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A new species and new records of Ichneumonini (Hymenoptera: Ichneumonidae, Ichneumoninae) from Iran

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ABSTRACT. A survey was conducted on the fauna of Ichneumonini Latreille, 1802 (Ichneumonidae: Ichneumoninae) in North-central area of Iran. The specimens were collected using Malaise traps from March to November in 2010–2011. A total of 28 species were identified, of which three species and one subspecies are recorded for the first time from Iran: *Eutanyacra ruficornis* Berthoumieu, 1894; *Ichneumon quadrialbatus* Gravenhorst, 1820; *Ichneumon sarcitorius turkestanicus* Heinrich, 1929; *Stenobarichneumon basalis* Perkins, 1960. As well 17 species are new provincial records. A new species, *Anisopygus persicus* Shirzadegan, Talebi & Riedel **sp. nov.** from Guilan province in northern Iran is now raised to 143. Detailed morphological characters of the newly recorded species and *Virgichneumon albilineatus* (Gravenhorst, 1820), as well as an updated list of the tribe Ichneumonini from Iran, are provided.

Key words: New record, New species, Ichneumoninae, Ichneumonini, Taxonomy, Checklist, Distribution, Iran

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Introduction

The Ichneumonidae Latreille, 1802 represent the largest hymenopteran family with 48 generally recognized subfamilies, 1601 genera and about 25300 described species worldwide (Yu et al., 2016). Ichneumoninae is the second-largest subfamily of Ichneumonidae (Burks & Hurd, 1979) with 15 tribes (Wahl et al., 1995) and 214 genera worldwide. So far, 1300 species of this subfamily have been recorded from the Western Palaearctic region (Yu et al., 2016). Species of the tribe Ichneumonini are endoparasitoids of Lepidoptera, Coleoptera, and Hymenoptera (Jeong et al., 2009). Members of this tribe are diagnosed by the structure of the propodeum, which is of the 'broken type' and is distinctly separated on horizontal and declivous parts, meeting under an angle of carinae dentiparae

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interiors and apical carina of area superomedia. Tereshkin (2009) discussed the diagnostic characters of this tribe which are mostly based on exceptions than on characters common in all members of the taxon.

In recent years, considerable progress has been made in understanding the taxonomy and fauna of different subfamilies of Ichneumonidae in Iran (Barahoei et al., 2012, 2013, 2014a, 2014b, 2015; Mohammadi-Khoramabadi et al., 2011; 2013a, 2013b; Amiri et al., 2015a, 2015b, 2016a, 2016b, 2017; Aghadokht et al., 2017; Shirzadegan et al., 2018; Reidel et al., 2019; Zardouei Heydari et al., 2019, 2020a, 2020b,2020c, 2020d; Falahatpisheh et al., 2021). From the tribe Ichneumonini (Ichneumonidae, Ichneumoninae), 137 species have been yet recorded from Iran (Heinrich, 1929; Mojeni & Sedivy, 2001; Kolarov & Ghahari, 2008; Masnadi & Jussila, 2008; Zarepour et al., 2008, 2009; Barahoei et al., 2012; Riedel et al., 2010, 2019; Riedel & Aghadokht, 2017; Riedel, 2020).

The central north of Iran includes five provinces located on the southern and northern slopes of the Alborz Mountains, the Hyrcanian forests biome, rangelands, agricultural or residential areas. A malaise trap sampling project had been done during 2010-2011 on the species diversity of the family Ichneumonidae in this region (Mohammadi-Khoramabadi et al., 2011, 2013a, 2013b). The objective of this study is to provide new data on the tribe Ichneumonini fauna of this region of Iran.

Material and methods

Sampling was performed by using Malaise traps at different locations in Guilan province (Ghazichak, Eshman Kamachal, Orkom and Ziaz), Alborz province (Arangeh, Sarziarat, Shahrestanak and Karaj) and Tehran province (Shahriar) during March to November in 2010 and 2011 (Fig. 1). The specimens were treated with a mixture of ethanol (60%) /xylene (40%) for two days and with amyl acetate for the next two days (AXA) and finally placed on a filter paper for drying (van Achterberg 2009). The dried specimens were then mounted on triangular point cards. Morphological terminology follows Tereshkin (2009) and Broad et al. (2018). Relevant determination keys were used for the identification of the specimens at the species level (Rasnitsyn & Sityan, 1981; Tereshkin, 2004, 2011). All the species were compared with the original descriptions and the specimens deposited in the Bavarian State Collection of Zoology, München, Germany. Photographs were made using either an Olympus TM AX70 microscope or an Olympus TM SZX9 stereomicroscope equipped with a Sony TM digital camera. A series of 10-15 captured images were merged into a single infocus image using the image-stacking software Zerene Stacker version 1.04. The specimens are deposited at the Collection of Department of Entomology, Tarbiat Modares University (TMUC), Tehran, Iran and the personal collection of M. Riedel (MRC).

The general abbreviations of terms used in this paper are as follows:

T1-T7 = first to seventh metasomal tergites

S1-S7 = first to seventh metasomal sternites

AOL = distance between anterior ocellus and posterior ocellus

- OOL = minimum distance between posterior ocelli and eye
- POL = distance between two posterior ocelli.



Figure 1. Map of Iran: Alborz, Tehran, Guilan provinces, where specimens have been collected in this study.

Results

Twenty-eight species belonging to thirteen genera of the tribe Ichneumonini were collected and identified. Of these, three species, *Amblyteles armatorius* (Forster, 1771), *Vulgichneumon saturatorius* (Linnaeus, 1758) and *V. suavis* (Gravenhorst, 1820) were previously recorded from the same provinces, 17 species are new provincial records, three species and one subspecies are new records for the Iranian fauna and one species, *Anisopygus persicus* Shirzadegan, Talebi and Riedel **sp. nov.**, is newly described here.

Anisopygus persicus Shirzadegan, Talebi & Riedel sp. nov. (Fig. 2; Figs 3A–J) http://zoobank.org/F19872AC-4A5A-4A25-97D5-99C60459BAF5

Holotype: ♂: Iran, Guilan province: Eshman Kamachal (37°22'06" N, 49°57'54" E, 1 m a.s.l.), 20.V.2010; TMUC, leg.: M. Khayrandish.

Paratypes: 13, TMUC and 233, MRC, same data as holotype.

Diagnosis. Anisopygus persicus **sp. nov.** differs from congeneric species (e.g. A. americanus Heinrich, 1961 and A. pseudonymus Wesmael, 1845 by the following combination of characters: clypeus flat (in A. americanus clypeus slightly convex); flagellum with white annulus on segments 9–19(20) (in A. americanus flagellum without annulus); pronotal ridge, subalarum, scutellum, postscutellum and mesopleura entirely black; all coxae and trochanters mainly black; apex of femora and tarsal segments of foreleg ivory ventrally; all tibiae with the ivory pattern, (in A. americanus the following are ivory: pronotal ridge, subalarum, scutellum, and postscutellum, sometimes prosternum, prepectus partially and small mark on the lower part of mesopleura, fore and mid coxae predominantly, the ventral apex of hind coxae, fore and mid trochanters and trochantellus ventrally, fore and mid femora, tibiae and tarsi ventrally ivory). Anisopygus persicus **sp. nov.** differs from A. pseudonymus by the following characters: temple orbits usually ferruginous marked (in A. pseudonymus temple orbits ivory; all coxae and trochanters mainly black (in A. pseudonymus fore coxa marked with a white spot; fore and mid legs extensively yellow); apical border of T2–T3 black (in A. pseudonymus apical border of T2 or T2–T3 usually narrowly ferruginous).



