Russian Entomol. J. 32(3): 322–329

A new species of *Medetera* Fischer von Waldheim, 1819 (Diptera: Dolichopodidae) with a key to the species known from Iran

Новый вид *Medetera* Fischer von Waldheim, 1819 (Diptera: Dolichopodidae) с определителем видов из Ирана

I.Ya. Grichanov[1*], E. Gilasian[2]
И.Я. Гричанов[1*], Э. Гиласян[2]

[1] All-Russian Institute of Plant Protection, Podbelskiy roadway, 3, St. Petersburg, Pushkin 196608 Russia. E-mail: grichanov@mail.ru.
[2] Insect Taxonomy Research Department, Iranian Research Institute of Plant Protection, Agricultural Research, Education and Extension Organization (AREEO), Tehran, 19395-1454, Iran. E-mail: gilasian@iripp.ir
[1] Всероссийский институт защиты растений, шоссе Подбельского, 3, Санкт-Петербург-Пушкин 196608 Россия.
*Corresponding author.

KEY WORDS: Medeterinae, *Medetera*, new species, Palaearctic Region, Iran, Markazi, West Azerbaijan.
КЛЮЧЕВЫЕ СЛОВА: Medeterinae, *Medetera*, новые виды, Палеарктика, Иран, Маркази, Западный Азербайджан.

ABSTRACT: A new long-legged fly species, *Medetera neopavlovskii* **sp.n.** from West Azerbaijan and Markazi provinces of Iran is described and illustrated. The new species appears to be very close to Iranian endemic *M. pavlovskii* Negrobov, 1972 in habitus, differing from the latter in a somewhat longer body; distal section of wing vein M_4 at least 3/4 as long as crossvein dm-m; postpedicel 1.5 times longer than high; hypopygial surstylus distinctly shorter than epandrium, with simple setae and one thick curved bristle at apex; epandrial setae nearly as long as cercus. *Medetera palmaris* Negrobov, 1972 is newly found in Iran and redescribed. It is the first finding of this species after the original description from two males collected from Tajikistan and a female collected from Kasakhstan. A check list and key to 22 *Medetera* species of Iran are compiled.

РЕЗЮМЕ: Новый вид мух-зеленушек, — короедница *Medetera neopavlovskii* **sp.n.** из иранских провинций Западный Азербайджан и Маркази описаны и проиллюстрированы. Новый вид оказался очень близким к иранскому эндемику *M. pavlovskii* Negrobov, 1972 по внешнему виду, отличаясь от последнего несколько более длинным телом; дистальным отрезком жилки M_4, который не менее 3/4 длины поперечной жилки dm-m; третьим члеником усика, длина которого в 1.5 раза больше высоты; суристиль гипопигия заметно короче эпандрия, с простыми щетинками и одной толстой изогнутой щетинкой на вершине; щетинки эпандрия почти такой же длины, как и церки. *Medetera palmaris* Negrobov, 1972 впервые обнаружен в Иране и переописан. Это первая находка вида после первоначального описания двух самцов, собранных в Таджикистане, и самки, собранной в Казахстане. Составлен справочный список и определитель 22 видов *Medetera*, известных из Ирана.

Introduction

The genus *Medetera* Fischer von Waldheim, 1819 is one of the largest dolichopodid genera with about 365 species worldwide, including ca. 200 recognized species from the Palaearctic, 62 from the Orient and 34 species from the Afrotropical region [Grichanov, 2023]. The Palaearctic species of *Medetera* were recently reviewed [Negrobov, Naglis, 2016]. Since then several new species were described from South-West of Europe, Slovakia and Palaearctic China [Tang *et al*., 2016; Maslova *et al*., 2018; Pollet *et al*., 2022] and one new species from Iran [Grichanov, Ahmadi, 2017]. The Iranian fauna of the genus numbers now 22 species [Grichanov, Gilasian, 2023b; this paper]. This genus is poorly studied in Iran and new species records are anticipated here, whereas some previously reported European species will probably be excluded from its fauna.

Males of one new *Medetera* species were found in the collection of the Hayk Mirzayans Insect Museum (HMIM), Iranian Research Institute of Plant Protection (IRIPP), Tehran, Iran, and considered close to Iranian endemic *M. pavlovskii* Negrobov, 1972. *Medetera palmaris* Negrobov, 1972 is newly found in Iran. These two species are described, and a list and identification key to males of 22 species from Iran are provided.

How to cite this article: Grichanov I.Ya., Gilasian E. 2023. A new species of *Medetera* Fischer von Waldheim, 1819 (Diptera: Dolichopodidae) with a key to the species known from Iran // Russian Entomol. J. Vol.32. No.3. P.322–329. doi: 10.15298/rusentj.32.3.08

Material and methods

The paper is based on material found in the HMIM collection that will be deposited in HMIM and the Zoological Institute of the Russian Academy of Sciences (ZIN, St Petersburg, Russia). All specimens are mounted on pins.

Specimens have been studied and photographed with a ZEISS SteREO Discovery.V12 modular stereo microscope and an AxioCam MRc5 camera. The preparations of the male genitalia were photographed with a ZEISS Axiostar stereo microscope and an AxioCam ICc3 camera. The measurement accuracy of these microscopes is 0.01 mm. Morphological terminology and abbreviations follow Cumming & Wood [2017] and Grichanov & Brooks [2017]. The lengths of the antennomeres and podomeres are given in millimetres. Body length is measured from the base of the antenna to the tip of abdominal segment 6. Wing length is measured from the base to the wing apex. Antenna length is measured from the base of the scape to tip of the arista-like stylus. The figures showing the hypopygium in lateral view are oriented as it appears on the intact specimen, with the morphologically ventral surface of the genitalia facing upwards, dorsal surface downwards, anterior end facing right and posterior end facing left.

Taxonomy

Genus *Medetera* Fischer von Waldheim, 1819

Medetera Fischer von Waldheim, 1819: 7. Type species: *Medetera carnivora* Fischer von Waldheim, 1819 [=*Medetera diadema* (Linnaeus, 1767)], monotypy.

urn:lsid:zoobank.org:act: BD0A434E-EFA6-43B3-A9C3-1A10B381E8AE

REMARKS. See Bickel [1985, 1987] for redescription of the genus, Grichanov [2023] for synonymy, Pollet *et al*. [2022] for discussion. The following species are reported from Iran:

1. *Medetera abstrusa* Thuneberg, 1955

References. Kazerani *et al*., 2016: 452 (no material provided).

