



## New records and an illustrated taxonomic key to the genera of the tribe Stenodemini (Hemiptera: Miridae) in Iran

**Mozhgan Zamani**

Department of Plant Protection, Faculty of Agricultural Sciences, University of Guilan, Rasht, 41635–1314, Iran.

✉ [mozhgan.zamani90@gmail.com](mailto:mozhgan.zamani90@gmail.com) <https://orcid.org/0000-0003-2081-5285>

**Reza Hosseini**

Department of Plant Protection, Faculty of Agricultural Sciences, University of Guilan, Rasht, 41635–1314, Iran.

✉ [rhosseini@guilan.ac.ir](mailto:rhosseini@guilan.ac.ir) <https://orcid.org/0000-0002-6556-8401>

**Fedor V. Konstantinov**

Zoological Institute, Russian Academy of Sciences, Universitetskaya nab. 1, St. Petersburg 199034, Russia [1]; National Museum of Natural History, Bulgarian Academy of Sciences, 1 Tsar Osvoboditel Blvd, 1000 Sofia, Bulgaria [2].

✉ [fkonstantinov@gmail.com](mailto:fkonstantinov@gmail.com) <https://orcid.org/0000-0002-7013-5686>

**ABSTRACT.** During the spring-summer of 2020–2022, field investigations were conducted in the diverse climate regions along the southern shore of the Caspian Sea. Examination of the sampled material resulted in the finding of *Acetropis carinata* (Herrich-Schaeffer, 1841) as a new genus and species for the Iranian fauna. Additionally, four more species were found: *Leptopterna inopinata* Vinokurov, 1982 and *Stenodema (Brachystira) pilosa* (Jakovlev, 1889) in Ardabil province, *Stenodema (Stenodema) virens* (Linnaeus, 1767) in Ardabil and Guilan provinces, and *Megaloceroea recticornis* (Geoffroy, 1785) in Mazandaran province. Measurements, distributional information, dorsal and lateral habitus photographs, illustrations of male and female genitalia, as well as diagnoses and redescriptions are provided for the new country and province records. A revised key was compiled for the identification of all Stenodemini genera currently known from Iran.

**Keywords:** *Acetropis*, Ardabil, Guilan, Iran, Mazandaran, Stenodemini, taxonomy

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### INTRODUCTION

The Miridae or plant bugs, with approximately 11,700 species, are the most species-rich family of Heteroptera. The largest subfamily, Mirinae Hahn, 1833, comprises around 350 genera in six tribes (Cassis & Schuh, 2012; Schuh & Weirauch, 2020; Oh et al., 2023). Three tribes, including Herdoniini Distant, 1904, Mirini Hahn, 1833, and Stenodemini China, 1943, have been reported from Iran, with only Mirini and Stenodemini having cosmopolitan distribution (Schuh & Slater, 1995; Aukema, 2024). The tribe Stenodemini comprises grass-feeding plant bugs, with 34 genera and 215 species described to date. So far, six genera (*Leptopterna*, *Megaloceroea*, *Notostira*, *Stenodema*, *Teratocoris*, and *Trigonotylus*) and 19 species have been found and documented from Iran (Schuh, 2002–2013; Hosseini, 2013; Aukema, 2024).

Several faunistic studies have been published on Stenodemini in Iran (e.g., Linnavouri & Modarres Awal, 1999; Linnavouri, 2007, 2009; Ebrahimi et al., 2012). Hosseini (2013) reviewed and compiled a key for five genera, including *Leptopterna*, *Megaloceroea*, *Notostira*, *Stenodema*, and *Trigonotylus*. Zamani & Hosseini (2020) modified this key by adding male and female genitalic characters. Being located adjacent to the Caspian Sea and bordered by the Alborz Mountains, Guilan and Mazandaran provinces experience highly variable climatic conditions. This unique geographical setting has endowed the region with a diverse flora and fauna. Hence, the insect fauna in different parts of the region is diverse and abundant.

**Corresponding author:** Reza Hosseini ✉ [rhosseini@guilan.ac.ir](mailto:rhosseini@guilan.ac.ir)

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Given the rich fauna and the pivotal role of insects as biological and ecological factors in an environment, identifying both harmful and beneficial species is crucially important (Linnavuori & Hosseini, 2000).

During the spring and summer seasons of 2020–2022, field investigations were conducted in different geographical regions along the southern shore of the Caspian Sea. In this paper, we report and briefly redescribe a new genus and species discovered in Iran, and four species new for Ardabil, Guilan, and Mazandaran provinces. In addition, a revised key for identifying Stenodemini genera currently known from Iran is compiled. Measurements, distributional information, dorsal and lateral habitus photographs, and illustrations of male and female genitalia are provided to facilitate identification.

## MATERIAL AND METHODS

Species were collected by sweeping during the spring and summer of 2020–2022 along the southern shore of the Caspian Sea. Adults were examined using a stereomicroscope (GX Microscope, Australia). Photographs of dry-mounted adult specimens were taken using a hand-made automated digital imaging system composed of a Canon® EOS 200D DSLR camera, a Canon® EF 100 mm f/2.8 USM Macro lens and a 65 mm Meike macro extension tube. Images were stacked using Helicon Focus image stacking software (ver. 6) (<http://www.heliconsoft.com>). Images and plates were edited using Adobe® Photoshop CC 2017. Genitalic structures were illustrated using a drawing tube attached to a BH-2 Olympus® microscope. The terminology for male and female genitalia follows Konstantinov (2003) and Schwartz (2008), respectively. Measurements are given in millimeters. Authentically identified specimens available in the insect collection of the Natural History Museum of the University of Guilan (UGNHM) were used for compiling the key to genera.

## RESULTS

### *Taxonomic hierarchy*

**Class Insecta Linnaeus, 1785**

**Order Hemiptera Linnaeus, 1758**

**Suborder Heteroptera Latreille, 1810**

**Family Miridae Hahn, 1831**

**Tribe Stenodemini China, 1943**

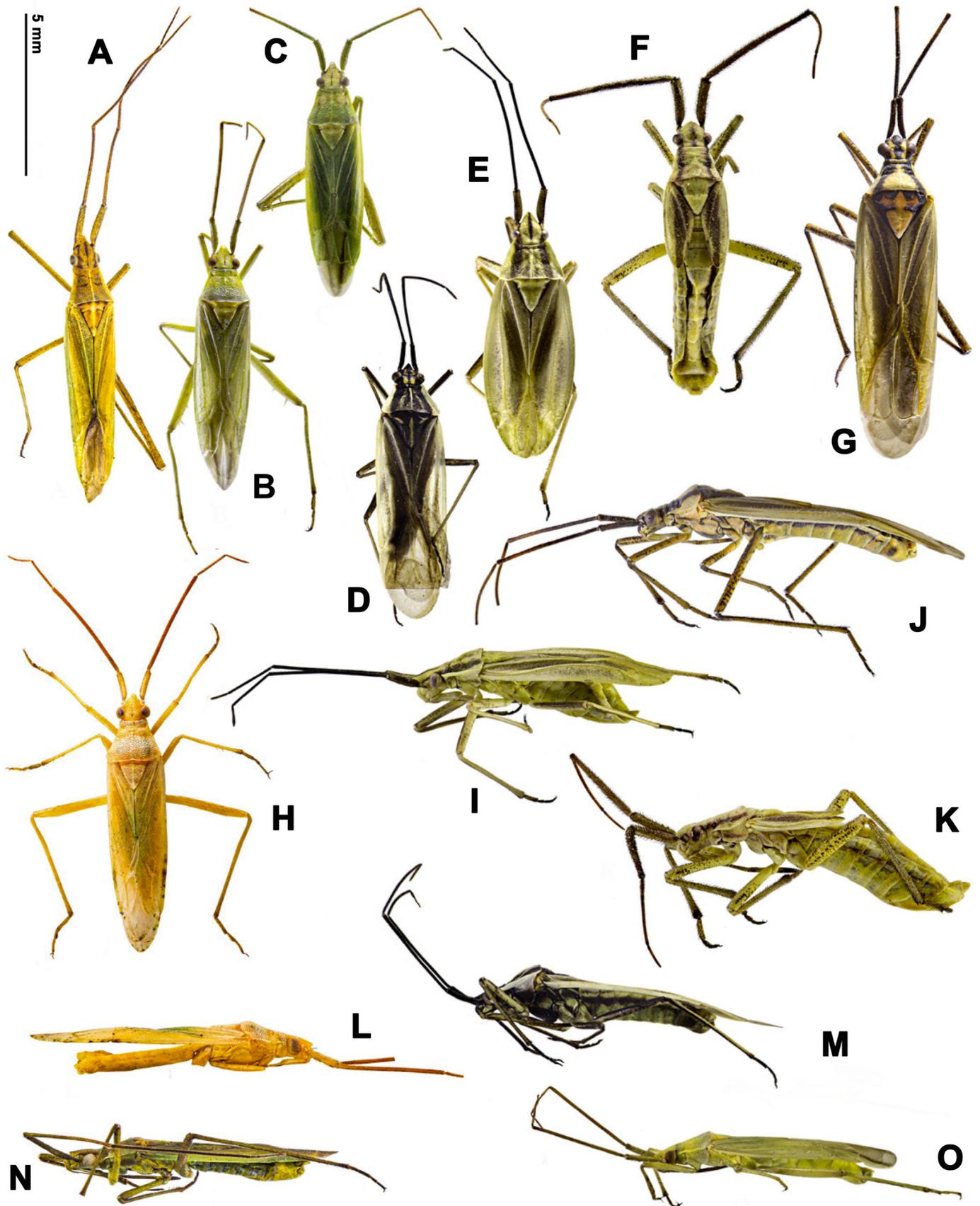
**Genus *Acetropis* Fieber, 1858**

*Acetropis* Fieber, 1858:302; Kerzhner, 1964:47 (key); Štys, 1973:9 (key); Wagner, 1974:100 (key, descriptions); Schwartz, 2008:1175 (diagnosis).