Figure 2. Lateral habitus of male in *Anisopygus persicus* Shirzadegan, Talebi and Riedel, **sp. nov.** (Scale bar: 4 mm).

Description. Length of body 12–13 mm, antenna 11 mm, fore wing 10 mm, hind wing 8 mm, hind leg 12 mm, mesosoma 4.2 mm, metasoma 8.5 mm.

Head: Vertex slanting straight down after the ocelli to occipital carina in lateral view (Fig. 3C); temple 0.8 × as long as transverse diameter of eye at middle, roundly narrowed behind eyes in dorsal view (Fig. 3A); occipital carina not reaching the level of hind ocelli in dorsal view; POL 1.25 × as long as OOL, and 2.5 to 2.6 × as long as AOL; OOL 2.0 –2.1 × as long as AOL; middle field of face slightly elevated, face with sparse superficial punctures, without microsculpture (Fig. 3B); clypeus 2.6 × wider than its length, apical margin of clypeus straight, separated from face by slight impression; clypeus with sparse, superficial punctures, without microsculpture; malar space 0.44 × basal width of mandible; occipital carina meeting hypostomal carina far from base of mandibles; mandibles strong, slightly evenly narrowed behind base, upper tooth longer than lower; antennal cavities deeply impressed, reach borders of eyes and far not reach front ocellus level, with weak tubercle between antennal fossae (Fig. 3B); margins of antennal fossae slightly elevated above face surface. Flagellum with 35 flagellomeres, with white annulus on segments (9)10-19(20), basal segment 2.6 × its width at apex; with narrow tyloides on segments 5–12 (Fig. 3H).

Mesosoma (Figs 3D, 3E, 3I): Collar of pronotum in dorsal view rather long with straight front margin, transverse furrow of pronotum shallow, not interrupted by keel; pronotal ridge not swollen; epomia sharp; base of pronotum gradually curved (Fig. 3E); mesoscutum only just convex, 1.07 × wider than its length; notauli in form of very slight impressions on frontal margin, middle lobe of mesoscutum densely punctured, without microsculpture, lateral lobes with sparse punctures, shining (Figs 3D); subalarum thin, sharp; axillary tongue developed, but weak; speculum with sparse superficial punctures, slightly shining (Fig. 3E); area of mesopleural fovea moderately impressed; area of mesopleural fovea slightly impressed; mesopleural suture straight, interrupted by slight transversal ribs; middle part and hind third of mesopleura wrinkly-punctured, other part of mesopleura densely punctured (Fig. 3E); sternauli not developed; scutellum convex, carinated up to middle, dorsal surface densely punctured, without microsculpture (Fig. 3I); length of horizontal part of propodeum 1.28 × longer than area posteromedia in middle; carinae of propodeum sharp; area superomedia 1.25 × wider than its length, costulae at middle; apices of area dentiparae slightly prominent; propodeal spiracles 2 × longer than its width (Fig. 3I).

Legs: Moderately stout; densely punctured and slightly shining; hind femur 2.8 × as long as its maximum width; hind tibia 1.8 × longer than hind basitarsus.

Wings (Fig. 3J): Areolet pentagonal, first intercubitus (internal vein of a base or Rs) approximately equal to the length of the second intercubitus (external vein of a base or 3rs-m). radius (Rs) straight and slightly curved at apex; radial cell long and rather broad; ramulus distinct; all veins dark; length of fore wings 0.83 × as long as the body, and 1.25 × longer than hind wings.

Metasoma (Figs 3F, G): Metasoma in dorsal view elongated, parallel-sided, T2 at apex 1.2 × longer than its width (Fig. 3G); middle field of postpetiole slightly elevated, 2.4 × wider than lateral fields, its surface irregularly reticulate-rugose (Fig. 3F); gastrocoeli presented by shallow impressions, interspace between its irregularly wrinkled; surface of T2 reticulate-cellular sculpture and T3 densely punctured; thyridia developed, interval between them wider than the middle field of postpetiole, it's surface irregularly wrinkled (Fig. 3F); lunulae only just expressed.

Color. Body black; face and clypeus completely ivory; scape with ivory spot ventrally; scutellum black; legs black, with an ivory pattern on all tibiae; the base of all femorae brown-red.

Female. Unknown.



Figure 3. *Anisopygus persicus* Shirzadegan, Talebi and Riedel, **sp. nov**., male; **A.** Head, dorsal view, **B.** Head, frontal view, **C.** Head, lateral view, **D.** Mesonotum, dorsal view, **E.** Mesosoma, lateral view, **F.** T1–T2, dorsal view, G. Metasoma, dorsal view, **H.** Antenna, lateral view, **I.** Scutellum and propodeum, dorsal view, **J.** Fore wing. Scale bars: A–D, F, I= 1 mm, E, G–H= 2 mm, J= 4 mm.

Shirzadegan et al.

Hosts: Unknown.

Etymology. The name of the new species is derived from Persia, the Latin name used for the area of Iran.

General distribution. Currently, only known from the type locality in Iran.

Barichneumon chionomus (Wesmael, 1845)

Material examined. Iran, Alborz province: Shahrestanak (35°57'36" N, 51°22'18" E, 2301 m a.s.l.), 01.VI.2010, 13; 22.VI.2010, 333; 28.VI.2010, 233; Guilan province: Ghazichak (36°45'54" N, 50°19'36" E, 1803 m a.s.l.), 06.IX.2010, 13; 20.IX.2010, 333; TMUC, leg.: M. Khayrandish.

General distribution. Western and Eastern Palaearctic region (Yu et al., 2016).

Distribution in Iran. Razavi Khorasan (Ghahari & Jussila, 2014), Alborz and Guilan (new provincial record) provinces.

Barichneumon derogator (Wesmael, 1845)

Material examined. Iran, Guilan province: Ghazichak (36°45'54" N, 50°19'36" E, 1803 m a.s.l.), 05.VII.2010, 13; TMUC, leg.: M. Khayrandish.

General distribution. Western and Eastern Palaearctic region (Yu et al., 2016).

Distribution in Iran. Fars (Falahatpisheh et al., 2021), Golestan (Aghadokht et al., 2017), Guilan (new provincial record), Kerman (Mohebban et al., 2015), Tehran (Hasanshahi et al., 2014) and Yazd (Habibi-Badrabadi et al., 2018) provinces.

Barichneumon gaullei (Berthoumieu, 1903)

Material examined. Iran, Alborz province: Shahrestanak (35°57′36″ N, 51°22′18″ E, 2301 m a.s.l.), 20.VII.2010, 1♂; 07.IX.2010, 1♂; Guilan province: Orkom (36°45′42″ N, 50°18′12″ E, 1235 m a.s.l.), 14.VI.2010, 1♀; TMUC, Leg.: M. Khayrandish

General distribution. Southern Europe (Yu et al., 2016).