Type locality: Finland: Outakoski; England: Wordlitton Wood.

Distribution: ?Iran; West and Central Palaearctic boreal species.

2. *Medetera anjudanica* Grichanov et Ahmadi, 2017

References. Grichanov, Ahmadi, 2017: 13; Grichanov *et al*., 2017: 103; Grichanov, Gilasian, 2023b: 94.

Type locality: Iran: Markazi Province, Arak env., 35 km ESE, Anjudan village.

Distribution: The species is known only from Markazi Province.

3. *Medetera belgica* Parent, 1936

References. Kazerani *et al*., 2016: 452 (no material provided).

Type locality: Belgium: Malmedy, Pouhondes Cuves.

Distribution: ?Iran, Belgium, Czech Republic, Germany, Norway, Romania, Russia (northern European part), Sweden.

4. *Medetera diadema* (Linnaeus, 1767)

References. Grichanov *et al*., 2017: 103; Grichanov, Gilasian, 2023b: 94.

Type locality: Europe.

Distribution: Iran (Tehran); West and Central Palaearctic, Nearctic Region.

5. *Medetera feminina* Negrobov, 1967

References. Kazerani *et al*., 2016: 452 (no material provided).

Type locality: Russia: Voronezh, near Borisoglebsk.

Distribution: Belgium, Czech Republic, ?Iran, Portugal, Russia (European part), Sweden.

6. *Medetera flavipes* Meigen, 1824

References. Kazerani *et al*., 2014b: 269.

Type locality: not given.

Distribution: Iran (Gilan, Mazandaran); West Palaearctic species.

7. *Medetera freyi* Thuneberg, 1955

References. Kazerani *et al*., 2016: 452 (no material provided).

Type locality: Finland: Joutseno.

Distribution: ?Iran, Czech Republic, Finland, Norway, Russia (Saint Petersburg), Sweden, the UK.

8. *Medetera jacula* (Fallén, 1823)

References. Ahmadi *et al*., 2016: 192; 2017: 68.

Type locality: Sweden: Scania.

Distribution: Iran (Lorestan, Markazi); West and Central Palaearctic species.

9. *Medetera lamprostoma* Loew, 1871

References. Grichanov *et al*., 2017: 103; Grichanov, Gilasian, 2023b: 95.

Type locality: Tajikistan: Zeravshan valley.

Distribution: The species is known from Iran (Markazi, South Khorasan), Tajikistan, Turkmenistan and Uzbekistan.

10. *Medetera media* Parent, 1925

References. Rezaei *et al*., 2019a: 9; 2019b: 91.

Type locality: Tunisia.

Distribution: The species is known from Iran (Fars), Egypt, Kazakhstan, Morocco, Tunisia and Turkmenistan.

11. *Medetera meridionalis* Negrobov, 1967

References. Kazerani *et al*., 2014a: 27; 2014b: 270; Ahmadi *et al*., 2017: 68; Grichanov *et al*., 2017: 103; Hamed *et al*., 2017: 3; Grichanov, Gilasian, 2023b: 95.

Type locality: Russia: Voronezh, near the Novokhopersk River.

Distribution: Iran (Alborz, East Azerbaijan, Gilan, Lorestan, Markazi, Mazandaran, West Azerbaijan). The species is known from Russia (Crimea, Lugansk, Voronezh, Rostov, Volgograd, Penza, Orenburg, Altay and Krasnodar Regions), Ukraine (Odessa and Poltava), Armenia, Azerbaijan, Czech Republic, Georgia, Iran, Kazakhstan and Turkey.

12. *Medetera mixta* Negrobov, 1967

References. Kazerani *et al*., 2014b: 270 (as *Medetera micacea* Loew, 1857); Grichanov, Gilasian, 2023b: 95.

Type locality: Russia: Atai Vil., Evpatoriya Distr., Crimea.

Distribution: Iran (Markazi, Mazandaran). The species is known from Bulgaria, Czech Republic, Iran, Kazakhstan, Kyrgyzstan, Mongolia, Portugal, Romania, Russia (Bashkiria, Crimea, Krasnodar Lipetsk and Voronezh), Slovakia, Tajikistan, Turkey and Ukraine.

13. *Medetera muralis* Meigen, 1824

References. Kazerani *et al*., 2014b: 270.

Type locality: Germany: Hamburg.

Distribution: Iran (Gilan, Mazandaran). West Palaearctic species.

14. *Medetera pallipes* (Zetterstedt, 1843)

References. Kazerani *et al*., 2016: 452 (no material provided); Ahmadi *et al*., 2017: 68; Grichanov *et al*., 2017: 103; Rezaei *et al*., 2019b: 91; Grichanov, Gilasian, 2023b: 96.

Type locality: Scania, "in Ostrog ad Wadstena; Botnia orientali ad Johannis Ro prope Tormea" [Sweden; Denmark].

Distribution: Iran (Alborz, Esfahan, Fars, Markazi, Tehran); West Palaearctic species.

15. *Medetera palmaris* Negrobov, 1972

Type locality: Tajikistan: "Hissar-Bergkette, Chodzha Obi-garm" [=Gissar Range, Khodzha-Obigarm, 38°53′44″N, 68°47′54″E].

Distribution: Tajikistan, Kazakhstan. New record from Iran (see below).

16. *Medetera pavlovskii* Negrobov, 1972

References. Negrobov, Stackelberg, 1974: 328.

Type locality: Iran: Shahrud.

Distribution: The species is known from Iran (Semnan: Shahrud) and Egypt.

17. *Medetera roghii* Rampini et Canzoneri, 1979

References. Grichanov *et al*., 2017: 103.

Type locality: Spain: Minorca.

Distribution: The species is known from Iran (Lorestan), Italy (Sicilia), Malta, Morocco and Spain.

18. *Medetera seguyi* Parent, 1926

References. Kazerani *et al*., 2014b: 271.

Type locality: France: Rambouillet.

Distribution: The species is known from Iran (Mazandaran), Belgium, Czech Republic, France, Norway and Switzerland (as *Medetera seguyi*); Russia (Adygea, Karachai-Cherkessia and Krasnodar; as subspecies *M. seguyi sphaeroidea* Negrobov, 1967).

19. *Medetera spinigera* (Stackelberg, 1937)

References. Grichanov, Gilasian, 2023b: 96.

Type locality: Uzbekistan: Yargak, near Chatyrchi, Kattakurgan district.

Distribution: The species is known from Iran (Markazi) and Uzbekistan.

