

## **Description of two new species of the genus *Helina* Robineau-Desvoidy (Diptera: Muscidae) from Iran**

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ZIELKE E. 2017: Description of two new species of the genus *Helina* Robineau-Desvoidy (Diptera: Muscidae) from Iran. *Acta Musei Moraviae, Scientiae biologicae* (Brno) **101(1)**: 35–42. – *Helina banari* sp.nov. and *Helina oborili* sp.nov. from Iran are described and compared with similar species of the genus.

**Key words:** Diptera, Muscidae, *Helina*, new species, Iran

### **Introduction**

Investigation of non-identified material in the Muscidae collection of the Entomological Department of the Moravian Museum, Brno (Czech Republic) has revealed two different specimens of the genus *Helina* Robineau-Desvoidy, 1830 which were collected in recent years in Iran by using yellow pan traps. They are distinguished from known *Helina* species by several taxonomic characters. The specimens, a male and a female, are described below as *Helina banari* sp.nov. and *H. oborili* sp.nov. respectively.

### **Material and Methods**

For identification of the flies, the keys to the Muscidae of the Palaearctic Region by HENNIG (1964) together with the keys to the Muscidae of Central Europe published by GREGOR *et al.* (2002, 2016) were used. External morphological features were examined using a Zeiss Stemi 2000-C stereomicroscope, for illustrations an AxioCam ERc5s camera was employed and for further processing Helicon Focus 6 and Adobe Photoshop CS2 were applied. Standard terminologies are used for the description. Body length was measured in millimetres (mm).

The holotypes of the newly-described species are deposited in the collection of the Entomological Department of the Moravian Museum, Brno.

### **Results**

#### ***Helina banari* sp.nov.**

(Fig. 1)

**Material examined.** Male holotype; the specimen is slightly dirty and some setae are missing. However, determination and description of the species are not impaired by these shortcomings. The specimen has been

collected by M. Obořil and the locality label contains the following information: “Iran, Cikani, Kohgíluje a Bójer-Ahmad prov., 20 km S of Jásúdz, Tang-e-Sorkh 13km S, 2144 m., 30°29'25.78"N; 51°39'26.64"E, 30.v.2015”.

**Description.** Head. Ground-colour black. Eyes covered with long hairs. Shortest distance between eyes about twice the diameter of anterior ocellus. Fronto-orbital plate at narrowest place barely as broad as anterior ocellus. Fronto-orbital plates separated by a triangular frontal vitta in the lower two-thirds of frons, at the upper third frontal vitta almost linear, barely as broad as half-diameter of anterior ocellus. Parafacial midway at most as broad as half-width of postpedicel and becoming markedly narrower in the lower half. In profile, upper mouth margin about in line with profrons. Genal depth below lowest eye margin approx. width of postpedicel. When viewed from anterior, face including ocellar tubercle more or less uniformly dusted greyish-white, gena and occipital surface dark grey. Postpedicel 2.4 times as long as broad and about twice as long as pedicel. Antennal segments all dark. Arista twice as long as postpedicel, longest dorsal hairs of arista slightly longer than the ventral hairs, of which the longest are about as long as width of postpedicel. Anterior half of fronto-orbital plate with approx. five frontal setae and some interstitial hairs between and slightly above the frontal setae, not covering the upper half of frons. Parafacial bare. Vibrissal setae long and strong, surrounding peristomal setae distinctly weaker, longest ones barely half as long as vibrissals. Lower margin of gena, post-genal and post-occipital surfaces covered with dark, setulose hairs. Proboscis dark and short; palpus black and slender.

Thorax. Ground-colour dark, uniformly densely grey-dusted, without distinct markings. Scutellum and pleura dark, uniformly greyish-dusted. Anterior and posterior spiracles yellowish-brownish. Scutum and pleura covered with fine hairs. Dorsocentral setae 2+4; acrostichals 0+1; notopleuron posteriorly partly haired, anterior notopleural seta slightly stronger and longer than posterior one; pre-alar seta hair-like, barely distinguishable from ground-hair; 2 intra-alar setae. Prosternum with black setulae at the margin. Proepimeral area, anepimeron and katepimeron bare. Meron with dark hairs below posterior spiracle. Katepisternum covered in fine hairs and with 2+2 katepisternal setae, the lower anterior one distinctly shorter than the others. Anepisternum with fine hairs and at posterior margin with a row of long setae varying in length and strength. Scutellum with long apical and lateral setae, basal and preapical setae distinctly shorter and weaker, upper surface densely haired, ventral and lateral surfaces with dark hairs.