Distribution in Iran. Kerman (Mohebban et al., 2016), Alborz and Guilan (new provincial record) provinces.

Ctenichneumon castigator (Fabricius, 1793)

Material examined. Iran, Guilan province: Orkom (36°45′42″ N, 50°18′12″ E, 1235 m a.s.l.), 10.V.2010, 1♂; 29.VIII.2010, 1♀; Tehran province: Shahriar, (35°40′06″ N, 50°56′54″ E, 1168 m a.s.l.), 14.VII.2010, 1♀; TMUC, leg.: M. Khayrandish.

General distribution. Western and Eastern Palaearctic and Oriental regions (Yu et al., 2016).

Distribution in Iran. Guilan (Heinrich, 1929, current study), Mazandaran (Masnadi & Jussila, 2008), Razavi Khorasan (Ghahari & Jussila, 2014) and Tehran (Masnadi & Jussila, 2008; current study) provinces.

Ctenichneumon devylderi (Holmgren, 1871)

Material examined. Iran, Alborz province: Sarziarat (35°55'12" N, 51°06'54" E, 1980 m a.s.l.), 15.VI.2010, 333; Shahrestanak (35°57'36" N, 51°22'18" E, 2301 m a.s.l.), 08.VI.2010, 233; TMUC, leg.: M. Khayrandish.

General distribution. Western and Eastern Palaearctic region (Yu et al., 2016).

Distribution in Iran. Alborz (Falahatpisheh et al., 2021; Current study), Ghom (Masnadi & Jussila, 2008) and Kerman (Mohebban et al., 2015) provinces.

Ctenichneumon inspector (Wesmael, 1845)

Material examined. Iran, Alborz province: Karaj (35°46'18" N, 50°56'42" E, 1278 m a.s.l.), 08.VI.2010, 3♂♂; 15.VI.2010, 1♂; 06.VII.2010, 1♂; 14.VII.2010, 1♀; 19.X.2010, 1♀; Guilan province, Ghazichak (36°45'54" N, 50°19'36" E, 1803 m a.s.l.), 05.VII.2010, 1♀; 09.VIII.2010, 1♂; Orkom (36°45'42" N, 50°18'12" E, 1235 m a.s.l.), 28.VI.2010, 1♀, 2♂♂; Ziaz (36°52'30" N, 50°13'24" E, 490 m a.s.l.), 17.V.2010, 1♂; Tehran province: Shahriar (35°40'06" N, 50°56'54" E, 1168 m a.s.l.), 17.V.2010, 1♀, 3♂♂; TMUC, leg.: M. Khayrandish.

General distribution. Western and Eastern Palaearctic, Oriental regions (Yu et al., 2016).

Distribution in Iran. Alborz, Guilan and Tehran provinces (new provincial record). This species was previously reported from Iran (Tehran province), which is excluded from the current list of valid records because it has been published in an invalid journal.

Ctenichneumon panzeri (Wesmael, 1845)

Material examined. Iran, Guilan province: Orkom (36°45′42″ N, 50°18′12″ E, 1235 m a.s.l.), 10.V.2010, 1₃; TMUC, Leg.: M. Khayrandish.

General distribution. Australasian, Oriental, Western and Eastern Palaearctic regions (Yu et al., 2016).

Distribution in Iran. Golestan (Heinrich, 1929; Ghadiri et al., 2007), Guilan (new provincial record), Mazandaran (Masnadi & Jussila, 2008), Sistan and Baluchestan (Kolarov & Ghahari, 2008) and Razavi Khorasan (Ghahari & Jussila, 2014) provinces.

Ctenichneumon repentinus (Gravenhorst, 1820)

Material examined. Iran, Alborz province, Karaj (35°46'18" N, 50°56'42" E, 1278 m a.s.l.), 08.VI.2010, 2♂♂; 15.VI.2010, 1♂, 1♀; Sarziarat, (35°55'12" N, 51°06'54" E, 1980 m a.s.l.), 15.VI.2010, 1♂; Guilan province, Ghazichak (36°45'54" N, 50°19'36" E, 1803 m a.s.l.), 26.VII.2010, 1♂; Tehran province: Shahriar (35°40'06" N, 50°56'54" E, 1168 m a.s.l.), 29.VI.2010, 2♂♂; TMUC, leg.: M. Khayrandish.

General distribution. Western and Eastern Palaearctic region (Yu et al., 2016).

Distribution in Iran. Alborz, Guilan, Tehran (new provincial record), East and West Azarbaijan (Kolarov & Ghahari, 2008) provinces.

Diphyus ochromelas (Gmelin, 1790)

Material examined. Iran, Guilan province: Ghazichak (36°45′54″ N, 50°19′36″ E, 1803 m a.s.l.), 07.VI.2010, 1♂; TMUC, leg.: M. Khayrandish.

General distribution. Western and Eastern Palaearctic region (Yu et al., 2016).

Distribution in Iran. Ardabil (Kolarov & Ghahari, 2008; Masnadi & Jussila, 2008) and Guilan (new provincial record) provinces.



Figure 4. Lateral habitus of male in Eutanyacra ruficornis Berthoumieu, 1894 (scale bar: 5mm).

Eutanyacra ruficornis (Berthoumieu, 1894) (Fig. 4; Figs 5A-G)

Material examined. Iran, Alborz province: Shahrestanak (35°57′36″ N, 51°22′18″ E, 2301 m a.s.l.), 20.VII.2010, 1♂; TMUC, leg.: M. Khayrandish.

Diagnostic characters (male). Body length 16 mm; Vertex linearly sloping from ocelli to occipital carina in lateral view (Fig. 5C); temples equal to transverse diameter of eye at middle, behind eyes slightly roundly narrowed in dorsal view (Fig. 5A); occipital carina from above not reaching level of eyes and hind ocelli; middle field of face slightly elevated, its surface densely punctured (Fig. 5B); clypeus $2.5 \times$ wider than length, apical margin of clypeus straight, separated from face by slight impression; clypeus densely punctured (Fig. 5B); malar space 0.66 × basal width of mandible; occipital carina meeting hypostomal carina some before base of mandibles; mandibles narrow, gradually narrowed towards apex, upper tooth distinctly longer than lower; antennal cavities strongly impressed, reach borders of eyes and almost reach front ocellus level, with tubercle between antennal fossae; margins of antennal fossae high elevated above face surface (Fig. 5B); flagellum with 41 segments, with long row of long tyloides on segments 2–19, basal segment in dorsal view 3 × longer than its width at apex; collar of pronotum from above long, with straight front margin; mesoscutum slightly convex, with equal length and breadth; notauli in form of slight frontal impressions; mesopleura very densely punctured, without verv microsculpture; speculum densely punctured; mesopleural fovea small, area of mesopleural fovea only just impressed; subalarum moderately thick (Fig. 5D); sternauli absent; scutellum high elevated, laterally not carinated (Fig. 5E); carinae of propodeum sharp, costulae absent; area superomedia 2.3 × wider than its length; area dentiparae at apices with slight denticles (Fig. 5E); propodeal spiracles long, slit-shaped, 4 × longer than its width; T2 transversal, $1.55 \times$ wider than its length at apex; middle field of postpetiole $2.13 \times$ wider than lateral fields, its surface longitudinally-wrinkled (striated) (Fig. 5F); gastrocoeli comparatively short, deep, narrower than interval between them; thyridiae not developed; lunulae distinct, of moderate size (Fig. 5F); S2 and S3 with fold; hypopygium with long, sharpened and compressed from sides median process.