20. *Medetera truncorum* Meigen, 1824

References. Kazerani *et al*., 2014b: 271; Grichanov *et al*., 2017: 103; Grichanov, Gilasian, 2023b: 96.

Type locality: Germany: Hamburg.

Distribution: Iran (Alborz, Gilan, Lorestan, Mazandaran, Razavi Khorasan, Tehran). West and Central Palaearctic, Nearctic Region.

21. *Medetera veles* Loew, 1861

References. Grichanov, Gilasian, 2023b: 96.

Type locality: the USA: Florida.

Distribution: Iran (Tehran); Europe, some regions of European Russia and Siberia, Japan; Nearctic Region.

Key to *Medetera* species from Iran (males)

NOTES. This key builds extensively on Negrobov & Naglis [2016] but has scattered modifications based on material examined for the present study in our respective collections. The final decision on species identification needs the male genitalia examination.

1. Distal section of vein M_4 5–6 times as long as crossvein dm-m; basal section of M_4 swollen along its almost entire length; 1.4–1.8 mm ..... *M. spinigera*
– Distal section of M_4 at most 3–4 times as long as crossvein dm-m; basal section of M_4 usually not swollen 2
2. Mid tibia without dorsal setae in basal third 3
– Mid tibia with a pair of anterodorsal and posterodorsal setae in basal third, sometimes with only one posterodorsal seta 5
3. Postocular setae white; antenna dark with mostly white arista-like stylus; thoracic setae white; body 2.3 mm .... *M. anjudanica*
– Postocular setae black; antenna entirely dark; thoracic setae mostly black 4
4. Tibiae usually dark; apical projection of phallus with acute apex and subapical tooth; dorsal lobe of surstylus strongly curved; cercus with three apical projections; 2 mm .... *M. belgica*
– Tibiae usually yellow or brownish yellow; apical projection of aedeagus with obtuse apex, without middorsal tooth; cercus usually with only two apical projections; apical projection of phallus with a small dorsobasal tooth; 1.9–2.2 mm ..... *M. muralis*
5. Scutellum with 2 strong marginal setae; surstyli in ventral view with rounded edges near tip of setae of epandrial lobes; 1.7–2.2 mm ..... *M. mixta*
– Scutellum with 4 strong marginal setae; surstyli various 6
6. Three or four pairs of strong dorsocentral setae of almost equal length; second pair of dorsocentral setae sometimes smaller than remaining dorsocentrals; sometimes a small additional pair of dorsocentral setae anteriorly 7
– Usually more than 3–4 pairs of dorsocentral setae decreasing in size anteriorly; anterior dorsocentral setae distinctly smaller than posterior dorsocentrals 15
7. Three pairs of dorsocentral setae of almost equal length; if 4 pairs of dorsocentral setae present, then second pair distinctly smaller than other pairs 8
– Four pairs of dorsocentral setae of almost equal length..... 11
8. Four pairs of dorsocentral setae, second pair distinctly smaller than other pairs 9
– Three pairs of dorsocentral setae of almost equal length 10
9. Distal section of M_4 longer than or equal to crossvein dm-m; epandrium not higher than length of tergite 5; 2.6–3.2 mm ..... *M. truncorum*
– Distal section of M_4 distinctly shorter than crossvein dm-m; epandrium higher than length of tergite 5; 2.6–2.9 mm ... . *M. roghii*
10. Postpedicel 2 times longer than high; distal section of M_4 half as long as crossvein dm-m; surstylus distinctly longer than epandrium (4/3), with simple setae at apex; 2.6 mm. .....*M. pavlovskii*
– Postpedicel 1.5 times longer than high; distal section of M_4 at least 3/4 as long as crossvein dm-m; surstylus distinctly shorter than epandrium (3/4), with simple setae and 1 thick curved bristle at apex; 3.1 mm.....*M. neopavlovskii* **sp.n.**
11. Tibiae and tarsi mainly yellow 12
– Tibiae and tarsi dark brown or black, knees sometimes yellow 14
12. Fore femur dark basally; costal section between R_{2+3} and R_{4+5} more than twice as long as costal section between R_{4+5} and M_{1+2}; epandrial lobes with long simple setae of equal length; 3.2–3.9 mm.....*M. lamprostoma*
– Fore femur yellow; costal section between R_{2+3} and R_{4+5} at most twice as long as costal section between R_{4+5} and M_{1+2}; epandrial lobes each with plumose seta 13
13. Fore coxa dark; tarsi dark from apex of basitarsus; clypeus scarcely shining, with weak pruinosity; epistome matt; ventral lobe of surstylus with two strong simple apical setae, dorsal lobe of surstylus without dorsoapical seta; median seta of epandrial lobes spatulate; 2.6–3.7 mm ....*M. flavipes*
– Fore coxa yellow; segments 1–4 of all tarsi dark at extreme apex; clypeus metallic shining, with weak pruinosity only laterally; epistome greenish grey, with some bronze tinge and with metallic spot venrally; ventral lobe of surstylus with one simple and one club-shaped apical seta, dorsal lobe of surstylus with strong dorsoapical seta; setae of epandrial lobes flattened but not spatulate; 2.9–3.8 mm .. .. *M. media*
14. Two pairs of dorsocentral setae in front of transverse suture, anterior seta small; surstylus with long distance between two dorsoapical bristles, about as long as the longest bristle; 2.7–3.6 mm ..... *M. jacula*

– One pair of dorsocentral setae in front of transverse suture; surstylus with two dorsoapical bristles situated more apically, with distance between them about half as long as the longest bristle; 3–4 mm ..... *M. meridionalis*
15. Basal section of M_4 with distinct swelling; 1.9–2.1 mm ... . *M. freyi*
– Basal section of M_4 without swelling 16
16. Distal section of M_4 more than 1.5 times as long as crossvein dm-m 17
– Distal section of M_4 at most 1.5 times as long as crossvein dm-m 21
17. Basal antennal segments yellow; 2.2–2.3 mm .... *M. palmaris*
– Basal antennal segments black 18
18. At least tibiae yellow; 1.8–2.2 mm ..... *M. pallipes*
– Legs including tibiae dark brown or black 19
19. Postocular setae brown or black; 2.4–2.8 mm ... *M. abstrusa*
– Postocular setae yellow or white; 2.2 mm ..... *M. seguyi*
20. Propleural setae unequal in length; 2.6–3.7 mm .... *M. feminina*
– Propleural setae strong, almost equal in length 21
21. At least tibiae yellow; clypeus metallic shining, without pruinosity; 3.7–4.5 mm ..... *M. diadema*
– Legs black, only knees sometimes yellow; clypeus with pruinosity at least laterally; 2.0–2.7 mm ..... *M. veles*