Wing. Membrane hyaline, cross-veins not conspicuously coloured. Tegula grey, basicosta yellow, veins at bases predominantly yellowish, apically more brownish. Costal spine indistinct, about twice as long as neighbouring bristles. Radial node and base of R4+5 ventrally haired. Vein M1 straight, diverging from vein R4+5. Cross-vein r-m basal from the point where vein R1 enters costa, distal cross-vein dm-cu oblique, strongly sinuous. Calypters whitish transparent, lower calypter with slightly yellowish margin and about 1.5 times as long as upper calypter. Haltere entirely yellow.

Legs all dark. Pulvilli and claws well developed, however pulvilli shorter than corresponding claws. Hind coxa bare on posterior surface. Fore-femur with complete rows of strong posteroventrals and posterodorsals upon which most of the setae are about as long or longer than depth of femur. Fore-tibia without median posterior seta. Mid-



**Fig. 1–2.** 1 – *Helina banari* sp.nov.: male holotype, lateral view (bar = 1mm). 2 – *Helina oborili* sp.nov.: female holotype, lateral view (bar = 1 mm).

femur at basal half with about four distinct, ventral setae, pre-apically three distinct posterodorsal setae. Mid-tibia with three posterior setae slightly longer than diameter of tibia. Hind femur with a complete row of strong anterodorsal setae and at distal half with a row of anteroventrals, no distinct setae on the posterior surface except a few slightly elongated posteroventral hairs at the extreme apex and pre-apically two or three distinct posterior to posterodorsal setae. Hind tibia with two anterodorsal setae slightly longer than diameter of tibia, about 3–5 anteroventral setae longer than anterodorsal ones, distal two-thirds of tibia with an irregular row of posterior setae not much longer than setulose ground-hair.

Abdomen ground-colour dark, densely grey-dusted. Tergites 3 and 4 each with a very faint pair of dark paramedian patches extending more or less over the whole length but not reaching the posterior margin of tergite and without well-defined shape. Tergite 4 with a row of well developed marginals, tergite 5 with a row of strong discals and a row of shorter marginals. Sternites uniformly greyish, sternite 1 distinctly haired.

Male genitalia. Hypopygium pronounced. As the species is clearly distinguished by morphological characters from similar species of the genus, the identification does not depend on comparison of characters of male terminalia. To avoid inflicting damage on the only available specimen of this new species, extraction of the genitalia has not been undertaken.

Measurements. Length of body *c.* 6.5 mm; length of wing about 6 mm.

Female not known.

**Etymology.** The species is named after Petr Baňář, who kindly made the unidentified muscid material available to me.

**Diagnosis.** The setulose prosternum in the male of *Helina banari* runs to couplet 6 with *Helina subvittata* (Séguy, 1923) in HENNIG'S (1964) key. The two species are distinguished by: *H. subvittata* katepimeron haired, meron below the posterior spiracle and ventral surface of scutellum bare, pre-alar seta as long as posterior notopleural seta, narrowest width of frontal vitta about half the width of postpedicel. *H. banari* katepimeron is bare, meron below posterior spiracle and ventral surface of scutellum haired, pre-alar seta not distinguishable from surrounding hairs and narrowest width of frontal vitta linear, barely as broad as diameter of anterior ocellus. Using the keys to the muscids of central Europe provided by GREGOR *et al.* (2002 and 2016), the markings of *H. banari* lead to couplet 3 with *Helina annosa* (Zetterstedt, 1838) and *Helina evecta* (Harris, 1780) in both publications. However, unlike *H. banari* they do not have setulose hairs on the margin of the prosternum and on the ventral side of the radial node and the base of wing-vein R4+5. Moreover, in contrast to *H. banari*, both species have dark, infuscated cross-veins.

***Helina oborili* sp.nov.**

(Fig. 2)

**Material examined.** Female holotype; a few setae are missing but the remaining scars are clearly visible and thus enable an estimate of the length and strength of the lost setae. The posterior margins of wings are slightly damaged. The locality label of the holotype reads: "Iran, Fars prov. 15km S of Dasht Arjan, 29°33'8.57"N; 51°56'22.22"E, 2261m, 2.–6.v.2016 M. Obořil lgt."