Coloration. Head and thorax completely black; basal flagellomeres reddish; scutellum, coxae, trochanters of all legs, the apex of hind tibiae and tarsi black; T5–T7 with short ivory posterolateral stripes.

General distribution. Algeria, Turkey (Yu et al., 2016) and Iran (new record).

Distribution in Iran. Alborz province.



Figure 5. *Eutanyacra ruficornis* Berthoumieu, 1894, male; **A.** Head, dorsal view, **B.** Head, frontal view, **C.** Head, lateral view, **D.** Mesosoma, lateral view, **E.** Scutellum and propodeum, dorsal view, **F.** T1–T2, dorsal view, **G.** Metasoma, dorsal view. Scale bars: A= 1.5 mm, B–E= 1mm, F= 2 mm, G= 3 mm.

Ichneumon proletarius (Wesmael, 1848)

Material examined. Iran, Guilan province: Eshman Kamachal (37°22'06" N, 49°57'54" E, 1 m a.s.l.), 13.IX.2010, 23강; TMUC, leg.: M. Khayrandish.

General distribution. Western and Eastern Palaearctic region (Selfa, 1996; Yu et al., 2016).

Distribution in Iran. Golestan (Heinrich, 1929), Sistan and Baluchestan (Kolarov & Ghahari, 2008), Tehran (Masnadi & Jussila, 2008) and Guilan (new provincial record) provinces.

Ichneumon quadrialbatus (Gravenhorst, 1820) (Fig. 6; Figs 7A-F)

Material examined. Iran, Guilan province: Ghazichak (36°45'54" N, 50°19'36" E, 1803 m a.s.l.), 06.VI.2010, 1^o; TMUC, leg.: M. Khayrandish.

Diagnostic characters (female). Body length 15 mm (Fig. 6); Vertex straightly slanting down after the occli to occipital carina in lateral view (Fig. 7B); temples $1.07 \times$ transverse diameter of eye at middle, behind eyes straightly narrowed in dorsal view; temples wrinkly-punctured (Fig. 7B); face 2.75 × wider than length, middle field slightly elevated, its surface wrinkly-punctured; clypeus 2.5 × wider than length, apical margin of clypeus straight, separated from face by slight impression; surface of clypeus densely punctured (Fig. 7A); malar space 1.46 × basal width of mandible; occipital carina meeting hypostomal carina far from base of mandibles; mandibles long, gradually narrowed towards apex, upper tooth distinctly longer than lower; antennal cavities moderately deep, reach borders of eyes and far not reach front ocellus level, with weak tubercle between antennal fossae; margins of antennal fossae slightly elevated above face surface (Fig. 7A); flagellum with 39 segments and with testaceous annulus on segments (9)10–12, basal segment from the side $2.55 \times \text{longer than its width at apex}$; mesoscutum only just convex, of equal length and breadth; notauli in form of very slight impressions at base of mesoscutum; surface of mesopleura densely punctured (Fig. 7C); subalarum narrow, but not sharpened (Fig. 7C); sternauli not expressed; scutellum slightly elevated, laterally not carinated (Fig. 7D); costulae absent; area superomedia $1.25 \times$ wider than long (Fig. 7D); propodeal spiracle $2.8 \times$ longer than its width; carina of area posteromedia absent; T2 almost 1.27 × wider than its length at apex; middle field of postpetiole slightly elevated, its surface regularly longitudinally wrinkled (striated) (Fig. 7E); gastrocoeli distinct, moderately deep, oblique; thyridia distinct, 0.83 × narrower than interval between them (Fig. 7E).

Coloration. Head and thorax black; legs with exception of coxae and trochanters testaceous; tergites of metasoma with exception of T2 and T3 completely black; T6 and T7 of metasoma with central ivory spot.

General distribution. Western and Eastern Palaearctic regions (Yu et al., 2016) and Iran (new record).

Distribution in Iran. Guilan province.



Figure 6. Lateral habitus of female in *Ichneumon quadrialbatus* Gravenhorst, 1820 (scale bar: 4 mm).

Ichneumon sarcitorius turkestanicus (Heinrich, 1929) (Fig. 8; Figs 9A-I)

Material examined. Iran, Alborz province: Arangeh (35°55'06" N, 51°05'12" E, 1891 m a.s.l.), 22.VI.2010, 13; Karaj (35°46'18" N, 50°56'42" E, 1278 m a.s.l.), 06.VII.2010, 233; 20.VII.2010, 13; Guilan province, Eshman Kamachal, (37°22'06" N, 49°57'54" E, 1 m a.s.l.), 13.IX.2010, 233; Ghazichak (36°45'54" N, 50°19'36" E, 1803 m a.s.l.), 02.VIII.2010, 233; 29.VIII.2010, 13; Tehran province: Shahriar (35°40'06" N, 50°56'54" E, 1168 m a.s.l.), 25.V.2010, 233; 15.VI.2010, 13; 29.VI.2010, 433; 06.VII.2010, 13; 12.X.2010, 13; TMUC, leg.: M. Khayrandish.

Diagnostic characters (male). Body length 14–15 mm (Fig. 8); vertex straightly slanting down after the ocelli to occipital carina in lateral view (Fig. 9C); temples shorter than transverse diameter of eye at middle, parallel to hind margin of eye, behind eyes sharply and straightly narrowed in dorsal view (Fig. 9A); temples densely punctured by superficial punctures (Fig. 9C); occipital carina from above not reach level of eyes and hind ocelli; middle field of face slightly elevated, its surface densely punctured; surface of lateral fields of face with sparse, superficial punctures, without microsculpture (Fig. 9B); clypeus 4.7 × wider than length, apical margin of clypeus straight, separated from face by slight impression; clypeus with big, sparse, superficial punctures, without microsculpture (Fig. 9B); malar space 0.62 × basal width of mandible; hypostomal carina not visible in lateral view, occipital carina meeting hypostomal carina far from base of mandibles (Fig. 9C);

Shirzadegan et al.

mandibles long, gradually narrowed towards apex, upper tooth distinctly longer than lower; antennal cavities deeply impressed, reach borders of eyes and far not reach front ocellus level, with weak tubercle between antennal fossae; margins of antennal fossae slightly elevated above face surface (Fig. 9B); flagellum with 38 segments and without annulus on segments, length of basal segment 1.8 × its width at apex; transverse furrow of pronotum shallow, not interrupted by keel; mesoscutum only just convex, 1.06 × longer than its width (Fig. 9D); notauli in form of very slight impressions at base of mesoscutum; mesopleura very densely punctured, without microsculpture (Fig. 9E); speculum with sparse superficial punctures (Fig. 9E); sternauli in a form of indistinct impressions in front third; scutellum flat, laterally not carinated (Fig. 9H); carinae of propodeum sharp, costulae present; area superomedia large, rectangular, 1.66 × wider than its length; area dentiparae at apices without apophyses and teeth (Fig. 9H); propodeal spiracles 3.5 × longer than wide; T2 transversal, 1.2 × wider than long at apex; middle field of postpetiole slightly elevated, $1.66 \times$ wider than lateral fields, its surface regularly longitudinally wrinkled (striated) without microsculpture (Fig. 9I); gastrocoeli distinct, moderately deep, oblique; thyridia developed, interval between them wider than middle field of postpetiole (Fig. 9I).