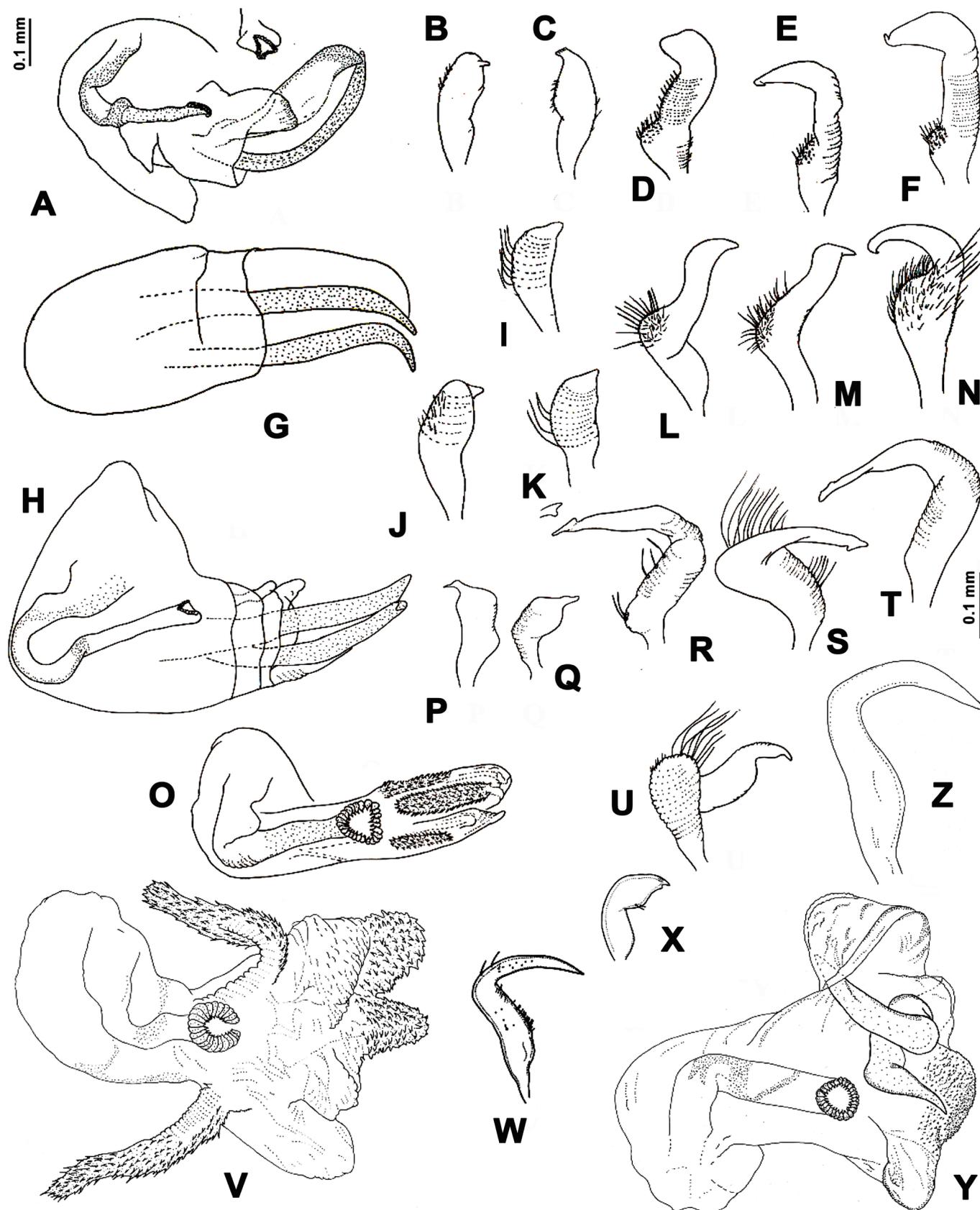
**Diagnosis.** Males macropterous; females submacropterous (hemelytra usually reduced to various extent). Body covered with sparse, fine and adpressed silvery setae; head porrect; vertex usually without longitudinal sulcus; frons usually conical and projecting to the anterior margin of clypeus; lateral margins of pronotum curved upwards, pronotum with laminate, strongly explanate lateral margins, sometimes with distinct longitudinal carina along midline; left paramere sickle-shaped; right paramere club-shaped, medially constricted; vesica with two or three long basal processes; female genitalia with narrow interramal sclerite (Schwartz, 2008).

The genus *Acetropis* Fieber, 1858 currently contains seven species subdivided into two subgenera based on the structure of the head and the first antennomere (Wagner, 1967; Štys, 1973). The subgenus *Acetropis* consists of *A. carinata* (Herrich-Schaeffer, 1841), *A. americana* Knight, 1927, *A. gimmerthali* (Flor, 1860), *A. longirostris* Puton, 1875, *A. sinuata* Wagner, 1951, *A. stysi* Remane & Günther, 2008, and *A. sinuata* Wagner, 1951. The subgenus *Paracetropis* Wagner, 1962 is monotypic, containing *A. atropis* Reuter, 1895. Of these, six species are represented in the western Palearctic region, while *A. americana* is found exclusively in western Oregon, North America (Knight, 1927; Slater & Baranowski, 1978). This genus occurs on grasses (Poaceae), although few specific host plants have been identified (Southwood & Leston, 1959; Koppányi, 1965). In this paper, *Acetropis* is reported for the first time from Iran.