Medetera neopavlovskii **sp.n.**
Figs 1–10

MATERIAL. Holotype ♂, Iran, West Azerbaijan Prov., Rashakan Research Station for Lake Urmia National Park, 1315 m, 37°20'38"N, 045°17'37"E, 18–25.VI.2015, Malaise trap, M. Parchami-Araghi leg. (ZIN; male terminalia dissected and stored in glycerin in microvial pinned with the specimen). Paratypes: 2♂, same data as for holotype (HMIM); 1♂, Iran, Markazi Prov., Arak, Haftad Qolleh Protected Area, Chekab valley, 2219 m, 34°07'05"N, 050°16'25"E, 20.V–15.VI.2016, Malaise trap, E. Gilasian, M. Parchami-Araghi leg. (ZIN; male terminalia dissected and stored in glycerin in a microvial pinned with the specimen).

DESCRIPTION. **Male** (Fig. 1). Length (mm): body 3.1, wing 3.0/1.1, antenna 1.1. *Head* (Fig. 2). Frons bluish black, with grey pruinosity; ocellar, vertical and postvertical bristles black; postocular setae white; face slightly narrowing towards clypeus, under antenna 1.4 times as wide as at clypeus, with grey pruinosity, metallic violet in middle of lower part; narrowest distance between eyes 2 times as long as distance between ocellar setae; clypeus metallic violet, with grey pruinosity along eyes; palpus black, with white hairs; proboscis black; antenna brown-black (Fig. 3); postpedicel conoid, 1.5 times as long as high; arista-like stylus apical, bare; length (mm) of scape to pedicel to postpedicel to stylus (segments 1 and 2), 0.05/0.05/0.11/0.03/0.89. *Thorax* bluish black, with grey pruinosity, with mainly black bristles and white hairs; 3 pairs of strong dorsocentral bristles slightly decreasing in length anteriorly, with anterior pair at level of sutural bristles; acrostichal setae biserial, microscopic, white; proepisternum with 1 long and 1 short white setae on its lower portion; 1 long and 1 short notopleural bristles; 1 long and 1 short supra-alar bristles; scutellum with 2 pairs of strong bristles, with lateral bristles more than half as long as medials. *Legs* including coxae black; knees yellow; coxae, femora and tibiae with white hairs and setae; tarsomeres with black apical setulae; fore and mid coxae with anterior and apical setae; hind coxa with strong lateral seta; fore and mid femora with short hairs; hind femur (Fig. 4) with strong dorsal setae in basal half, nearly as long as femur height, with rather short ventral setae in basal half; tibia and tarsomeres devoid of strong bristles; mid tibia with pair of antero- and posterodorsal short setae at basal 1/4; hind tibia (Fig. 5) with short dorsal preapical setae, with white spine and minute comb of black setulae dorsoapically; tarsomeres with simple setulae; fore podomere length (from femur to tarsomere 5, mm): 0.64/0.59/0.28/0.15/0.11/0.06/0.09, mid leg: 0.71/0.72/0.34/0.19/ 0.13/0.07/0.08, hind leg: 0.69/0.89/0.23/ 0.33/0.17/0.09/0.09. *Wing* hyaline, veins yellow-brown; basal section of M_{1+2} as long as distal section; ratio of part of costa between R_{2+3} and R_{4+5} to this between R_{4+5} and M_{1+2}, 0.37/0.11; ratio of cross-vein dm-m to distal part of M_4 to maximal distance between R_{4+5} and M_{1+2}, 0.24/ 0.19−0.26/ 0.34; lower calypter yellow, with white setae; halter yellow. *Abdomen* bluish black, with grey pollinosity, with short white setae; tergum 7 well developed, with short setae; hypopygium (Fig. 6) black, narrow, elongate-triangular, with brownish yellow appendages; hypandrium (ventral view) very long and narrow, thickened at extreme base (Fig. 8); phallus filiform, bifurcated at extreme apex; epandrial lobes fused, with 2 long and simple setae, about as long as cercus (Fig. 7); surstylus (Fig. 9) long and narrow, distinctly shorter than epandrium, with simple setae and 1 thick curved bristle at apex; dorsal and ventral arms of surstylus fused almost to apex (Fig. 10); cercus (Fig. 8) long and narrow, covered with hairs and setae, bifurcated at apex, with dorsal process bearing long apical bristle, with ventral process bearing minute setulae.

Female. Unknown.