Coloration. Hind femur and tibia yellow, conspicuously black apically; T1 often yellowmarked apically; T2–T3 black, yellow apically, both tergites with the yellow apical margin broader laterally than centrally; T4 often yellow apically at least laterally; T5 black; T6–T7 dorsally, apically yellow.

General distribution. Uzbekistan (Yu et al., 2016) and Iran (new record).

Distribution in Iran. Alborz, Guilan and Tehran provinces.

Probolus crassulus (Horstmann, 2000)

Material examined. Iran, Guilan province: Orkom (36°45'42" N, 50°18'12" E, 1235 m a.s.l.), 29.VIII.2010, 13; Ziaz (36°52'30" N, 50°13'24" E, 490 m a.s.l.), 26.IV.2010, 13; 31.V.2010, 433; 05.VII.2010, 13; 19.VII.2010, 13; TMUC, Leg.: M. Khayrandish.

General distribution. Western and Eastern Palaearctic region (Yu et al., 2016).

Distribution in Iran. Lorestan (Ghahari & Gadalla, 2015) and Guilan (new provincial record) provinces.

Probolus culpatorius (Linnaeus, 1758)

Material examined. Iran, Alborz province: Karaj (35°46'18" N, 50°56'42" E, 1278 m a.s.l.), 28.VII.2010, 2♂♂; Guilan province, Ziaz (36°52'30" N, 50°13'24" E, 490 m a.s.l.), 07.VI.2010, 1♂; TMUC, Leg.: M. Khayrandish.

General distribution. Western and Eastern Palaearctic region (Yu et al., 2016).

Distribution in Iran. Golestan (Masnadi & Jussila, 2008), Alborz and Guilan (new provincial record) provinces.

Pseudoamblyteles homocerus (Wesmael, 1845)

Material examined. Iran, Alborz province: Arangeh (35°55′06″ N, 51°05′12″ E, 1891 m a.s.l.), 01.VI.2010, 2^Q; TMUC, leg.: M. Khayrandish.

General distribution. Eastern and Western Palaearctic, Nearctic (Selfa, 1996; Yu et al., 2016).

Distribution in Iran. Alborz (new provincial record), Kerman (Mahyabadi et al., 2018) Razavi Khorasan (Barahoei et al., 2012, 2014b), Qazvin (Ghahari & Schwarz, 2012) and Sistan and Baluchestan (Hedwig, 1957) provinces.



Figure 7. *Ichneumon quadrialbatus* Gravenhorst, 1820, male; **A.** Head, frontal view, **B.** Head, lateral view, **C.** Mesosoma, lateral view, **D.** Scutellum and propodeum, dorsal view, **E.** Metasoma, dorsal view, **F.** Metasoma, lateral view (scale bars: A= 0.5 mm, B–D= 1 mm., E= 2 mm, F= 3 mm).



Figure 8. Lateral habitus of male in *Ichneumon sarcitorius turkestanicus* (Heinrich, 1929) (scale bar= 4 mm).

Spilothyrateles illuminatorius (Gravenhorst, 1820)

Material examined. Iran, Alborz province: Karaj (35°46'18" N, 50°56'42" E, 1278 m a.s.l.), 12.X.2010, 1♀; Guilan province: Ghazichak (36°45'54" N, 50°19'36" E, 1803 m a.s.l.), 02.VIII.2010, 1♂; 20.IX.2010, 5♂♂; 27.IX.2010, 2♂♂; 04.X.2010, 2♂♂; 11.X.2010, 1♂; Tehran province: Peykan Shahr (35°44'24" N, 51°09'36" E, 1350 m a.s.l.), 02.VI.2010, 3♂; Shahriar (35°40'06" N, 50°56'54" E, 1168 m a.s.l.), 18.V.2010, 3♂♂; 06.VII.2010, 2♀♀; TMUC, leg.: M. Khayrandish.

General distribution. Western and Eastern Palaearctic region (Yu et al., 2016).

Distribution in Iran. Alborz and Tehran (new provincial record), Kerman (Mohebban et al., 2016), Mazandaran (Kolarov & Ghahari, 2008) provinces.



Figure 9. *Ichneumon sarcitorius turkestanicus* (Heinrich, 1929), male; **A.** Head, dorsal view, **B.** Head, frontal view, **C.** Head, lateral view, **D.** Mesonotum, dorsal view, **E.** Mesosoma, lateral view, **F.** T1, lateral view, **G.** Hind coxa and trochanter, lateral view, **H.** Scutellum and propodeum, dorsal view, **I.** Metasoma, dorsal view. All scale bars = 1 mm.

Spilothyrateles nuptatorius (Fabricius, 1793)

Material examined. Iran, Alborz province: Karaj (35°46'18" N, 50°56'42" E, 1278 m a.s.l.), 06.VII.2010, 1 \degree ; Tehran province: Shahriar (35°40'06" N, 50°56'54" E, 1168 m a.s.l.), 15.VI.2010, 2 \degree ; TMUC, leg.: M. Khayrandish.

General distribution. Western and Eastern Palaearctic region (Yu et al., 2016).

Distribution in Iran. Alborz, Tehran (new provincial record), Golestan (Heinrich, 1929; Aghadokht et al., 2017) and Isfahan (Barahoei et al., 2014a, 2015) provinces.

Remark. This species has previously been recorded as *Anisobas australis* Habermehl, 1917 (Heinrich, 1929) from Iran, which is a synonym of *Spilothyrateles nuptatorius*.

Stenobarichneumon basalis (Perkins, 1960) (Fig. 10; Figs 11A-H)

Material examined. Iran, Alborz province: Shahrestanak (35°57′36″ N, 51°22′18″ E, 2301 m a.s.l.), 06.VII.2010, 1♂; 14.VII.2010, 1♂, TMUC, leg.: M. Khayrandish.

Diagnostic characters (male). Body length 7-7.5 mm (Fig. 10); Vertex straightly slanting down to occipital carina in lateral view (Fig. 11C); temples slightly roundly narrowed behind eyes in dorsal view (Fig. 11A); middle field of face slightly elevated; clypeus flat, 2.5 × wider than height, only just visible separated from face, with sparse, superficial punctures, without microsculpture (Fig. 11B); malar space $0.44 \times basal$ width of mandible; antennal cavities moderately deep (Fig. 11B); antenna with 28 flagellomeres, with narrow tyloides on segments 4–11, basal segment from the side 2.6 \times longer than width at apex; mesoscutum moderately convex, of equal length and breadth; notauli developed in front third (Fig. 11D); surface of mesopleura shining, densely punctured; area of mesopleural fovea slightly Impressed; speculum with sparse punctures, shining (Fig. 11E); scutellum slightly convex, with carinae developed only at base (Fig. 11G); basal area of propodeum with protuberance; area superomedia of propodeum $1.42 \times longer$ than wide, costulae beyond middle of area superomedia (Fig. 11G); length of propodeal spiracles 3 × its width; hind femur 3.33 × its width; fore wings 0.65 × length of body; areolet pentagonal and lower internal angle of discocubital cell is the right; T2 at apex, of equal length and breadth (Fig. 11H); middle field of postpetiole densely punctured; gastrocoeli deep and thyridia wider than interval between them (Fig. 11F).