**Description.** Head: Ground-colour black. Eyes distinctly but not densely covered with short hairs. Shortest distance between eyes about three times the width of postpedicel. Fronto-orbital plate about as broad as diameter of anterior ocellus at level of anterior ocellus; at anterior margin as wide as width of postpedicel. Frontal vitta broad and oval, ocellar triangle extending beyond midway on frons but not reaching anterior margin. Parafacial midway barely half as broad as width of postpedicel. In profile, upper mouth-margin approx. in line with profrons. Genal depth below lowest eye margin the same width as postpedicel at most. When viewed from anterior, fronto-orbital plates and frontal vitta including ocellar tubercle grey-dusted, fronto-orbital plates more intensely than frontal vitta, parafacial and gena silvery-whitish. Post-occipital surface uniformly greyish. Basal antennal segments and basal part of postpedicel nearly to insertion of arista yellowish-brown and in distinct contrast to upper, darker brown part of postpedicel. Postpedicel approx. twice as long as broad, and about twice as long as pedicel. Length of arista about twice the length of postpedicel, the longest hairs barely as long as width of postpedicel. Fronto-orbital plate with two distinct reclinate orbital setae on upper third, with about four inclinate frontal setae and one or two short interstitial hairs on the lower two-thirds; the lowest frontal seta at least twice as long and significantly stronger than the other frontal setae, a number of very small, dark setulae irregularly distributed beyond the row of frontals. Parafacial bare. Vibrissal setae strong and significantly longer than the

surrounding peristomal setae. Lower margin of gena, post-genal and post-occipital surfaces covered with setulose dark hairs. Proboscis short; palpus brown and very slender.

Thorax in general dark and grey-dusted, except the yellowish-greyish postpronotal calli and adjacent areas such as anterior part of notopleuron and surfaces around the anterior spiracle and a small, yellowish spot between the post-alar setae. Scutum dark and uniformly greyish-dusted with no distinct dark postsutural markings; when viewed from anterior presutural part with a pair of short, not well-shaped paramedian dark vittae not reaching the scutellar suture. Scutellum with a large grey, triangular area on dorsal surface and yellowish broad apex and lateral margins and sides. Pleura predominantly dark with greyish dust. Anterior spiracle yellow, posterior spiracle brownish-yellow. Scutum ground hair short and setulose, pleura with finer hairs. Dorsocentrals 2+3; acrostichals 0+1; notopleuron with at least one setulose hair close to the posterior seta, anterior notopleural seta slightly longer than posterior one; pre-alar seta weak and barely half as long as posterior notopleural seta but distinctly longer than the ground hair; 2 intra-alar setae. Prosternum, proepimeral area, anepimeron, katepimeron and meron bare. Katepisternals 2+2, lower anterior one distinctly shorter than the remainder. Anepisternum with 3 long setae at upper half of posterior margin and 1 strong seta near to lower posterior margin; shorter interstitial hairs between upper and lower setae. Scutellum with very long apical and lateral setae, basal and subapical setae distinct but at most one-third as long as the two others, upper surface with dark setulae, laterally and ventrally bare.

Wing. Membrane hyaline, cross-veins infuscated dark brown. Tegula and basicosta yellow, veins at base of wing yellow, otherwise yellowish-brown to brown. Costal spine well-developed, approx. as long as length of cross-vein r-m. Radial node and vein R4+5 dorsally and ventrally bare. Vein M1 straight, diverging slightly from vein R4+5. Cross-vein r-m slightly basal from the point where vein R1 enters costa; distal cross-vein dm-cu very weakly sinuous, almost straight, making a near right-angle with vein R4+5. Calypters white transparent with white margin, lower calypter approx. 1.5 times as long as upper calypter. Halter entirely yellow.

Legs including coxae and trochanters all yellow, tarsomeres contrasting black. Hind coxa bare on posterior surface. Pulvilli and claws small and of about equal size. Fore-femur with a complete row of posterodorsal setae barely as long as depth of femur and a row of posteroventrals, longest setae longer than depth of femur. Fore-tibia without median posterior seta. Mid-femur at basal half with a row of anterior setae about half as long as depth of femur, ventrally approx. four distinct setae, pre-apically one short but distinct anterior seta and two or three strong posteriors to posterodorsals. Mid-tibia with three posterior setae about as long as diameter of tibia. Hind femur with a complete row of strong anterodorsal setae and an almost complete row of anteroventral setae, of which the apical 4–5 are about as long as depth of femur; the more basal ones are only about as long as the ground-hair but more robust, preapically one posterior and one posterodorsal seta, both distinct and strong. Hind tibia with two anterodorsal setae slightly longer than diameter of tibia and one shorter anteroventral seta, no posterodorsal seta on basal half.

Abdomen. Ground-colour yellow with some whitish-grey dust. Tergites 3 and 4 each with a pair of nearly round paramedian brown patches; from one point of view tergite 3 additionally with a distinct brown median longitudinal vitta not reaching the distal margin of tergite, tergite 4 with only a weak grey tinge to median vitta. Tergite 4 with a complete row of distinct marginal setae, tergite 5 with a row of distinct discal setae but only weakly developed marginals. All sternites yellow; sternite 1 bare, sternites 2–5 haired.