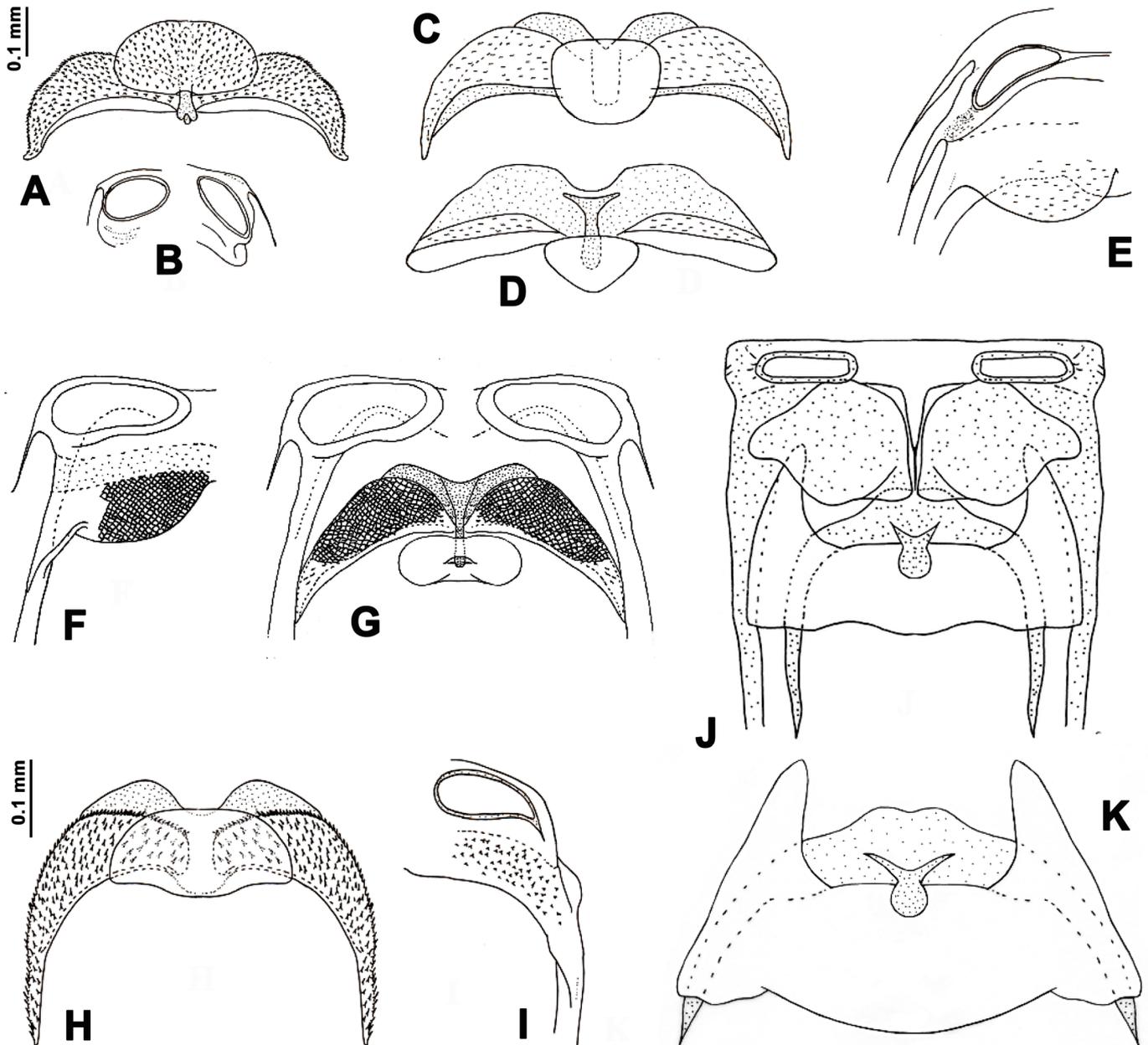
***Acetropis carinata* (Herrich-Schaeffer, 1841)** (Figs 1D, 1E, 1I, 1M; 2A–F; 3A–B; 4A–B)*Lopus carinatus* Herrich-Schaeffer, 1841:49.*Acetropis carinatus*: Fieber, 1861:244; Kerzhner, 1964:962; Wagner, 1974:102.**Material examined.** ARDABIL: Asalem-Khalkhal rd Site 3 (37°34'48.6"N 48°39'39.1"E), 22.vi.2021, 1♂; 11.vii.2022, R. Hosseini 1♂; 27.vi.2022, R. Hosseini 1♂/1♀.**Diagnosis.** Males macropterous; females submacropterous (hemelytra usually reaching apex of abdomen). Body narrow and elongated, stramineous, with longitudinal black stripes and covered with scarce, fine and adpressed silvery setae; head porrect; frons projecting to the anterior margin of clypeus, pointed at apex; ocular index 1.72–1.81♂/3♀; antenna uniformly black; labium reaching metacoxa; pronotum with distinct longitudinal median carina, lateral margins broadly explanate; apophysis of left paramere narrowing towards apex, apically hook shaped (Fig. 2E–F); endosoma with two spicules (Fig. 2A); median process of female genitalia elongated and apically trifurcated (Fig. 3A); dorsal margin of second valvulae with a few teeth (Fig. 4A).**Measurements.** body length ♂/♀: 7.38–7.48/6.7; interocular width/width of eye ♂/♀: 0.4/0.59; lengths of antennal segments I–IV ♂/♀: 0.68–0.77, 2.2–2.4, 1.43, 0.5/ 0.92, 2.9, 1.43, 0.52; 2nd segment ♂/♀: 2.4–2.6×/ 2.9× as long as width of head; length of pronotum (dorsal view) ♂/♀: 0.7/0.8; posterior width of pronotum ♂/♀: 1.6/1.6.**Male genitalia.** Genital opening directed posteriorly; left paramere sickle-shaped, dorsally sinuated, sensory lobe with setiferous tuberculus, apophysis narrowing towards apex, apically hook shaped; right paramere club-shaped, medially constricted, pointed at apex; vesica with membranous lobes and two spicules; secondary gonopore V-shaped and thickened rims; ductus seminis narrow, sclerotized, distal half with indistinct coils (Fig. 2A–F).**Female genitalia.** Dorsal labiate plate membranous; sclerotized rings moderately large, elongate-oval, distinctly separated, oriented obliquely; posterior wall with interramal sclerites (medially connected), spinulate interramal lobes (medially separated), dorsal structure rounded and spinulate, median process elongated and apically trifurcated. First valvulae almost triangular and finally serrate, ventral margin of second valvulae edentate and dorsal margin with a few teeth (Fig. 3A–B).**General distribution.** Europe: Austria, Belgium, Bosnia Hercegovina, Bulgaria, Belarus, Crete?, Croatia, Czech Republic, Denmark, France, Germany, Greece, Hungary, Italy, Kazakhstan, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Moldavia, Netherlands, Poland, Romania, Russia (Central and south territories of European), Serbia, Slovakia, Spain, Switzerland, Ukraine; North Africa: Algeria, Tunisia; Asia: Armenia, Azerbaijan, Kazakhstan, Turkey (Aukema, 2024).**Comments.** *Acetropis carinata* could be easily distinguished from *A. longirostris* Puton, 1875, a species found in adjacent countries of Iran (Armenia, Azerbaijan, Kazakhstan, and Turkey) by the following characters: pronotum has a distinct longitudinal carina in the middle, the apex of the frons is pointed and covers the clypeus, and the labium reaches metacoxae. In *A. longirostris* the pronotum has an indistinct carina, the apex of the frons does not cover the clypeus and the labium extends well beyond the metacoxae (Kerzhner, 1964).**Biology.** Adults are found from June to the end of July; it overwinters as an egg, and has one generation per year (Wachmann et al., 2004). *Acetropis carinata* is reported for the first time from Iran. This species was collected by sweeping grasses in a hilly pasture (Fig. 5A–B).**Genus *Leptopterna* Fieber, 1858***Leptopterna* Fieber, 1858:302; Kerzhner, 1964 (key); Wagner, 1974:104 (key, descriptions); Vinokurov, 1982:95 (revision); Schwartz, 2008:1177 (diagnosis).*Leptopterna* is a Holarctic genus comprising 16 species (Schuh, 2002–2013), including three species recorded from Iran: *L. ferrugata*, *L. inopinata* and *L. putshkovi* (Aukema, 2024).***Leptopterna ferrugata* (Fallén, 1807)***Miris ferrugatus* Fallén, 1807:107*Leptopterna ferrugata*: Reuter, 1875:14; Kerzhner, 1964:961; Wagner, 1974:107; Vinokurov, 1982:109.



**Figure 1.** Habitus photographs of the newly recorded species: **A, N.** (♂) – *Megaloceroea recticornis* (Geoffroy, 1785); **B., C., O.** (B., O. ♂, C. ♀) – *Stenodema (Brachystira) pilosa* (Jakovlev, 1889); **D., E., I., M.** (D., M. ♂, I., M. ♀) – *Acetropis carinata* (Herrich-Schaeffer, 1841); **F., G., J., K.** (G., J. ♂, F., K. ♀) – *Leptopterna inopinata* Vinokurov, 1982); **H., L.** (♂) – *Stenodema (Stenodema) virens* (Linnaeus, 1767).



**Figure 2.** Male genitalia of the newly recorded species: **A-F.** *Acetropis carinata* (Herrich-Schaeffer, 1841); **G-N.** *Leptopterna inopinata* Vinokurov, 1982; **O-U.** *Stenodema (Brachystira) pilosa* (Jakovlev, 1889); **V-X.** *Stenodema (Stenodema) virens* (Linnaeus, 1767); **Y-Z.** *Megaloceroea recticornis* (Geoffroy, 1785); **A., G., H., O., V., Y.** Vesica; **D., E., F., L., M., N., R., S., T., U., W., Z.** Left paramere; **B., C., I., J., K., P., Q., X.** Right paramere; (O-U. Same scale).

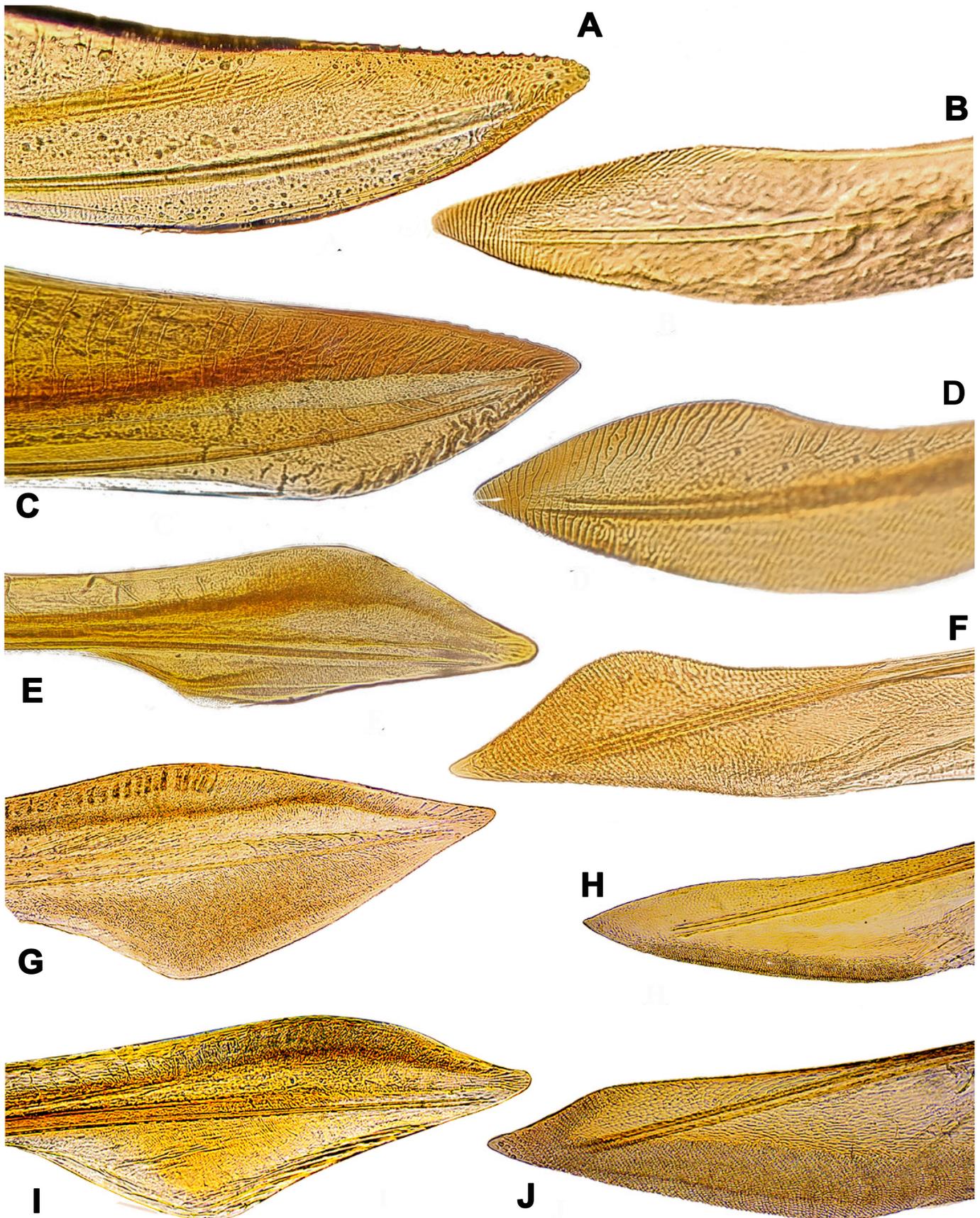


**Figure 3.** Female genitalia of the newly recorded species: **A–B.** *Acetropis carinata* (Herrich-Schaeffer, 1841); **C–E.** *Leptopterna inopinata* Vinokurov, 1982; **F–G.** *Stenodema (Stenodema) virens* (Linnaeus, 1767); **H–I.** *Stenodema (Brachystira) pilosa* (Jakovlev, 1889); **J–K.** *Megaloceroea recticornis* (Geoffroy, 1785); (H., I. same scale).