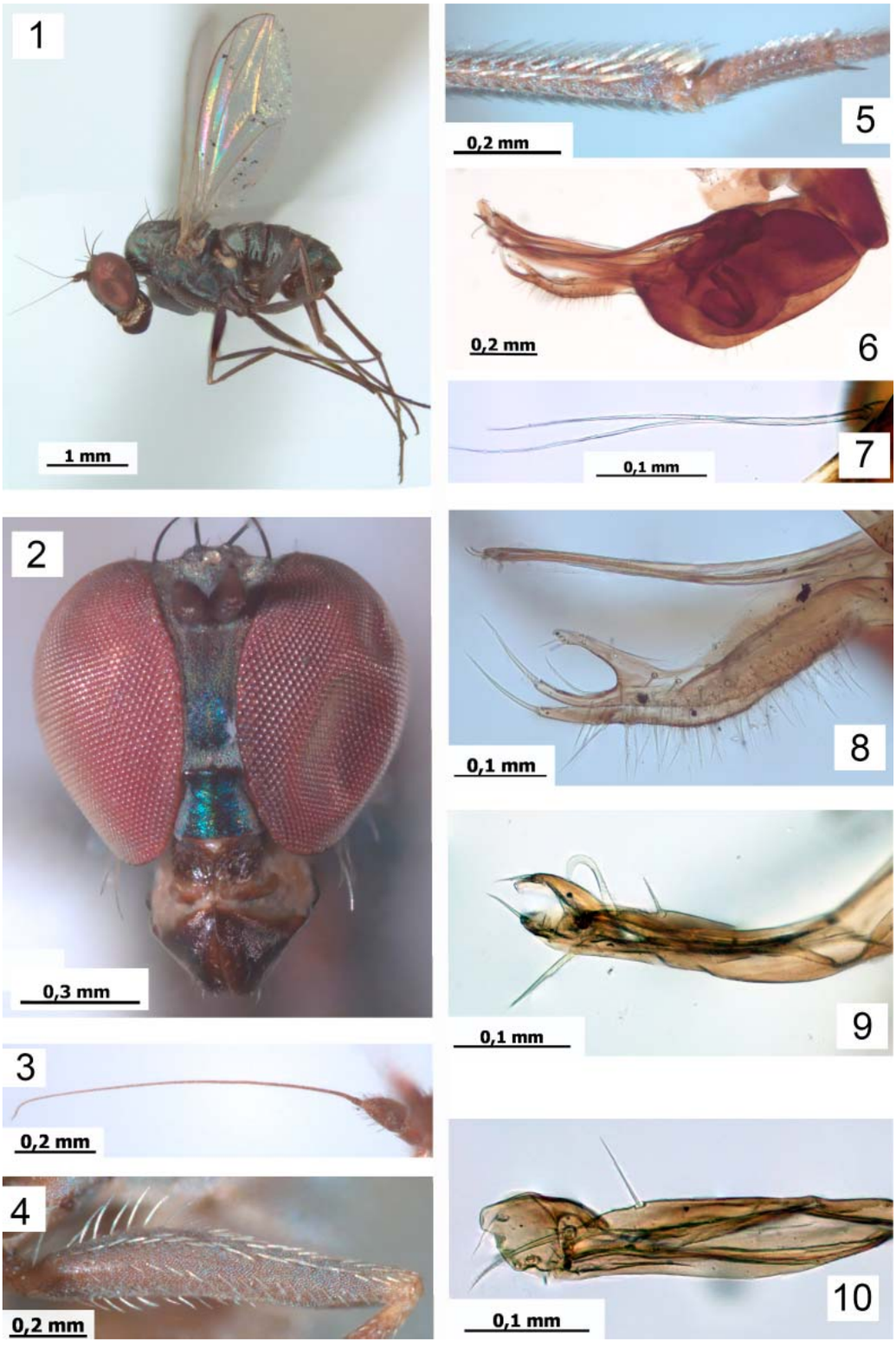
ETYMOLOGY. The species epithet reflects its morphological similarity with *Medetera pavlovskii*.

DISTRIBUTION. Iran (Markazi, West Azerbaijan).

DIAGNOSIS. *Medetera neopavlovskii* **sp.n.** is very close to *M. pavlovskii* Negrobov in habitus, differing from the latter in a somewhat longer body; distal section of M_4 at least 3/4 as long as crossvein dm-m; postpedicel 1.5 times longer than high; surstylus distinctly shorter than epandrium, with simple setae and 1 thick curved bristle at apex; epandrial setae nearly as long as cercus. *M. pavlovskii* has distal section of M_4 half as long as crossvein dm-m; postpedicel two times longer than high; surstylus distinctly longer than epandrium, with only simple setae at apex; epandrial setae about half as long as cercus [Negrobov, Stackelberg, 1974]. *Medetera pavlovskii* was described from Shahrud (Semnan province of Iran) and was once reported from Sinai Mountains, Egypt [Grichanov, 2007a]. The latter record must be confirmed.

In addition, *M. pavlovskii* with three dorsocentrals on mesonotum and *M. tuberculata* Negrobov, 1966 with four dorsocentrals on mesonotum were incorrectly included into the identification key by Negrobov & Naglis [2016]. The couplet 51 of this key must be written and supplemented as follows:

51. Proepisternal seta and hair black; acrostichal setae uniserial; lower calypter with black cilia; distal section of M_4 1.6 times longer than dm-m; 1.6 mm (Slovakia) .... *M. longisurstylata* Maslova *et al*., 2018
– Proepisternal seta and hairs white; acrostichal setae biserial; lower calypter with white cilia; distal section of M_4 not longer than dm-m 51a
51a. Face with dense grey pruinosity; scutellum with minute lateral setae; 2 mm (Uzbekistan) .... *M. turkestanica* (Stackelberg, 1926)
– Face partly shining; scutellum with lateral setae more than half as long as medians 51b
51b. Postpedicel 2 times longer than high; distal section of M_4 half as long as crossvein dm-m; surstylus distinctly longer than epandrium (4/3), with simple setae at apex; 2.6 mm . ..... *M. pavlovskii*



Figs 1–10. *Medetera neopavlovskii* **sp.n.**, male: 1 — habitus; 2 — head; 3 — antenna; 4 — hind femur; 5 — apex of hind tibia and basitarsus; 6 — hypopygium, lateral view; 7 — epandrial setae; 8 — hypandrium and cercus, lateral view; 9 — surstylus, lateral view; 10 — surstylus, dorsal view.

Рис. 1–10. *Medetera neopavlovskii* **sp.n.**, самец: 1 — внешний вид; 2 — голова; 3 — усик; 4 — заднее бедро; 5 — вершина задней голени и 1-й членик задней лапки; 6 — гипопигий, вид сбоку; 7 — щетинки эпандрия; 8 — гипандрий и церка, вид сбоку; 9 — сурстиль, вид сбоку; 10 — сурстиль, вид сверху.

