d, f, h. basal 4 segments.

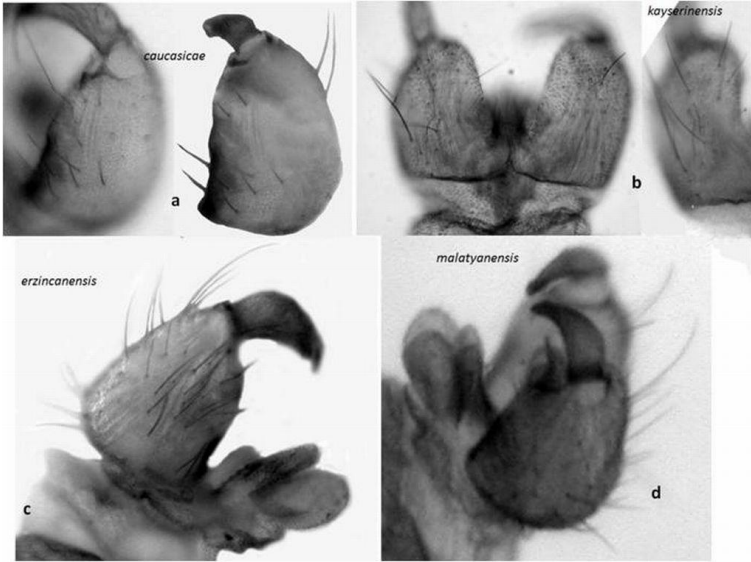


Figure 5. Male genitalia of *Celticecis* species in Turkey., setal pattern.

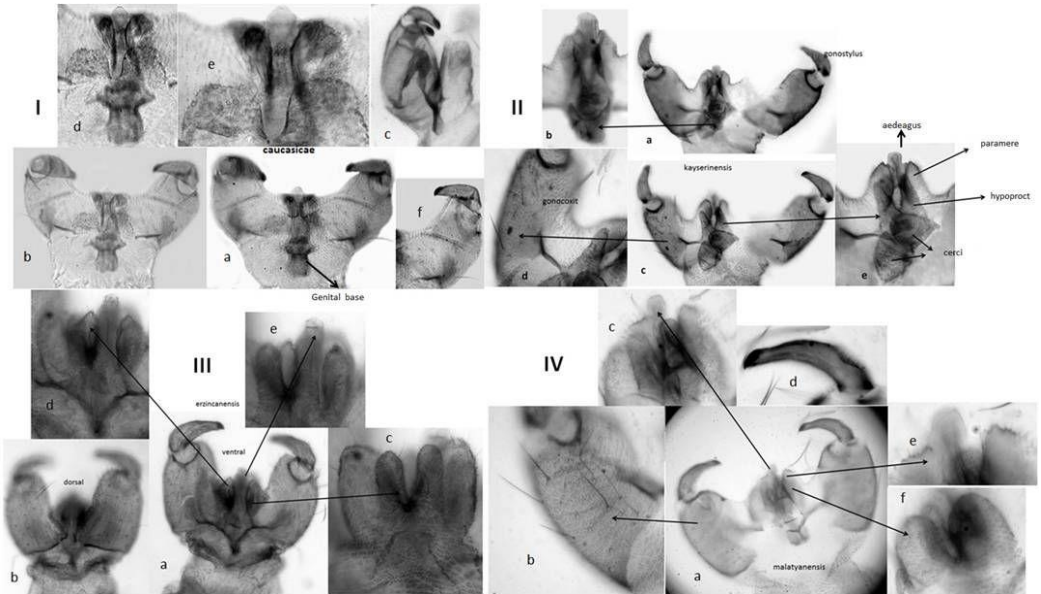


Figure 6. Male genitalia of *Celticecis* species in Turkey. I. *C. caucasicae* Gayné; II. *C. kayserinensis* n.sp.; III. *C. erzincanensis* n.sp.; IV. *C. malatyanensis* n.sp.

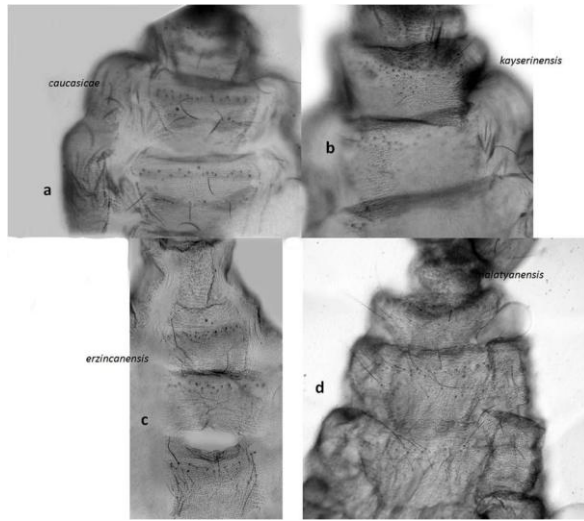


Figure 7. Male abdominal sterna of *Celticecis* species in Turkey. a. *C. caucasicae* Gayné; b. *C. kayserinensis* n.sp.; c. *C. erzincanensis* n.sp.; d. *C. malatyanensis* n.sp.

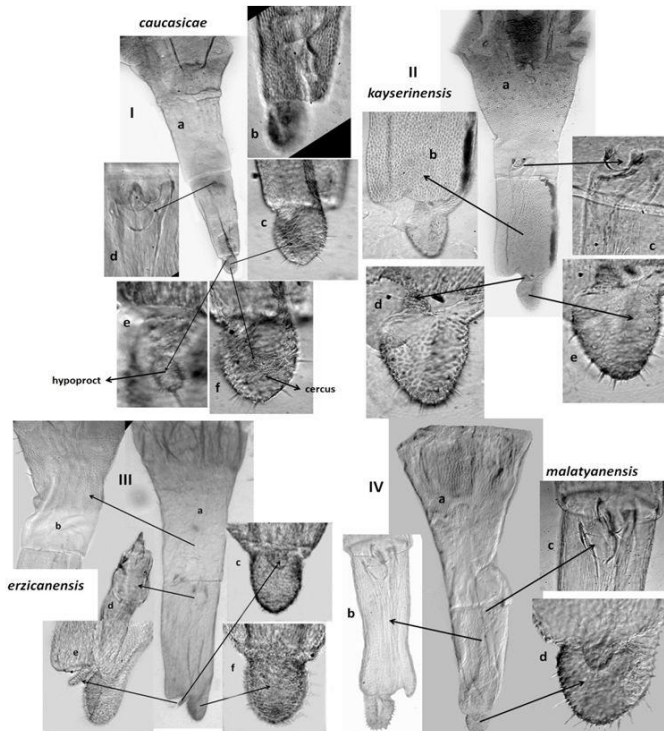


Figure 8. Female genitalia of *Celticecis* species in Turkey. I. *C. caucasicae* Gayné; II. *C. kayserinensis* n.sp.; III. *C. erzincanensis* n.sp.; IV. *C. malatyanensis* n.sp.