Figure 10. Lateral male habitus of Stenobarichneumon basalis (Perkins, 1960) (scale bar: 3 mm).



Figure 11. *Stenobarichneumon basalis* (Perkins, 1960), male; **A.** Head, dorsal view, **B.** Head, frontal view, **C.** Head, lateral view, **D.** Mesonotum, dorsal view, **E.** Mesosoma, lateral view, **F.** T1–T2, dorsal view, **G.** Scutellum and propodeum, dorsal view, **H.** Metasoma, dorsal view (scale bars: A–B, D–F, H= 0.5 mm, C, G= 1 mm).

Coloration. Head and thorax black; face and clypeus broadly ivory laterally; scutellum black; legs black (fore and mid legs with red pattern); T2–T3 red.

General distribution. Western Palaearctic region (Yu et al., 2016) and Iran (new record). **Distribution in Iran**. Alborz province (Current study).

Stenobarichneumon basiglyptus (Kriechbaumer, 1890)

Material examined. Iran, Guilan province: Ghazichak (36°45′54″ N, 50°19′36″ E, 1803 m a.s.l.), 05.VII.2010, 1♂; TMUC, leg.: M. Khayrandish.

General distribution. Western and Eastern Palaearctic region (Yu et al., 2016).

Distribution in Iran. Golestan, Khuzestan, Mazandaran, Yazd (Kolarov & Ghahari, 2008) and Guilan (new provincial record) provinces.

Virgichneumon albilineatus (Gravenhorst, 1820) (Fig. 12; Figs 13A-H)

Material examined. Iran, Guilan province: Eshman Kamachal (37°22'06" N, 49°57'54" E, 1 m a.s.l.), 31.V.2010, 233; 07.VI.2010, 233; 13.IX.2010, 433, 25.X.2010, 13; TMUC, leg.: M. Khayrandish.

Diagnostic characters (male). Body length 13-16 mm (Fig. 12); vertex slightly roundly slanting down after the ocelli to occipital carina in lateral view (Fig. 13C); temple approximately equal to transverse diameter of eye at the middle, slightly roundly narrowed behind eyes in dorsal view (Fig. 13A); occipital carina not extending to posterior ocelli in dorsal view; middle field of face distinct, but slightly elevated, surface of face densely punctured; clypeus 1.9 × wider than length, apical margin of clypeus straight, separated from face by slight impression; surface of clypeus with, sparse delicate not uniform punctures, shining (Fig. 13B); malar space 0.57 × basal width of mandible; occipital carina meeting hypostomal carina far from base of mandibles; mandibles strong, slightly evenly narrowed behind base, upper tooth longer than lower; antennal cavities deeply impressed, reach borders of eyes and far not reach front ocellus level; margins of antennal socket slightly elevated above face surface (Fig. 13B); flagellum with 42 segments, basal segment from the side 2.1 × longer than width at apex; narrow tyloides on segments 7-17; transverse furrow of pronotum shallow, not interrupted by keel (Fig. 13A); mesoscutum only just convex, 1.03 × longer than wide; notauli in form of very slight impressions at base (Fig. 13D); upper part of mesopleura under subalarum with wrinkly-punctured, other part of mesopleura densely punctured (Fig. 13E); speculum smooth, shining; scutellum slightly convex, not carinated laterally, dorsal surface sparsely punctured (Fig. 13G); area superomedia $1.66 \times$ wider than long, costulae at middle (Fig. 13G); propodeal spiracles $3.2 \times$ longer than width; front tarsus with segment 1 expanded apically, externally into a sharp tooth (Fig. 13F); T2 at apex 1.1 × wider than length (Fig. 13H); middle field of postpetiole slightly elevated, its surface punctured; gastrocoeli deeply impressed, approximately triangular, with distinct thyridia, interval wider than breadth of thyridia; surface of tergites of metasoma densely punctured, slightly shining (Fig. 13H).

Coloration. Body black; frontal orbit broadly ivory, the ivory mark extending at least to two-thirds the distance from the orbit to the posterior ocellus; face and clypeus broadly ivory laterally; pronotal collar (front margin of pronotum) ivory centrally; pronotal ridge, hind corner of pronotum, tegula and subalarum marked with ivory; scutellum in greater part ivory; hind femur black; tibia and usually tarsal segments of the legs marked with ivory; postpetiole marked with ivory apically.



Figure 12. Lateral habitus of male in *Virgichneumon albilineatus* (Gravenhorst, 1820) (scale bar: 5 mm).

General distribution. Western and Eastern Palaearctic and Oriental regions (Yu et al., 2016). **Distribution in Iran**. Guilan (new provincial record) and Mazandaran (Hooshyar et al., 2019) provinces.

Virgichneumon digrammus (Gravenhorst, 1820)

Material examined. Iran, Alborz province: Karaj (35°46'18" N, 50°56'42" E, 1278 m a.s.l.), 08.VI.2010, 1♀; 28.VI.2010, 1♂; Sarziarat (35°55'12" N, 51°06'54" E, 1980 m a.s.l.), 28.VI.2010, 1♂; Guilan province: Ghazichak (36°45'54" N, 50° 19' 36" E, 1803 m a.s.l.), 23.VIII.2010, 1♂; 06.IX.2010, 2♂♂; TMUC, leg.: M. Khayrandish.

General distribution. Western and Eastern Palaearctic region (Yu et al., 2016).

Distribution in Iran. Alborz, Guilan (new provincial record); Golestan and Razavi Khorasan (Kolarov & Ghahari, 2008) provinces.

A







B

Figure 13. *Virgichneumon albilineatus* (Gravenhorst, 1820), male; **A.** Head, dorsal view, **B.** Head, frontal view, **C.** Head, lateral view, **D.** Mesonotum, dorsal view, **E.** Mesosoma, lateral view, **F.** Front tarsus, lateral view, **G.** Mesonotum and scutellum, dorsal view, **H.** Metasoma, dorsal view (scale bars: A= 1.5 mm, B-G= 1 mm, H= 2 mm).

Virgichneumon dumeticola (Gravenhorst, 1829)

Material examined. Iran, Guilan province: Eshman Kamachal (37°22'06" N, 49°57'54" E, 1 m a.s.l.), 07.VI.2010, 233; 29.VIII.2010, 13; 06.IX.2010, 13; TMUC, leg.: M. Khayrandish.

General distribution. Western and Eastern Palaearctic and Oriental regions (Yu et al., 2016).

Distribution in Iran. Guilan (Riedel & Aghadokht, 2017; current study) province.