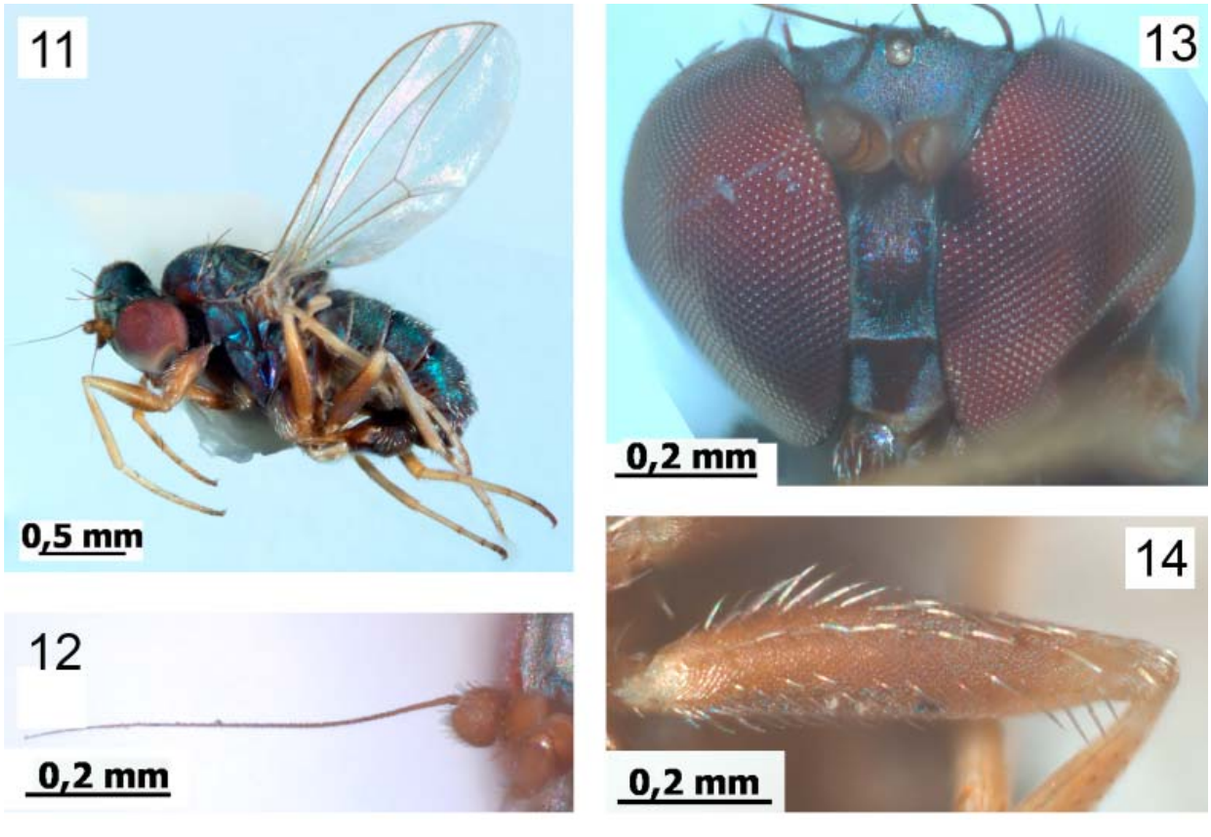
– Postpedicel 1.5 times longer than high; distal section of M_4 at least 3/4 as long as crossvein dm-m; surstylus distinctly shorter than epandrium (3/4), with simple setae and 1 thick curved bristle at apex; 3.1 mm ..... *M. neopavlovskii* **sp.n.**

Medetera palmaris Negrobov, 1972
Figs 11–14.

Medetera palmaris Negrobov, in Negrobov, Stackelberg, 1972: 277 [in key; description: *ibid*., 1974: 326].

Material. 1♂, Iran, Markazi Prov., Arak, Haftad Qolleh Protected Area, Chekab valley, 2219 m, 34°07'05"N, 050°16'25"E, 20.V–15.VI.2016, Malaise trap, E. Gilasian, M. Parchami-Araghi leg. (ZIN; male terminalia dissected and stored in glycerin in microvial pinned with the specimen); 6♂ (in ethanol), same data (HMIM, ZIN).

DESCRIPTION. **Male** (Fig. 11). Length (mm): body 2.2–2.3, wing 2.3/0.9, antenna 0.8. *Head* (Fig. 13). Frons bluish black, with whitish grey pruinosity; ocellar, vertical and postvertical bristles light brown; postocular setae white; face nearly parallel-sided, metallic greenish violet, with grey pruinosity along eyes and clypeus; narrowest distance between eyes 1,7 times as long as distance between ocellar setae; clypeus metallic violet, with grey pruinosity laterally; palpus black, with white hairs; proboscis black; antenna (Fig. 12) with sacpe and pedicel dirty yellow, postpedicel grey-brown, arista-like stylus black; postpedicel rounded, about as long as high; arista-like stylus dorso-apical, with microscopic hairs; length (mm) of scape to pedicel to postpedicel to stylus (segments 1 and 2), 0.05/0.05/0.07/0.02/0.59. *Thorax* greenish blue-black, with whitish grey pruinosity, with dirty white bristles and white setae; 5 pairs of dorsocentral setae strongly decreasing in length anteriorly, with posterior pair long and strong; acrostichal setae distinct, consisting of 6–7 pairs; proepisternum with 1 long and 1 short setae on its lower portion; 1 long and 1 short notopleural setae; 1 long and 1 short supra-alar setae; scutellum with 2 pairs of strong setae, with lateral setae nearly half as long as medials. *Legs* mainly yellow; fore coxa brown in basal half; mid and hind coxae black; fore femur brownish in basal half; mid femur brown in basal 2/3; hind femur blackish brown except apex; tarsi with brown-black segments 4 and 5; coxae, femora and tibiae with white hairs and setae; tarsomeres with black apical setulae; fore and mid coxae with anterior and apical setae; hind coxa with strong lateral seta; fore and mid femora with short hairs; hind femur (Fig. 14) with strong dorsal setae in basal half, with 4 anteroventral setae at apex; tibia and tarsomeres devoid of strong bristles; mid tibia with pair of antero- and posterodorsal setae at basal 1/4; hind tibia with short dorsal preapical setae; tarsomeres with simple setulae; fore podomere length (from femur to tarsomere 5, mm): 0.64/0.59/0.28/0.15/0.11/0.06/0.09, mid leg: 0.71/0.72/0.34/0.19/ 0.13/0.07/0.08, hind leg: 0.69/0.89/0.23/0.33/0.17/0.09/0.09. *Wing* hyaline, veins yellow-brown; basal section of M_{1+2} distinctly shorter than distal section (0.65/1.06); ratio of part of costa between R_{2+3} and R_{4+5} to this between R_{4+5} and M_{1+2}, 0.28/0.08; ratio of cross-vein dm-m to distal part of M_4 to maximal distance between R_{4+5} and M_{1+2}, 0.19/0.35/0.22; lower calypter yellow, with white setae; halter yellow. *Abdomen* greenish blue-black, with grey pollinosity, with short white setae; sternite 7 well developed; hypopygium [Negrobov, Stackelberg, 1974: fig. 731] black, narrow, elon-



Figs 11–14. *Medetera palmaris* Negrobov, 1972, male: 11 — habitus; 12 — antenna; 13 — head; 14 — hind femur.
Рис. 11–14. *Medetera palmaris* Negrobov, 1972, самец: 11 — внешний вид; 12 — усик; 13 — голова; 14 — заднее бедро.

Fig. 15. Habitat of *Medetera* species in the Chekab valley, Haftad Qolleh Protected Area, Markazi province, Iran. Photograph by E. Gilasian.