**General distribution.** Europe: Albania, Austria, Belgium, Bosnia Hercegovina, Bulgaria, Belarus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Montenegro, Netherlands, Norway, Poland, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey (European part), Ukraine; Asia: Turkey (Asian part), West and East Siberia; North America: USA (Alaska) and Canada (Yukon & Northwest Territories) (Scudder & Schwartz, 2001; Aukema, 2024).

**Distribution in Iran.** This species was previously recorded from East Azarbaijan (Khaghaninia et al., 2011).

**Comments.** The presence of *L. ferrugata* in Iran is doubtful and should be verified through an analysis of the East Azarbaijan specimens studied by Khaghaninia et al. (2011) (Aukema et al., 2013).



**Figure 4.** First and second valvula of the ovipositor: **A-B.** *Acetropis carinata* (Herrich-Schaeffer, 1841); **C-D.** *Leptopterna inopinata* Vinokurov, 1982; **E-F.** *Stenodema (Brachystira) pilosa* (Jakovlev, 1889); **G-H.** *Megaloceroea recticornis* (Geoffroy, 1785); **I-J.** *Stenodema (Stenodema) virens* (Linnaeus, 1767); **B., D., F., H., J.** First valvula; **A., C., E., G., I.** Second valvula.

***Leptopterna inopinata* Vinokurov, 1982 (Figs 1F, 1G, 1J, 1K; 2G–N; 3C–E; 4C–D)***Leptopterna inopinata* Vinokurov, 1982:111.**Material examined.** ARDABIL: Asalem-Khalkhal rd Site 3 (37°28'27.8"N 48°39'27.0"E), 22.vi.2021, R. Hosseini, 2♂; Poonel-Khalkhal Site 1 (37°34'21.1"N 48°40'27.6"E), 27.vi.2022, R. Hosseini, 2♂/♀.**Diagnosis.** Male macropterous and female brachypterous; body stramineous, with longitudinal black markings and covered with erect short golden setae; frons flat, projecting to the anterior margin of clypeus, rounded at apex; eyes removed from anterior margin of pronotum; ocular index 1.2–1.5♂/2–2.2♀; labium reaching mesocoxa in male and metacoxa in female; second antennomere in female proximally incrassate, narrow towards apex; 2nd segment ♂/♀: 2.7×/ 3.2–3.6× as long as width of head; 2nd segment ♂/♀: 1.5–1.7×/ 2.4× as long as posterior width of pronotum; vesica with several membrane lobes and two long spicules (Figs 2G, 2H); dorsal structure in female genitalia sack-shaped and median process elongated (Fig. 3C–D); first valvulae almost triangular, ventral and dorsal margins finely serrate, dorsal margin of second valvulae with a few blunt teeth (Fig. 4C–D).**General distribution.** Armenia, Azerbaijan, Georgia, Iran (Aukema, 2024).**Distribution in Iran.** Ardabil (Current study); Khorasan (Linnavuori & Modarres Awal, 1999).**Comments.** Collected by sweeping grasses in a hilly pasture (Fig. 5A–B). *Leptopterna inopinata* is reported for the first time from Ardabil province.***Leptopterna putshkovi* Vinokurov, 1982***Leptopterna putshkovi* Vinokurov, 1982:114**Material examined.** ARDABIL: 20–30 km E of Khalkhal (37°37'49" N, 48°33'03" E), 21.vii.1996. R. Linnavuori, 1♀; TEHRAN: Azad Bar, 70 km W Karaj, 2410 m a.s.l., 8–10.vii.1995, R. Linnavuori, 6♂/1♀; Kandovan, 2550 m a.s.l., 3–4.vii.1995, R. Linnavuori, 4♀ (UGNHM).**General distribution.** Armenia, Azerbaijan and Iran (Aukema, 2024).**Distribution in Iran.** Ardabil, Tehran (Linnavuori, 2007; Hosseini, 2013).**Genus *Megaloceroea* Fieber, 1858***Megaloceroea* Fieber, 1858:301; Wagner, 1974:120 (description); Schwartz, 2008:1157 (diagnosis).*Megaloceroea* contains a single species with a wide Holarctic distribution, inhabiting grasses, especially on slopes and in forest edges undergrowth in deciduous forests (Linnavuori, 2007).***Megaloceroea recticornis* (Geoffroy, 1785) (Figs 1A, 1N; 2Y–Z; 3J–K; 4G–H)***Cimex recticornis* Geoffroy [in Fourcroy], 1785:209.*Megaloceroea recticornis*: Fieber, 1861:243; Kerzhner, 1964:959; Wagner, 1974:120.**Material examined.** MAZANDARAN: Ramsar (36°53'56.4"N 50°35'31.2"E), 22.vi.2018. M. Zamani, 2♂/2♀. GUILAN: Talabon Site 1 (36°45'21.6"N 50°18'14.4"E), 30.vi.2021. R. Hosseini, 4♂/♀; Tarpu Site 2 (36°49'37.2"N 50°14'52.8"E), 30.vi.2021. R. Hosseini, >25♂/♀; Masal (Asb Riseh) Site 2 (37°29'2"N 48°99'4"E), 18.vii.2021. R. Hosseini, 5♂/♀; Gilvan-Masal Site 1 (37°18'20.2"N 49°01'35.0"E), 18.vii.2021. R. Hosseini, 2♂/♀; Ardeh Site 3 (37°32'27.6"N 48°49'08.4"E), 20.vi.2021. R. Hosseini, >20♂/♀; Ardeh Site 2 (37°32'18.3"N 48°49'52.9"E), 20.vi.2021. R. Hosseini, 10♂/♀; Eshkevarat Site 5 (36°52'25.3"N 50°13'43.1"E), 31.v.2021. R. Hosseini, >20♂/♀; Eshkevarat Site 3 (36°52'29.2"N 50°10'41.2"E), 31.v.2021. R. Hosseini, >20♂/♀; Eshkevarat Site 4 (36°52'21.3"N 50°11'22.6"E), 31.v.2021. R. Hosseini, >10♂/♀; Halu-Dasht Site 1 (37°00'03.4"N 50°04'21.3"E), 27.vii.2021. R. Hosseini, 9♂/♀; Roshan Deh Site 4 (37°31'27.9"N 48°53'17.9"E), 20.vii.2022, R. Hosseini, 3♂/♀; Roshan Deh Site 3 (37°31'04.3"N 48°52'17.9"E), 20.vii.2022, R. Hosseini, 1♀; Eshkevarat Site 1 (36°52'42.3"N 50°12'11.3"E), 22.vi.2022, R. Hosseini, >25♂/♀; Eshkevarat Site 3 (36°52'24.4"N 50°11'23.2"E), 22.vi.2022, R. Hosseini, 12♂/♀; Masuleh Site 1 (37°10'17.1"N 48°59'09.6"E), 27.vii.2022, R. Hosseini, 1♂; Gilvan-Masal Site 2 (37°18'17.5"N 49°01'44.4"E; 37°18'04.6"N 49°00'05.7"E), 20.vi.2022, R. Hosseini, 11♂/♀.**Diagnosis.** Body greenish, elongated and narrow; head porrect; frons flat and projecting to anterior margin of clypeus; clypeus swollen; first antennomere very long and with short black bristle like setae;

2nd segment ♂/♀: 3.8×/ 4.2× as long as width of head; 2nd segment ♂/♀: 2.8×/ 2.1–2.7× as long as posterior width of pronotum; calli large and separated; pronotum punctuated; hind femora slender and long; vesica with spinulate lobes and two spicules (Fig. 2Y); sclerotized rings of female genitalia ovoid, posterior wall with prominent and large inter ramal lobes (Fig. 3J–K).

**General distribution.** Europe: Albania, Andorra, Austria, Belgium, Bosnia Hercegovina, Bulgaria, Belarus, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Moldavia, Montenegro, Netherlands, Norway, Poland, Romania, Russia (European part), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine; North Africa: Algeria, Morocco; Asia: Armenia, Azerbaijan, Georgia, Iran, Japan, Kazakhstan, Russia (West Siberia), Turkey; North America and New Zealand (Aukema, 2024).

**Distribution in Iran.** Golestan (Heiss & Linnavuori, 2002), Guilan (Linnavuori, 2007; Hosseini, 2013); Mazandaran (Current study).

**Remarks.** This species is reported for the first time from Mazandaran province.

### Genus *Notostira* Fieber, 1858

*Notostira* Fieber, 1858:301; Kerzhner, 1964:958 (key); Wagner, 1974:116 (key, description); Golub, 1978:1359 (revision); Schwartz, 2008:1191 (diagnosis).