Vulgichneumon deceptor (Scopoli, 1763)

Material examined. Iran, Alborz province: Karaj (35°46'18" N, 50°56'42" E, 1278 m a.s.l.), 29.VI.2010, 1₃; Guilan province: Eshman Kamachal (37°22'06" N, 49°57'54" E, 1 m a.s.l.), 16.VIII.2010, 1₃; 29.VIII.2010, 1₃; 20.IX.2010, 1₃; 18.X.2010, 1₃; Orkom (36°45'42" N, 50°18'12" E, 1235 m a.s.l.), 02.VIII.2010, 1₃; Ziaz (36°52'30" N, 50°13'24" E, 490 m a.s.l.), 20.IX.2010, 1₃; 13.III.2010, 1₃; TMUC, Leg.: M. Khayrandish.

General distribution. Western and Eastern Palaearctic region (Yu et al., 2016).

Distribution in Iran. Alborz, Guilan (new provincial record), Golestan (Aghadokht et al., 2017) and Qazvin (Ghahari & Schwarz, 2012) provinces.

Discussion

As a result of this study and review of the previously recorded taxa, 143 species of Ichneumonini are now reported for the Iranian fauna (Table 1). There were unreliable records of six species (e. g., *Ichneumon fulvicornis* Gravenhorst, 1829; *Ichneumon haematofemur* Heinrich, 1980; *Ichneumon ignobilis* Wesmael, 1855; *Ichneumon phaeostigmus* Wesmael, 1857; *Ichneumon suspiciosus* Wesmael, 1845; *Limerodops subsericans* (Gravenhorst, 1820) which are excluded from the current list of valid records, until the accession to and examination of the voucher specimens. Furthermore, these species have been published in invalid and predatory journals.

Considering the high species richness of the tribe Ichneumonini with more than 1300 known species in the Western Palaearctic (Yu et al., 2016), and the high number of recent new records and new species of the family Ichneumonidae from Iran (Riedel & Aghadokht, 2017; Shirzadegan et al., 2018; Reidel et al., 2019; Zardouei Heydari et al., 2019, 2020a, 2020b, 2020c, 2020d; Falahatpisheh et al., 2021), future studies in intact and unexplored regions, will get a more complete picture of the tribe as well as ichneumonid fauna in Iran. This is also the case for other neighbouring countries of Iran. The number of species of the tribe Ichneumonini is recorded as 325 species in the former USSR and 103 species in Turkey, whereas only five species are recorded in Tajikistan, nine in Turkmenistan, six in Armenia, 10 in Afghanistan, 81 in Azerbaijan and one in Iraq (Yu et al., 2016).

No	Species	Distribution in Iran (provinces)	References
1	Amblyteles armatorius (Forster, 1771)	Guilan, Isfahan, Yazd, East Azarbaijan	Kolarov & Ghahari, 2008; Masnadi & Jussila, 2008; current study
2	Anisopygus persicus Shirzadegan, Talebi & Riedel sp. nov.*	Guilan	current study
3	<i>Barichneumon albicaudatus</i> (Fonscolombe, 1847)	West Azarbaijan	Kolarov & Ghahari, 2008
4	Barichneumon bilunulatus (Gravenhorst, 1829)	North Khorasan	Kolarov & Ghahari, 2008

Table 1. The updated list of the tribe Ichneumonini (Hymenoptera: Ichneumonidae, Ichneumoninae) of Iran.

Table 1. Continued.

No	Species	Distribution in Iran (provinces)	References
5	<i>Barichneumon brevipunctatus</i> Riedel, Ameri, Talebi & Ebrahimi, 2019	Khuzestan, Markazi	Riedel et al., 2019
6	Barichneumon chionomus (Wesmael, 1845)***	Razavi Khorasan, Alborz, Guilan	Ghahari & Jussila, 2014; current study
7	Barichneumon derogator (Wesmael, 1845)***	Fars, Golestan, Guilan, Kerman, Tehran	Hasanshahi et al., 2014; Mohebban et al., 2015; Aghadokht et al., 2017; Falahatpisheh et al., 2021; current study
8	Barichneumon gaullei (Berthoumieu, 1903)***	Kerman, Alborz, Guilan	Mohebban et al., 2016; current study
9	Barichneumon peregrinator (Linnaeus, 1758)	Ilam, Kermanshah	Kolarov & Ghahari, 2008
10	Barichneumon plagiarius (Wesmael, 1848)	Qazvin, Mazandaran	Ghahari & Schwarz, 2012; Hooshyar et al., 2019
11	<i>Barichneumon quadriguttatus</i> (Gravenhorst 1829)	Kordestan, Golestan, Ardabil, East Azarbaijan	Kolarov & Ghahari, 2008; Ghahari & Jussila, 2010a, 2010b
12	Barichneumon sexalbatus (Gravenhorst, 1820)	Golestan	Riedel & Aghadokht, 2017; Aghadokht et al., 2017
13	Chasmias masanderanicus (Heinrich, 1929)	Mazandaran	Heinrich, 1929
14	Cratichneumon coruscator (Linnaeus, 1758)	Golestan, Mazandaran	Heinrich, 1929; Kolarov & Ghahari, 2008
15	Cratichneumon culex (Muller, 1776)	Isfahan, Guilan, Golestan, Mazandaran, North Khorasan, Semnan, West Azarbaijan	Kolarov & Ghahari, 2008; Ghahari & Jussila, 2011c; Aghadokht et al., 2017
16	Cratichneumon flavifrons (Schrank, 1781)	Golestan	Aghadokht et al., 2017
17	Cratichneumon rufifrons (Gravenhorst, 1829)	East Azarbaijan, Razavi Khorasan	Kolarov & Ghahari, 2008; Barahoei et al., 2012
18	Cratichneumon semirufus (Gravenhorst, 1820)	Kerman	Kolarov & Ghahari, 2008
19	<i>Cratichneumon sexarmillatus</i> (Kriechbaumer, 1891)	Mazandaran	Kolarov & Ghahari, 2008
20	Cratichneumon stenocarus (Thomson, 1887)	Guilan	Heinrich, 1929
21	Cratichneumon versator (Thunberg, 1822)	Guilan	Heinrich, 1929