Рис. 15. Местообитание видов *Medetera*: долина Чекаб, заказник Хафтад Коллех, провинция Маркази, Иран. Фотография Э. Гиласяна.

gate-triangular, with brownish yellow appendages; hypandrium (ventral view) relatively narrow and mostly parallel sided, with strong subapical constriction, forming apical round head with minute projection at apex [*Ibid*: fig. 730]; phallus simple, pointed at apex; epandrial lobes rather short, distinctly separated, each bearing equally long and simple setae; short epandrial seta present between epandrial lobes and base of hypandrium; surstylus [*Ibid*: fig. 732] long and narrow; dorsal and ventral arms of surstylus fused almost to apex; dorsal surstylar arm slender, with two dorsal setae; ventral surstylar arm with 2 simple apical setae, 1 leaflike subapical seta, 1 thick dentate seta at junction with dorsal surstylar arm; cercus with subtriangular base, narrow distally, ending with long slender pointed process, bearing flattened subapical ventral seta, equal in length to apical process; other cercal setae simple.

DISTRIBUTION. Iran (Markazi), Tajikistan, Kazakhstan (female).

DIAGNOSIS AND NOTES. *Medetera palmaris* was rather briefly described and never recorded again after description [Negrobov, Stackelberg, 1974]. This species keys to *M. flavichaeta* Naglis, 2013 from Kars province of Turkey [Negrobov, Naglis, 2016], strongly differing from the latter in shape of surstylus and hypandrium [Negrobov, Stackelberg, 1974: figs 730–732; Naglis, 2013: fig. 2]. It is worth noting that the hind tarsomere 2 was incorrectly measured as 1.8 times longer than tarsomere 1 in the description [Negrobov, Stackelberg, 1974: 326] and correctly described as "not more than 1.5 times longer than tarsomere 1" in both keys [Negrobov, Stackelberg, 1972: 277; Negrobov, Naglis, 2016: 356]. Wing vein M_4 and dm-m length ratio was most probably also incorrectly given in the original description of *M. palmaris* (2.4 vs. 1.8).

Conclusion

As a result of this study, the *Medetera* species number in Iran has increased to 22: ten species have been reported from Markazi, six from Mazandaran, four from Tehran, Gilan and Lorestan each, three from Alborz, two from Fars and West Azerbaijan each, as well as from East Azerbaijan, Esfahan, Razavi Khorasan, Semnan and South Khorasan with one species in each province. Four species were reported without precise localities [Kazerani *et al*., 2016]. In comparison, the Turkish fauna numbers 18 species [Tonguç *et al*., 2016; Tonguç, Yüzer, 2023]. The fauna of the Caucasus and East Mediterranean region as a whole includes about 60 species of the genus [Grichanov, 2007b; Negrobov, Naglis, 2016]. It means that new species records are anticipated in Iran.

Medetera neopavlovskii **sp.n.** types along with *M. meridionalis* adults were collected in the Lake Urmia National Park (West Azerbaijan province) and the Haftad Qolleh Protected Area (Markazi province). See Asem *et al*. [2014] and Ansari & Golabi [2019] for descriptions of these nature reserves. See also photographs of type localities in Grichanov & Gilasian [2023b].

Medetera palmaris specimens were collected in the Haftad Qolleh Protected Area (Fig. 3), together with *M. neopavlovskii* **sp.n.**, *M. anjudanica* and more common *M. meridionalis* and *M. mixta* (see Grichanov, Gilasian [2023b]).

In total, 179 species belonging to 31 genera of the family Dolichopodidae are recorded now from Iran [Grichanov, Gilasian, 2023a, b, c, d].

Competing interests. The authors declare no competing interests.

Acknowledgements. This research was funded by the Iranian Research Institute of Plant Protection (IRIPP, Tehran, Iran) and the All-Russian Institute of Plant Protection project No. FGEU-2022-0002. Two anonymous reviewers kindly commented on the earlier drafts of the manuscript.

References

Ahmadi A., Gheibi M., Ostovan H., Hesami S., Grichanov I.Ya. 2016. New records of Dolichopodidae (Diptera) from Central Provinces of Iran // Halteres. Vol.7. P.191–196. https://doi.org/10.5281/zenodo.192413.

Ahmadi A., Gheibi M., Ostovan H., Hesami S., Grichanov I.Ya. 2017. New records of long-legged flies (Diptera, Dolichopodidae) of Iran // Russian Entomological Journal. Vol.26. No.1. P.65–70.

Ansari A., Golabi M.H. 2019. Using Ecosystem Service Modeler (ESM) for Ecological Quality, rarity and Risk Assessment of the wild goat habitat, in the Haftad-Gholleh protected area // International Soil and Water Conservation Research. Vol.7. No.4. P.346–353. https://doi.org/10.1016/j.iswcr.2019.08.004.

Asem A., Eimanifar A., Djamali M., De los Rios P., Wink M. 2014. Biodiversity of the Hypersaline Urmia Lake National Park (NW Iran) // Diversity. Vol.6. P.102–132. https://doi.org/10.3390/d6010102.

Bickel D.J. 1985. A revision of the Nearctic *Medetera* (Diptera: Dolichopodidae) // United States Department of Agriculture Technical Bulletin. No.1692. P.1–109.

Bickel D.J. 1987. A Revision of the Oriental and Australasian *Medetera* (Diptera: Dolichopodidae) // Records of the Australian Museum. Vol.39. P.131–182.

Cumming J.M., Wood D.M. 2017. 3. Adult morphology and terminology // Kirk-Spriggs A.H., Sinclair B.J. (eds.). Manual of Afrotropical Diptera. Vol.1. Introductory chapters and keys to Diptera families. Suricata 4. Pretoria: SANBI Graphics and Editing. P.89–134.

Fischer von Waldheim G. 1819. Programme d'invitation à la séance publique de la Société impériale des Naturalistes, qui aura lieu le 15 décembre. Contenant une notice sur une mouche carnivore, accompagnée d'une planche Université Impériale. Moscou. 11 pp. 1 pl.

Grichanov I.Ya. 2007a. New records of Dolichopodidae (Diptera) from the Middle East // International Journal of Dipterological Research. Vol.18. No.3. P.141–153.

Grichanov I.Ya. 2007b. A checklist and keys to Dolichopodidae (Diptera) of the Caucasus and East Mediterranean. St. Petersburg: All-Russian Research Institute of Plant Protection. 160 pp.

Grichanov I.Ya. 2023. Alphabetic list of generic and specific names of predatory flies of the epifamily Dolichopodoidae (Diptera). [Online version]. St. Petersburg: All-Russian Research Institute of Plant Protection. Available from: http://grichanov.aiq.ru/genera3.htm (Accessed 10 May 2023).