This Palearctic genus contains four species (Schwartz, 2008; Schuh, 2002–2013), three of which, *N. erratica*, *N. elongata* and *N. poppiusi*, have been reported from Iran (Aukema, 2024).

### *Notostira elongata* (Geoffroy, 1785)

*Cimex elongatus* Geoffroy, 1785:208

*Notostira elongata*: Wagner, 1957:1; Kerzhner, 1964:959 (key); Wagner, 1974: 117; Golub, 1978:1360.

**Material examined.** ARDABIL: Majareh Site 3 (37°33'57.6"N 48°36'25.2"E), 5.vii.2021, R. Hosseini, 2 ♂/♀; Majareh Site 4 (37°33'59.3"N 48°36'26.3"E) 27.vi.2022, R. Hosseini, 16 ♂/♀.

**General distribution.** Transpalearctic species. Europe: Austria, Belgium, Bulgaria, Belarus, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Moldavia, Netherlands, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden, Ukraine; North Africa: Algeria, Morocco; Asia: Armenia, Azerbaijan, Georgia, Iran, Lebanon, Kazakhstan, Kirgystan, Turkey, Russia (Aukema, 2024).

**Distribution in Iran.** Ardabil (Modarres Awal, 1987; Linnavuori, 2007; Hosseini, 2013), East Azarbaijan (Modarres Awal, 1997c; Hassazadeh et al., 2009; Gharaat et al., 2009; Khaghaninia et al., 2013), Khorasan (Modarres Awal, 1997b), Tehran (Linnavuori, 2007).

**Remarks.** Collected by sweeping in a mixture of grasses (Poaceae) and from *Medicago sativa* (Fig. 5C–D).

### *Notostira erratica* (Linnaeus, 1758)

*Cimex erraticus* Linnaeus, 1758:449.

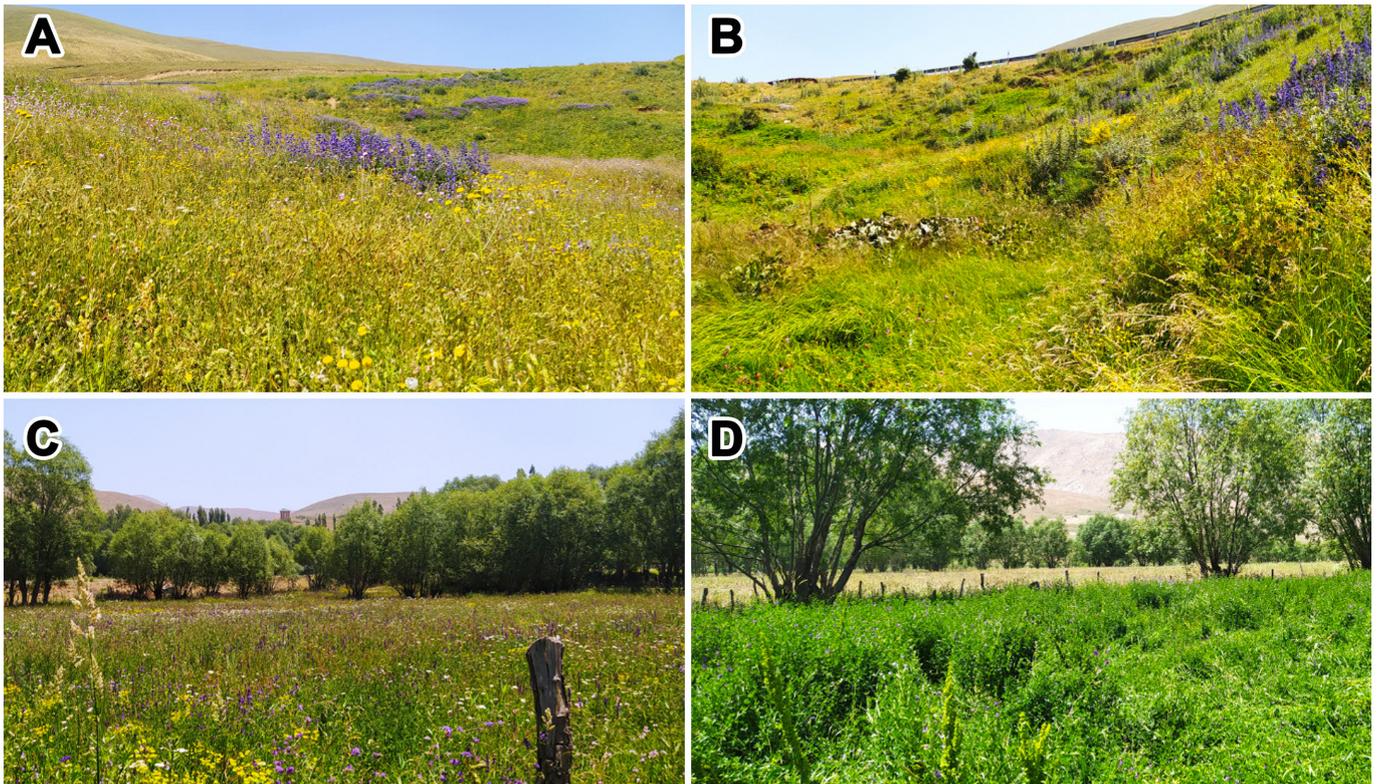
*Notostira erratica*: Fieber, 1861:242; Kerzhner, 1964:959; Wagner, 1974:118; Golub, 1978:1360.

**Material examined.** ARDABIL: Majareh Site 4 (37°33'58.1"N 48°36'27.4"E), 23.vii.2022, R. Hosseini, 7 ♂/♀; GUILAN: Deylaman Site 1 (36°51'54.0"N 49°54'21.6"E), 28.vi.2021, R. Hosseini, 2 ♂/♀.

**General distribution.** Europe: Albania, Andorra, Austria, Bosnia Hercegovina, Bulgaria, Belarus, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Great Britain, Germany, Greece, Hungary, Ireland, Italy, Kazakhstan?, Latvia, Liechtenstein, Lithuania, Macedonia, Moldavia, Montenegro, Norway, Poland, Portugal, Romania, Russia (CT NT ST), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine; Asia: Armenia, Azerbaijan, Georgia, Iran, Russia (WS), Turkey, Turkmenistan (Aukema, 2024).

**Distribution in Iran.** Ardabil (Modarres Awal, 1996, 1997c), East Azarbaijan (Modarres Awal, 1997c), Golestan (Heiss & Linnavuori, 2002), Guilan (Current study), Tehran (Hoberlandt, 1955).

**Remarks.** Listed in Iran on *Medicago sativa* and *Triticum* sp. (Modarres Awal, 1996; Modarres Awal, 1997c). It was collected by sweeping in a mixture of grasses (Poaceae) and *Medicago sativa* (Fig. 5C–D).



**Figure 5.** Habitats and plant associations: **A–D.** Habitats of *Stenodema* (*Stenodema*) *virens* (Linnaeus, 1767); **A–B.** Habitats of *Acetropis carinata* (Herrich-Schaeffer, 1841) and *Leptopterna inopinata* Vinokurov, 1982; **B–C.** Habitats of *Notostira elongata* (Geoffroy, 1785) and *Notostira erratica* (Linnaeus, 1758).

### *Notostira poppiusi* Reuter, 1911

*Notostira poppiusi* Reuter, 1911:321; Golub, 1978:1360.

**Material examined.** ARDABIL: Majareh–Kolur (37°31'46"N, 48°37'42"E), 15.ix.1998, R. Hosseini, 1♂; KHORASAN-e RAZAVI: 70 km W of Darreh Gaz, 14.vi. 1994; R. Linnavuori, 1♀; Khargh 70 km SW of Quchan, 8–9.vi.1994, R. Linnavuori, 3♂/1♀; WEST AZERBAIJAN: near Sardasht, 14–15.vi.2005. 1♀, ZANJAN: 20–35 km E of Zanjan, 13.vii.2004, R. Linnavuori, 1♂ (UGNHM)

**General distribution.** Irano-Turanian species. Asia: Armenia, Azerbaijan, China, Iran, Kazakhstan, Kyrgyzstan, Tadjikistan, Turkey (Asian part) and Turkmenistan (Aukema, 2024).

**Distribution in Iran.** Ardabil (Linnavuori, 2007; Hosseini, 2013), East Azarbaijan (Linnavuori, 2009), Khorasan-e Razavi (Linnavuori & Modarres Awal, 1999), Kordestan (Ebrahimi et al., 2012), Tehran (Linnavuori, 2007), West Azarbaijan (Linnavuori, 2009), Zanjan (Linnavuori, 2007).

**Comments.** Reported on *Cyperus* sp. and *Cynodon dactylon* (Ebrahimi et al., 2012).

### Genus *Stenodema* Laporte, 1833

*Stenodema* Laporte, 1832:40; Kerzhner, 1964:958 (key); Wagner, 1974 (key, description); Muminov, 1989 (revision); Schwartz, 2008 (diagnosis).

This genus currently includes 57 species and has a principally Holarctic distribution, with several species reported from Southeast Asia and one from South Africa (Schwartz, 2008; Schuh, 2002–2013). So far five species (*S. calcarata*, *S. pilosa*, *S. laevigata*, *S. turanica*, and *S. virens*) have been found and documented from Iran (Hosseini, 2013).

### *Stenodema* (*Brachystira*) *calcarata* (Fallén, 1807)

*Miris calcaratus* Fallén, 1807:110.

*Stenodema calcaratum*: Reuter, 1904a; Kerzhner, 1964:958; Wagner, 1974:110.

*Stenodema calcarata*: Kerzhner, 1988:99; Muminov, 1989:126; Kerzhner & Josifov, 1999:191.