Measurements. Length of body about 5 mm, length of wing about 4.4 mm.

Male not known.

**Etymology.** The species is named after M. Obořil, the collector of this specimen.

**Diagnosis.** The taxonomic markings of *H. oborili* lead in HENNIG'S (1964) key to the females of *Helina* species of the Palaearctic Region, to couplet 30 with *Helina coniformis* (Stein, 1903) known from North Africa (Egypt) and the Afrotropical Region (PONT 1986). Both species are quite small, with a body-length of only about 5 mm, and can be distinguished as follows:

*H. coniformis*: Antennal segments predominantly dark, basal segments perhaps slightly brighter, longest arisal hairs longer than width of postpedicel; thorax densely white to yellowish-grey-dusted, scutum with a pair of paramedian brown vittae inside the rows of dorsocentral setae, pre-alar seta absent, notopleuron without hairs; fore-tibia with median posterior seta and hind tibia with 1 posterodorsal seta in basal third; cross-veins not infuscated.

*H. oborili*: Basal antennal segments and basal part of postpedicel up to the insertion of arista are yellowish and in contrast to the dark brown upper part of postpedicel; longest arisal hairs barely as long as width of postpedicel; thorax dark with white-grey dust, postpronotal calli and area around anterior spiracle in contrast yellowish-grey, scutum without distinct brown paramedian vittae, pre-alar seta short but clearly distinguishable from ground hair, notopleuron with at least one setula next to posterior notopleural seta; fore-tibia without posterior seta and hind tibia without posterodorsal seta; cross-veins distinctly darkened.

When using the most modern keys to the muscid species of central Europe (GREGOR *et al.* 2016) the characters of *H. oborili* run to couplet 22 but do not match with the two options offered. As *H. oborili* has 2+2 katapisternal setae it is close to *Helina sexmaculata* (Preyssler, 1791) and *Helina clara* (Meigen, 1826) at couplet 24, but the brown patches on the postsutural part of the scutum which are characteristic for these two *Helina* species are absent.

*Helina montana* (Rondani, 1866) shares some taxonomic characters with *H. sexmaculata* and *H. clara* but, like *H. oborili*, it has no brown patches on the postsutural part of the scutum and it is known from Iran (PONT 1986). As the female of *H. montana* has not yet been described, it is not considered in the keys of HENNIG (1964) nor in the keys published by GREGOR *et al.* (2002 and 2016). HENNIG (1964), however, refers to the description by MIK (1867) of the synonymized *Spilogaster dexiaeformis*, which points out that the female of *S. dexiaeformis* = *H. montana* is similar to the males with the exception of a broader frons and a more darkened postpedicel. GREGOR *et al.* (2002,

2016) also mention these differences in the section in which the species are reviewed. *H. montana* is characterized by yellow palpi and yellow antennae, predominantly yellow thorax with pre-alar seta absent, bare notopleuron and 1+2 katepisternals, cross-veins not infuscated and rather short costal spine of the wing. *H. oborili*, however, has brown palpi and a contrasting dark brown distal half of postpedicel, the thorax is predominantly dark with short but distinct pre-alar seta, notopleuron has at least one setulose hair and there are 2+2 katepisternals, cross-veins are infuscated and the costal spine is well developed.

### Discussion

According to XUE & SUN (2015) the genus *Helina* comprises more than 530 species. It is the second largest genus of the family of Muscidae and *Helina* species are distributed in every zoogeographical region. While 229 species of *Helina* are reported from China (XUE & SUN 2015), only 80 species of the genus are listed for the European part of the Palaearctic Region (PONT 2013) and to date there are only four *Helina*-species known from Iran. PONT (1986) mentioned *Helina montana* and *Helina parcepilosa* (Stein) and MORADI *et al.* (2013), who emphasized that the muscid fauna of Iran “is still under-recorded”, added *Helina reversio* (Harris, 1780) and *Helina karina* Pont, 2012 to the list of known species from Iran. PONT (2012) described the latter species and *Helina marisha* as new species from Armenia, a country adjacent to Iran, as well as another new species, *Helina edita* from Georgia and Turkey. The description of these three new *Helina* species by PONT (2012) and the presently reported findings, together with the known general abundance of species of *Helina* in other regions, suggest that several further unrecorded and even new species of this genus have possibly to be expected from the large geographical area of Iran and the other western Asian countries.

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