Grichanov I.Ya., Ahmadi A. 2017. A new species of *Medetera* Fischer Von Waldheim, 1819 (Diptera: Dolichopodidae) from Iran // Far Eastern Entomologist. Vol.339. P.12–15.

Grichanov I.Ya., Ahmadi A., Kosterin O.E. 2017. New records of long-legged flies (Diptera, Dolichopodidae) from Central and North-Eastern Iran // Acta Biologica Sibirica. Vol.3. No.4. P.99–112.

Grichanov I.Ya., Brooks S.E. 2017. 56. Dolichopodidae (longlegged dance flies) // Kirk-Spriggs A.H., Sinclair B.J. (eds.). Manual of Afrotropical Diptera. Vol.2. Nematocerous Diptera and lower Brachycera. Suricata 5. Pretoria: SANBI Graphics and Editing. P.1265–1320.

Grichanov I.Ya., Gilasian E. 2023a. *Mangrovomyia*, a new genus of long-legged flies from Iranian mangroves (Diptera: Dolichopodidae: Hydrophorinae) // Zootaxa. Vol.5239. No.3. P.395–407. https://doi.org/10.11646/zootaxa.5239.3.4.

Grichanov I.Ya., Gilasian E. 2023b. An annotated checklist of Dolichopodidae (Diptera) species from Iran, with new records and a bibliography // Amurian Zoological Journal. Vol.15. No.1. P.82–109. https://doi.org/10.33910/2686-9519-2023-15-1-82-109.

Grichanov I.Ya., Gilasian E. 2023c. Two new species of *Sciapus* Zeller, 1842 (Diptera: Dolichopodidae) from Iran // Journal of Insect Biodiversity. Vol.38. No.2. P.37–47. https://doi.org/10.12976/jib/2023.38.2.2

Grichanov I.Ya., Gilasian E. 2023d. Three new species of the genus *Argyrochlamys* Lamb, 1922 (Diptera: Dolichopodidae) from mangroves of Iran and Oman // Russian Entomological Journal. Vol.32. No.2. P.210–220. https://doi.org/10.15298/rusentj.32.2.12

Hamed E., Khaghaninia S., Kazerani F. 2017. Study of the family Dolichopodidae in grasslands of Miandoab County, Iran // Acta Phytopathologica et Entomologica Hungarica. Vol.53. No.1. P.51–56. https://doi.org/10.1556/038.52.2017.031.

Kazerani F., Khaghaninia S., Talebi A.A., Gharajedaghi Y., Grichanov I.Ya. 2014a. New records of long-legged flies (Diptera: Dolichopodidae) from Iran // Acta entomologica serbica. Vol.19. No.1/2. P.25–32.

Kazerani F., Khaghaninia S., Talebi A.A., Grichanov I.Ya. 2014b. Faunistic survey of Dolichopodidae in forests of northern Iran with nine species as new records for the country // Zoology and Ecology. Vol.24. No.3. P.266–273.

Kazerani F., Khaghaninia S., Talebi A.A., Pollet M. 2016. Study of the genus *Medetera* Fischer von Waldheim, 1819 (Dip., Dolichopodidae) in the forests of northern Iran with 5 new records species for the fauna of Iran // Proceedings of 22nd Iranian Plant Protection Congress, 27–30 August 2016. Karaj: College of Agriculture and Natural Resources, University of Tehran. P.452.

Maslova O.O., Negrobov O.P., Oboňa J. 2018. A new species of *Medetera* (Diptera: Dolichopodidae) from Slovakia // Zoosystematica Rossica. Vol.27. No.2. P.196–199.

Naglis S. 2013. New records of Medeterinae (Diptera, Dolichopodidae) from Turkey, with the description of three new species of *Medetera* Fischer von Waldheim // Mitteilungen der Schweizerischen Entomologischen Gesellschaft. Vol.86. No.3/4. P.165−173.

Negrobov O.P., Naglis S. 2016. Palaearctic species of the genus *Medetera* (Diptera: Dolichopodidae) // Zoosystematica Rossica. Vol.25. No.2. P.333–379.

Negrobov O.P., Stackelberg A.A. 1972. Dolichopodidae, Unterfamilie Medeterinae // Lindner P.E. (Hrsg.). Die Fliegen der Paläarktischen Region. Bd.IV. Teil 29. Lfg.289. S.257–302.

Negrobov O.P., Stackelberg A.A. 1974. Dolichopodidae, Unterfamilie Medeterinae // Lindner P.E. (Hrsg.). Die Fliegen der Paläarktischen Region. Bd.IV. Teil 29. Lfg.303. S.325–346.

Pollet M., Andrade R., Gonçalves A., Álvarez Fidalgo P., Camaño Portela, J.L., Belin F., Mortelmans J., Stark A. 2022. Discovery of a lineage of soil-dwelling *Medetera* species with multi-coloured eyes in Southern Europe (Diptera: Dolichopodidae) // Insects. Vol.13. No.1012. P.1–36. https://doi.org/10.3390/insects13111012

Rezaei S., Grichanov I.Ya., Fallahzadeh M. 2019a. First records of long-legged flies (Diptera, Dolichopodidae) from Fars Province of Iran // Acta Biologica Sibirica. Vol.5. No.1. P.6–11.

Rezaei S., Grichanov I.Ya., Fallahzadeh M., Dousti A.F., Saghaei N. 2019b. A faunistic study of the Dolichopodidae (Diptera, Brachycera) in Fars Province of Iran // Acta Biologica Sibirica, Vol.5. No.4. P.89–95. https://doi.org/10.14258/abs.v5.i4.7069.

Tang C., Wang M., Yang D. 2016. New species of *Medetera* from Inner Mongolia, China (Diptera, Dolichopodidae, Medeterinae) // ZooKeys. Vol.604. P.117–144.

Tonguç A., Grichanov I.Ya., Naglis S. 2016. Checklist of the Dolichopodidae (Diptera, Brachycera) of Turkey // Turkish Journal of Zoology. Vol.40. No.1. P.14–26. https://doi.org/10.3906/zoo, 1412-23.

Tonguç A., Yüzer Ö. 2023. Contributions to the Dolichopodidae (Insecta: Diptera) Fauna of Muğla Provinces with the Six New Records for Turkey // Journal of the Entomological Research Society. Vol.25. No.1. P.229–239.