**Material examined.** ARDABIL: Asalem-Khalkhal Site 3 (37°34'53.1"N 48°39'35.4"E), 22.vi.2021, R. Hosseini, 5♂/♀; Majareh Site 4 (37°33'59.3"N 48°36'26.3"E), 27.vi.2022, R. Hosseini 4♂/♀; GUILAN: Rostam abad-Salansar Site 2 (36°55'10.1"N 49°22'34.5"E), 13.vi.2021, R. Hosseini, 1♂; Talesh Site 5 (37°48'28.8"N 48°49'33.6"E), 12.vii.2021, R. Hosseini, 1♀; Lur Site 2 (36°51'39.6"N 49°53'08.2"E), 28.vi.2021, R. Hosseini, 3♂/♀; Malumeh Site 4 (36°50'58.2"N 49°55'53.4"E), 25.v.2021, 3♂/♀; Eshkevarat Site 4 (36°58'38.1"N 50°16'55.0"E), 22.vi.2022, R. Hosseini, 1♂; Chahar Mahal Site 3 (36°46'36.2"N 49°43'58.5"E), 13.vii.2022, R. Hosseini, 3♂/♀; Lur (Deylaman) Site 5 (36°51'39.6"N 49°53'08.2"E), 13.vi.2022, R. Hosseini, 2♀; Pirkooch Site 3 (36°50'23.0"N 50°01'11.7"E), 16.vii.2022, R. Hosseini, 5♂/♀.

**General distribution.** Transpalaeartic species; Europe: Albania, Austria, Belgium, Bosnia Hercegovina, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Ireland, Italy, Kazakhstan, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Moldavia, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey (European part), Ukraine, Yugoslavia; North Africa: Algeria, Morocco, Tunisia; Asia: Armenia, Azerbaijan, China (Northeastern, Northern, and Northwestern), Georgia, Iran, Iraq, Israel, Japan, Kazakhstan, Kirgystan, Korea, Lebanon, Russia (from Eastern Siberia to the Far East), Syria, Tadjikistan, Turkey, Uzbekistan (Aukema, 2024).

**Distribution in Iran.** Ardabil (Linnavuori, 2007; Hosseini, 2013), East Azarbaijan (Linnavuori, 2009; Khaghaninia et al., 2010a, 2010b), Fars (Linnavuori, 2009), Golestan (Heiss & Linnavuori, 2002), Guilan (Linnavuori, 2007; Hosseini, 2013; Zamani, 2021), Kermanshah (Linnavuori, 2009), Khorasan (Linnavuori & Modarres Awal, 1999; Heiss & Linnavuori, 2002), Khuzestan (Linnavuori, 2009), Kordestan (Ebrahimi et al., 2012), Kuhgiluyeh and Boyerahmad (Linnavuori, 2009), Markazi (Arkani et al., 2011), Mazandaran (Heiss & Linnavuori, 2002; Zamani, 2021), Tehran (Linnavuori, 2007), West Azarbaijan (Linnavuori, 2009), Zanjan (Linnavuori, 2007).

**Comments.** Living on numerous host plants.

***Stenodema (Brachystira) pilosa (Jakovlev, 1889)* (Figs 1B, 1C, 1O; 2O-U; 3H-I; 4E-F)**

*Brachytropis pilosa* Jakovlev, 1889:243.

*Stenodema pilosum*: Reuter, 1904a:3

*Stenodema pilosa*: Muminov, 1989:127; Kerzhner & Josifov, 1999:192.

**Material examined.** ARDABIL: Askestan Site 1 (37°28'27.8"N 48°39'27.0"E), 11.vii.2022, R. Hosseini, 3♂/♀. KHORASAN-e RAZAVI, Lotfabad, 15.vi.1994, nr Parvand 70km W of Sabzevar, 4.vii.1994, R. Linnavuori, 3♂/1♀, and WEST AZARBAIJAN: Marangalu nr Urmieh, 15-17.vii.2004, R. Linnavuori, 1♂ (UGNHM).

**Diagnosis.** body narrow and elongated; covered with decumbent short whitish setae; frons prolonged forward; clypeus projected; ocular index 1.7–2♂/2–2.2♀; third and fourth antennomere usually brownish; 2nd segment ♂/♀: 2.8–3×/ 2.3–2.5× as long as width of head; 2nd segment ♂/♀: 1.9–2.1×/1.5× as long as posterior width of pronotum; pronotum and scutellum punctuated; metafemora medially with a short tooth and subapically with a pair of long and short teeth; apex of left paramere slightly expanded (Fig. 2R–U); vesica with several membranous and three dentate lobes, without spicule (Fig. 2O); sclerotized rings in female genitalia moderately large and elongate oval, posterior wall with large, spinulate interramal lobes, rounded dorsal structure and indistinct median process (Fig. 3H–I); first valvulae almost triangular, ventral and dorsal margins finely serrate; second valvulae edentate (Fig. 4E–F).

**General distribution.** Holarctic species. Europe: Kazakhstan, Russia (Central and South European territories), Ukraine; Asia: Armenia, Azerbaijan, China (Northern, Northwestern, and Southwestern), Iran, Kazakhstan, Kyrgyzstan, Mongolia, Tadjikistan, Turkey, Uzbekistan; North America: USA (Aukema, 2024; Namyatova et al., 2024).

**Distribution in Iran.** Ardabil (Current study), Khorasan (Linnavuori & Modarres Awal, 1999), West Azarbaijan (Linnavuori, 2009).

**Comments.** Collected on undergrowth grasses. In this research, *Stenodema pilosa* is reported for the first time from Ardabil province.

***Stenodema (Stenodema) laevigata (Linnaeus, 1758)****Cimex laevigatus* Linnaeus, 1758:449.*Stenodema laevigatum*: Reuter, 1904a:6; Kerzhner, 1964:958; Wagner, 1974:113.*Stenodema laevigata*: Muminov, 1989:128; Kerzhner & Josifov, 1999:195.

**Material examined.** ARDABIL: Askestan Site 1 (37°27'57.6"N 48°39'54.0"E), 5.vii.2021, R. Hosseini, 10♂/♀; Majareh-Kolor Site 2 (37°25'48.0"N 48°41'24.0"E), 5.vii.2021, R. Hosseini, >20♂/♀; Majolan Site 2 (37°14'30.2"N 48°50'56.7"E), 27.vii.2022, R. Hosseini, 1♂; Majolan-Masuleh-Site 3 (37°14'31.7"N 48°49'53.7"E), 27.vii.2022, R. Hosseini, 5♂/♀; GUILAN: Talabon Site 1 (36°45'21.6"N 50°18'14.4"E), 30.vi.2021, R. Hosseini, 20♂/♀; Tarpu Site 2 (36°49'37.2"N 50°14'52.8"E), 30.vi.2021, R. Hosseini, 7♂/♀; Damash Site 5 (36°46'37.2"N 49°43'58.8"E), 21.vii.2021, R. Hosseini, 1♂; Deylaman Site 2 (36°54'39.0"N 49°54'42.2"E), 25.v.2021, R. Hosseini, 1♀; Deylaman Site 1 (36°51'54.0"N 49°54'21.6"E), 28.vi.2021, R. Hosseini, 17♂/♀; Halu-Dasht Site 1 (37°00'03.4"N 50°04'21.3"E), 27.vii.2021, R. Hosseini, 1♂; Roshan deh Site 4 (37°31'27.9"N 48°53'17.9"E), 20.vii.2022, R. Hosseini, 2♂/♀; Ardeh Site 1 (37°32'19.1"N 48°49'50.4"E), 20.vii.2022, R. Hosseini, 1♀; Chahar Mahal Site 3-4 (36°46'36.2"N 49°43'58.5"E), 13.vii.2022, R. Hosseini, 11♂/♀.

**General distribution.** Western Palaearctic species; Europe: Albania, Austria, Belgium, Bosnia Hercegovina, Bulgaria, Belarus, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Moldavia, Netherlands, Norway, Poland, Portugal, Romania, Russia (European part), Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, Yugoslavia; North Africa: Algeria, Morocco, Madeira; Asia: Armenia, Azerbaijan, China, Georgia, Iran, Israel, Kazakhstan, Kirgystan, Lebanon, Turkey (Aukema, 2024).

**Distribution in Iran.** Ardabil (Linnavuori, 2007; Hosseini, 2013), Fars (Miyamoto, 1963), Guilan (Linnavuori 2007; Hosseini, 2013), Kordestan (Ebrahimi et al., 2012).

**Remakrs.** Host plants include *Cynodon dactylon*, *Hordeum vulgare* and *Triticum sativum* (Ebrahimi et al. 2012).

***Stenodema (Stenodema) turanica Reuter, 1904****Stenodema turanicum* Reuter, 1904a:23; Wagner, 1974:112.*Stenodema turanica*: Muminov, 1989:127; Kerzhner & Josifov, 1999:196.

**Material examined.** ARDABIL: Majareh Site 3 (37°33'57.6"N 48°36'25.2"E), 5.vii.2021, R. Hosseini, 2♂/♀; GUILAN: PirKooch Site 3 (36°50'23.0"N 50°01'11.7"E), 16.vii.2022, R. Hosseini, 1♂.

**General distribution.** Irano-Turanian species; Europe: Albania?, Bulgaria!, Greece, Crete, Macedonia, Russia (Dagestan); Asia: Armenia, Afghanistan, Azerbaijan, China (Northern and Northwestern), Georgia, Iran, Iraq, Kazakhstan, Kyrgyzstan, Mongolia, Russia (Eastern and Western Siberia), Tadjikistan, Turkmenistan, Turkey, Uzbekistan (Aukema, 2024).

**Distribution in Iran.** Ardabil (Linnavuori, 2007; Hosseini, 2013), East Azarbaijan (Modarres Awal, 1997a; Khalilzadeh, 2008; Linnavuori, 2009; Sadeghi et al., 2009; Khaghaninia et al., 2010a, 2010b, 2011), Fars (Kiritshenko, 1966; Linnavuori, 2009), Golestan (Heiss & Linnavuori, 2002), Guilan (Linnavuori, 2007; Hosseini, 2013), Ilam (Linnavuori, 2009), Isfahan (Linnavuori, 2009), Kerman (Wagner, 1968; Modarres Awal, 1997c), Kermanshah (Linnavuori, 2009), Khorasan (Wagner, 1957; Modarres Awal, 1997b; Linnavuori & Modarres Awal, 1999), Kordestan (Ebrahimi et al., 2012), Kuhgiloyeh and Boyerahmad (Linnavuori, 2009), Markazi (Modarres Awal, 1997c; Arkani et al., 2011), Semnan (Kiritshenko, 1949), Sistan and Baluchestan (Modarres Awal, 1997c), Tehran (Hoberlandt, 1955; Linnavuori, 2007), West Azarbaijan (Linnavuori, 2009), Zanjan (Linnavuori, 2007; Askari et al., 2009).

**Comments.** Collected on numerous plants, including *Medicago sativa* (Modarres Awal, 1997a; Khalilzadeh, 2008; Khaghaninia et al., 2010b, 2011), *Mentha* sp. (Khaghaninia et al., 2010b, 2011), sugar-beet (Askari et al., 2009), *Tamarix* sp. (Modarres Awal, 1997c), *Trifolium* sp. (Ebrahimi et al., 2012) and *Triticum* sp. (Modarres Awal, 1997b; Ebrahimi et al., 2012).

***Stenodema (Stenodema) virens (Linnaeus, 1767) (Figs 1H, 1L; 2V–X; 3F–G; 4I–J)****Cimex virens* Linnaeus, 1767:730.*Stenodema virens* Reuter, 1904a:4; Kerzhner, 1964:958; Wagner, 1974:112; Muminov, 1989:127.

**Material examined.** ARDABIL: Asalem-Khalkhal rd Site 3 (37°34'53.1"N 48°39'35.4"E), 22.vi.2021, R. Hosseini, 4♂/♀; Givi Site 1 (37°40'21.7"N 48°20'14.9"E), 23.vii.2022, R. Hosseini, 5♂/♀; Majareh Site 3 (37°33'58.1"N 48°36'27.4"E), 23.vii.2022, R. Hosseini, 2♂; Majareh Site 4 (37°33'59.3"N 48°36'26.3"E), 27.vi.2022, R. Hosseini, 3♂/♀; GUILAN: Salansar (36°55'12.0"N 49°23'34.8"E), 18.vii.2017, R. Hosseini, 1♂/2♀; Gilvan-Masal Site 1 (37°18'20.2"N 49°01'35.0"E), 18.vii.2021, R. Hosseini, 1♂; Rostam abad-Salansar Site 2 (36°55'10.1"N 49°22'34.5"E), 13.vi.2021, R. Hosseini, 1♀; Salansar Site 3 (36°55'25.7"N 49°22'38.6"E), 13.vi.2021, R. Hosseini, 1♀; Salansar Site 4 (36°55'38.7"N 49°23'02.1"E), 13.vi.2021, R. Hosseini, 1♂.

**Diagnosis.** body stramineous or pale green and covered with decumbent short whitish setae; ocular index 1.58–1.66♂/1.7–2♀; first antennomere stramineous to pale green; second to fourth antennomere uniformly brown to reddish brown; second antennomere ♂/♀: 3–3.2x/ 2.9–3.1x as long as width of head; second antennomere ♂/♀: 1.9x as long as posterior width of pronotum; labium reaching mesocoxa; vesica with 8–7 membranous and spinulate lobes, spicule absent (Fig. 2V); sclerotized rings in female genitalia large and elongate ovoid, dorsal structure of posterior wall saclike, and median process well developed (Fig. 3F–G); first and second valvulae expanded in ventral view and edentate (Fig. 4I–J).

**General distribution.** Europe: Albania, Andorra, Austria, Belgium, Bosnia Hercegovina, Bulgaria, Belarus, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Kosovo, Latvia, Liechtenstein, Lithuania, Macedonia, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia (European), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine; North Africa: Madeira; Asia: Armenia, Azerbaijan, China (Northern), Cyprus, Georgia, Iran, Iraq, Kazakhstan, Kirgызstan, Mongolia, Russia (Eastern and Western Siberia), Tadzhikistan, Turkey, Uzbekistan (Aukema, 2024).

**Distribution in Iran.** Ardabil, (Current study), East Azarbaijan (Modarres Awal, 1997a, 1998), Guilan (Current study), Hamadan (Mirab-balou et al., 2007, 2008); Northern Iran (Jakovlev, 1877).

**Comments.** *Stenodema virens* is reported for the first time from Guilan and Ardabil provinces. Observed in Iran in the alfalfa field (Mirab-balou et al., 2007, 2008). In the current research, was collected by sweeping in a mixture of grasses (Poaceae) and *Medicago sativa* (Fig. 5A–D).

**Genus *Teratocoris* Fieber, 1858***Teratocoris* Fieber, 1858:302; Kerzhner, 1964:960 (key); Wagner, 1974:107 (key, description); Schwartz, 2008 (diagnosis).

This Holarctic genus contains 10 species and only *T. antennatus* has been recorded from Iran (Linnavuori & Modarres Awal, 1999; Schuh, 2002–2013).

***Teratocoris antennatus* (Boheman, 1852)***Capsus antennatus* Boheman, 1852:76*Teratocoris antennatus*: Fieber, 1861:246; Kerzhner, 1964:960; Wagner, 1974:107.

**Material examined.** KHUZESTAN: Shadegan, 20.–21.vii.2007, R. Linnavuori, 1♀ (UGNHM).

**General distribution.** Western Palaearctic species, extending to Central Asia; Europe: Albania, Austria, Belgium, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Italy, Israel, Liechtenstein, Luxembourg, Moldavia, Netherlands, Norway, Poland, Portugal, Romania, Russia (Central and South European territories), Slovakia, Slovenia, Spain, Sweden, Turkey (European part), Ukraine. North Africa: Algeria, Morocco. Asia: Iran, Kazakhstan, Siberia, Tadzhikistan, Turkey (Asian part), Turkmenistan (Aukema, 2024).

**Distribution in Iran.** Fars (Linnavuori, 2009), Khuzestan (Wagner, 1958; Linnavuori & Modarres Awal, 1999; Linnavuori, 2009).

**Comments.** Living on *Cyperus* sp., *Juncus* sp. (Linnavuori & Modarres Awal, 1999; Linnavuori, 2009), *Phragmites* sp. and *Scirpus* sp. (Linnavuori, 2009).

### Genus *Trigonotylus* Fieber, 1858

*Trigonotylus* Fieber, 1858:302; Kerzhner, 1964:959 (key); Wagner, 1974:120 (key, description); Golub, 1989:136 (revision); Schwartz, 2008:1164 (diagnosis).

*Trigonotylus* comprises 36 species and has a Holarctic distribution, although one species is known from the Ethiopian region (Schuh, 2002–2013). Six species, including *T. brevipes*, *T. caelestialium*, *T. pulchellus*, *T. ruficornis*, *T. subulifer*, and *T. tenuis* were previously recorded from Iran (Reuter, 1904b; Wagner, 1958; Miyamoto, 1963; Wagner, 1968; Linnavuori, 2004; Linnavuori, 2007; Linnavuori, 2009; Hosseini, 2013); however, the presence of *T. ruficornis* should be confirmed.

### *Trigonotylus caelestialium* (Kirkaldy, 1902)

*Megaloceraea caelestialium* Kirkaldy, 1902:266.

*Trigonotylus caelestialium*: Reuter, 1903:1; Kerzhner, 1964:959; Wagner, 1974:122; Golub, 1989:147.

**Material examined.** ARDABIL: Givi Site 1 (37°40'21.7"N 48°20'14.9"E), 23.vii.2022, R. Hosseini, 12♂/♀; GUILAN: Gilvan-Masal Site 1 (37°18'20.2"N 49°01'35.0"E), 18.vii.2021, R. Hosseini, >10♂/♀; Talesh Site 2 (37°48'39.6"N 48°49'22.8"E), 12.vii.2021, R. Hosseini, 7♂/♀; Talesh Site 5 (37°48'28.8"N 48°49'33.6"E), 12.vii.2021, R. Hosseini, 1♀; Deylaman Site 2 (36°54'39.0"N 49°54'42.2"E), 25.v.2021, R. Hosseini, 1♂; Khorram rud (36°52'25.5"N 49°56'57.3"E), 25.v.2021, R. Hosseini, 4♂/♀; PirKooH Site 3 (36°50'23.0"N 50°01'11.7"E), 16.vii.2022, R. Hosseini, 6♂/♀.

**General distribution.** Holarctic species; Europe: Albania, Austria, Belgium, Bosnia Hercegovina, Bulgaria, Belarus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Italy, Kazakhstan, Liechtenstein, Lithuania, Luxembourg, Malta, Macedonia, Moldavia, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia (European), Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine. North Africa: Azores. Asia: Armenia, Azerbaijan, China, Georgia, Iran, Japan, Kazakhstan, Kyrgyzstan, Korea, Mongolia, Russia (from Eastern Siberia to the Far East), Tadjikistan, Turkmenistan, Uzbekistan. Also known from North America and Pakistan (Aukema, 2024).

**Distribution in Iran.** Ardabil (Linnavuori, 2007; Hosseini, 2013), East Azarbaijan (Gharaat et al., 2009; Linnavuori, 2009), Fars (Linnavuori, 2009), Golestan (Linnavuori, 2007; Zamani, 2021), Guilan (Linnavuori, 2007; Hosseini, 2013), Isfahan, Kermanshah (Linnavuori, 2009), Khorasan (Linnavuori & Modarres Awal, 1999), Khuzestan, Kordestan (Linnavuori, 2009), Kuhgiluyeh and Boyerahmad (Linnavuori, 2009), Mazandaran (Linnavuori, 2007), West Azarbaijan (Linnavuori, 2009; Gharaat et al., 2009), Zanzan (Linnavuori, 2007).

### Key to the Iranian genera of Stenodemini (modified from Hosseini, 2013; Zamani & Hosseini, 2020)

- 1 Vertex without a longitudinal median sulcus. ....2
- Vertex with a longitudinal median sulcus. ....3
- 2 Eyes touching anterior margin of pronotum, frons pointed anteriorly, lateral margins of pronotum carinate, endosoma with 1-3 spicules. .... *Acetropis* Fieber, 1858
- Eyes removed from anterior margin of pronotum, frons rounded anteriorly, lateral margins of pronotum not carinate, endosoma with 2 spicules. .... *Leptopterna* Fieber, 1858
- 3 Pronotum, scutellum and sometimes hemelytra distinctly and deeply punctate, vesica without spicule. ...  
..... *Stenodema* Laporte, 1833
- Pronotum, scutellum and hemelytra impunctate or smoothly rugose, vesica with spicule. ....4
- 4 Body large (6–8.5♂; 8–9♀ mm), first antennomere much longer than head width across eyes. .... 5
- Body small (<5.5♂; 5–6♀ mm), first antennomere almost as long as or slightly longer than head width across eyes. ....6
- 5 Clypeus visible from dorsal view, apex of frons smooth, metatibia with short adpressed setae, vesica with two spicules, sclerotized rings ovate and relatively small, dorsal structure small or obsolete. ....  
..... *Megaloceroea* Fieber, 1858

- Clypeus not visible from dorsal view, apex of frons notched, metatibia with long erect setae, vesica with single spicule; sclerotized rings almost subrectangular and large, dorsal structure large. .... *Notostria* Fieber, 1858
- 6 Clypeus strongly projected, mandibular plates visible from dorsal view, apex of frons almost acute, eyes small, not globular; first antennomere proximally as thick as its apical part; vesica with single spicule; sclerotized rings small, dorsal labiate plate small and not developed. .... *Trigonotylus* Fieber, 1858
- Clypeus blunt, mandibular plate not visible from dorsal view, apex of frons rounded, eyes large and globular; first antennomere proximally thicker than apically, vesica with 2 or 3 spicules; sclerotized rings obsolete, dorsal labiate plate well developed and strongly spinose. .... *Teratocoris* Fieber, 1858

## DISCUSSION

Reuter (1875) established Miraria, currently recognized as the plant bug subfamily Mirinae, which included all European genera that now belong to the tribe Stenodemini including *Stenodema* Laporte, *Acetropis* Fieber, *Leptopterna* Fieber, *Megaloceroea* Fieber, *Notostira* Fieber, *Teratocoris* Fieber, and *Trigonotylus* Fieber (Schwartz, 1987). Carvalho (1952) laid the foundation for the modern classification of plant bugs and divided the subfamily Mirinae into eight tribes, including Stenodemini. This tribe is recognized by a combination of the following characters: a long and slender body, a porrect head, an indistinct and medially not demarcated collar, stylate antennal fossae, carinate lateral margins of pronotum, and a first metatarsal segment longer than the others (Zamani & Hosseini, 2020).

In a comprehensive phylogenetic study of Stenodemini, Schwartz (1987, 2008) considered this tribe as monophyletic based on 54 morphological characters. However, Kim & Jung (2019) recovered this tribe as paraphyletic using a combination of morphological and molecular data. Among the seven generic groups of Stenodemini proposed by Schwartz (2008) four groups, along with one genus classified as *incertae sedis*, are found in Iran: *Stenodema* group (genus *Stenodema*), *Trigonotylus* group (genera *Megaloceroea* and *Trigonotylus*), *Leptopterna* group (genera *Acetropis* and *Leptopterna*), *Mimoceps* group (genus *Teratocoris*), and the genus *Notostira* (*incertae sedis*). The *Stenodema* group, being the largest within the tribe, has a worldwide distribution. The *Trigonotylus* group, the other large group, includes species of *Trigonotylus* that are found globally, while *Megaloceroea* is primarily Palearctic, but also found in North America and New Zealand. Species in the *Leptopterna* group are either Nearctic or Palearctic. The genera *Teratocoris* (*Mimoceps* group) and *Notostira* (*incertae sedis*), are found in the Northern Hemisphere (Schwartz, 2008). Species of the genus *Stenodema* Laporte 1833, along with several other members of the tribe Stenodemini – such as *Leptopterna dolabrata* (Linnaeus, 1758), *Notostira elongata* (Geoffroy, 1785), and *Trigonotylus caelestialium* (Kirkaldy, 1902) – are recognized as pests that can cause significant damage to pasture grasses, forage crops, and small grains, potentially reaching economic thresholds (Wheeler, 2001). From a plant protection point of view, collecting of stenodemines from fodder and forage plants during the current investigation indicates the presence of several potentially harmful species in cultivated *Medicago sativa* fields and natural pastures. As a result, detailed supplementary investigation and careful monitoring are necessary to prevent possible damage.

Prior to this study, 19 species (with two doubtful records- *Leptopterna ferrugata* (Fallén, 1807) and *Trigonotylus ruficornis* (Geoffroy, 1785)) belonging to six genera including *Stenodema*, *Trigonotylus*, *Megaloceroea*, *Leptopterna*, *Teratocoris*, and *Notostira* were reported from Iran (Hosseini, 2013; Aukema, 2024). The current study increases the number of genera and species to seven and 20, respectively.

## AUTHOR'S CONTRIBUTION

The authors confirm their contribution to the paper as follows: M. Zamani: writing the original draft, collecting and identification of specimens; R. Hosseini: designing the research, preparing the original draft and the revised version of the manuscript, collecting specimens and confirming the identifications; F.V. Konstantinov: confirming the identifications, review and editing of the manuscript to the final version. All authors read and approved the final version of the manuscript.

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## AVAILABILITY OF DATA AND MATERIAL

The specimens listed in this study are deposited in the insect collection of the Natural History Museum of the University of Guilan (UGNHM), Rasht, Iran and are available from the curator, upon request.

## ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study only included arthropod material, and all required ethical guidelines for the treatment and use of animals were strictly adhered to in accordance with international, national, and institutional regulations. No human participants were involved in any studies conducted by the authors for this article.

## CONSENT FOR PUBLICATION

Not applicable.

## CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this paper.

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## گزارش‌های جدید و کلید شناسایی مصور برای جنس‌های قبیله *Stenodemini* (Hemiptera: Miridae) در ایران

مژگان زمانی<sup>۱</sup>، رضا حسینی<sup>۱\*</sup> و فدور کنستانتینوف<sup>۲،۳</sup>

۱ گروه گیاه‌پزشکی، دانشکده علوم کشاورزی، دانشگاه گیلان، رشت  
 ۲ موسسه جانورشناسی، آکادمی علوم روسیه، سنت پترزبورگ، روسیه  
 ۳ موزه تاریخ طبیعی ملی، آکادمی علوم بلغارستان، صوفیه، بلغارستان

\* پست الکترونیک نویسنده مسئول مکاتبه: [rhosseini@guilan.ac.ir](mailto:rhosseini@guilan.ac.ir)

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**چکیده:** در طول بهار و تابستان ۱۳۹۹-۱۴۰۱، بررسی‌های میدانی در مناطق متنوع آب و هوایی در امتداد سواحل جنوبی دریای کاسپین انجام شد. نتایج مطالعات روی نمونه‌های جمع‌آوری شده منجر به یافتن *Acetropis carinata* (Herrich-Schaeffer, 1841) به عنوان جنس و گونه‌ای جدید برای فون حشرات ایران گردید. علاوه بر این، چهار گونه دیگر شامل *Leptopterna inopinata* Vinokurov, 1982 و *Stenodema (Brachystira) pilosa* (Jakovlev, 1889) از استان اردبیل، *Stenodema (Stenodema) virens* (Linnaeus, 1767) از استان‌های اردبیل و گیلان و *Megaloceroea recticornis* (Geoffroy, 1785) از استان مازندران برای اولین بار گزارش می‌شوند. اطلاعات تکمیلی شامل اندازه صفات تشخیصی نمونه‌ها، پراکنش، تصاویر سطح پستی و جانبی از نمونه‌ها، تصاویر ترسیم شده از اندام‌های تناسلی افراد نر و ماده به همراه خصوصیات افتراقی و توصیف مجدد برای گونه‌های گزارش شده جدید ارائه شد. همچنین یک کلید تاکسونومیک اصلاح شده برای شناسایی تمامی جنس‌هایی که در حال حاضر از قبیله *Stenodemini* در ایران یافت می‌شوند، ارائه شد.

**واژگان کلیدی:** *Acetropis*، اردبیل، گیلان، ایران، مازندران، *Stenodemini*، تاکسونومی