No	Species	Distribution in Iran (provinces)	References
22	Crypteffigies lanius (Gravenhorst, 1829)	Golestan	Riedel & Aghadokht, 2017; Aghadokht et al., 2017
23	Crytea sanguinator (Desvignes, 1856)	West Azarbaijan,	Ghahari & Jussila, 2010b
24	Ctenichneumon castigator (Fabricius, 1793)	Guilan, Golestan, Mazandaran, Razavi Khorasan, Tehran	Heinrich, 1929; Kolarov & Ghahari, 2008; Masnadi & Jussila, 2008; Ghahari & Jussila, 2014; current study
25	Ctenichneumon devylderi Holmgren, 1871	Alborz, Ghom, Kerman	Masnadi & Jussila, 2008; Mohebban et al., 2015; Falahatpisheh et al., 2021; current study
26	Ctenichneumon divisorius Gravenhorst, 1820	Guilan; Qazvin	Kolarov & Ghahari, 2008; Ghahari & Schwarz, 2012
27	Ctenichneumon edictorius Linnaeus, 1758	Guilan, Golestan	Heinrich, 1929
28	Ctenichneumon funereus Geoffroy, 1785	Razavi Khorasan	Ghahari & Jussila, 2014
29	Ctenichneumon inspector (Wesmael, 1845)***	Alborz, Guilan, Tehran	current study
30	Ctenichneumon melanocastaneus (Gravenhorst, 1820)	Guilan; Golestan	Heinrich, 1929; Aghadokht et al., 2017
31	Ctenichneumon panzeri (Wesmael, 1845)***	Guilan, Golestan, Sistsn and Baluchestan, Mazandaran, Razavi Khorasan	Heinrich, 1929; Ghadiri et al., 2007; Kolarov & Ghahari, 2008; Masnadi & Jussila, 2008; Ghahari & Jussila, 2014; current study
32	<i>Ctenichneumon repentinus</i> (Gravenhorst, 1820)***	Alborz , Guilan, Tehran, East Azarbaijan, West Azarbaijan,	Kolarov & Ghahari, 2008; current study
33	Ctenichneumon tristator (Habermehl, 1920)	Golestan, West Azarbaijan	Riedel & Aghadokht, 2017
34	Diphyus amatorius (Müller, 1776)	Guilan	Heinrich, 1929
35	Diphyus elbursicus (Heinrich, 1929)	Guilan	Heinrich, 1929
36	Diphyus longimanus (Wesmael, 1857)	Golestan, West Azarbaijan	Riedel & Aghadokht, 2017

Table 1. Continued.

Table 1. Continued.

No	Species	Distribution in Iran (provinces)	References
37	Diphyus luctatorius (Linnaeus, 1758)	North Khorasan	Kolarov & Ghahari, 2008
38	Diphyus mercatorius (Fabricius, 1793)	Ardabil, Guilan, Qazvin	Heinrich, 1929; Masnadi & Jussila. 2008; Ghahari & Schwarz, 2012
39	Diphyus montivagans (Berthoumieu, 1897)	Golestan, West Azarbaijan	Riedel & Aghadokht, 2017
40	<i>Diphyus ochromelas</i> (Gmelin, 1790)***	Ardabil, Guilan	Kolarov & Ghahari, 2008; Masnadi & Jussila. 2008; current study
41	Diphyus palliatorius (Gravenhorst, 1829)	Mazandaran, Razavi Khorasan	Kolarov & Ghahari, 2008; Ghahari & Jussila, 2014
42	Diphyus pedatus (Berthoumieu, 1895)	Guilan	Heinrich, 1929
43	Diphyus ponticus Heinrich, 1978	Not defined	Heinrich, 1978
44	Diphyus pseudocastigator (Heinrich, 1929)	Guilan	Heinrich, 1929
45	Diphyus quadripunctorius (Müller, 1776)	Mazandaran, Semnan	Kolarov & Ghahari, 2008
46	Diphyus raptorius (Linneaus, 1758)	Guilan	Kolarov & Ghahari, 2008
47	Diphyus septemguttatus (Gravenhorst, 1829)	Guilan, Golestan, Mazandaran	Heinrich, 1929; Kolarov & Ghahari, 2008
48	Eupalamus lacteator (Gravenhorst, 1829)	Golestan, West Azarbaijan	Riedel & Aghadokht, 2017
49	Eutanyacra glaucatoria (Fabricius, 1793)	Golestan, Qazvin; Razavi Khorasan,	Kolarov & Ghahari, 2008; Masnadi & Jussila, 2008; Ghahari & Schwarz, 2012
50	Eutanyacra sanguinolenta (Heinrich, 1929)	Golestan	Heinrich, 1929
51	Eutanyacra picta (Schrank, 1776)	Guilan, Fars, Isfahan, Kerman, Golestan, Kerman	Heinrich, 1929; Kolarov & Ghahari, 2008; Masnadi & Jussila, 2008; Mohebban et al., 2015
52	Eutanyacra ruficornis (Berthoumieu, 1894)**	Alborz	current study
53	Exephanes ischioxanthus Gravenhorst, 1829	Lorestan	Ghahari & Gadallah, 2015

No	Species	Distribution in Iran (provinces)	References
54	Exephanes occupator (Gravenhorst, 1829)	Guilan, East Azarbaijan	Heinrich, 1929; Kolarov & Ghahari, 2008
55	Exephanes tauricus Hinz, 2000	Ilam	Darvishnia et al., 2018
56	Fileanta flavolaeta (Berthoumieu, 1892)	Ghom	Masnadi & Jussila, 2008
57	Fileanta radoszkowskii (Berthoumieu, 1892)	Golestan, West Azarbaijan	Riedel & Aghadokht, 2017
58	Homotherus locutor (Thunberg 1822)	Razavi Khorasan	Ghahari & Jussila, 2014
59	Hoplismenus bidentatus (Gmelin, 1790)	Qazvin	Ghahari & Schwarz, 2012
60	Hoplismenus bispinatorius (Thunberg, 1824)	Guilan, Mazandaran, Zanjan	Kolarov & Ghahari, 2008
61	Hoplismenus lamprolabus Wesmael, 1857	Tehran, Lorestan	Masnadi & Jussila, 2008
62	Ichneumon albicollis Wesmael, 1857	West Azarbaijan	Ghahari & Jussila, 2010b
63	Ichneumon balteatus Wesmael, 1845	Fars, Bushehr; Razavi Khorasan	Kolarov & Ghahari, 2008; Ghahari & Jussila, 2014
64	Ichneumon bucculentus Wesmael, 1845	Tehran, Semnan, Mazandaran, Golestan; Tehran	Kolarov & Ghahari, 2008
65	Ichneumon caedator Gravenhorst, 1829	North Khorasan	Kolarov & Ghahari, 2008
66	Ichneumon caloscelis Wesmael, 1845	Guilan, Yazd, Tehran	Kolarov & Ghahari, 2008; Masnadi & Jussila, 2008; Zarepour et al., 2008, 2009
67	Ichneumon caucasicus Meyer 1926	Guilan, Golestan, Mazandaran	Heinrich, 1929
68	Ichneumon cerinthius Gravenhorst, 1820	Guilan	Heinrich, 1929
69	Ichneumon cessator Müller, 1776	Guilan, Golestan, Mazandaran	Heinrich, 1929; Kolarov & Ghahari, 2008
70	Ichneumon confusor Gravenhorst, 1820	Qazvin	Ghahari & Schwarz, 2012
71	Ichneumon curtulus Kriechbaumer, 1882	Lorestan	Heinrich, 1929; Ghahari & Gadalla, 2015
72	Ichneumon erythromerus Wesmael, 1857	Southern Khorasan	Ghahari & Jussila, 2014
73	Ichneumon eumerus Wesmael, 1857	Guilan	Heinrich, 1929

Table 1. Continued.

Table 1. Continued.

No	Species	Distribution in Iran (provinces)	References
74	Ichneumon exilicornis Wesmael, 1857	Qazvin	Ghahari & Schwarz, 2012
75	Ichneumon gracilentus Wesmael, 1845	Kordestan	Kolarov & Ghahari, 2008
76	Ichneumon gracilicornis Gravenhorst, 1829	Qazvin	Ghahari & Schwarz, 2012
77	Ichneumon gratus Wesmael, 1855	Lorestan	Ghahari & Gadalla, 2015
78	Ichneumon haemorrhoicus crassigena Kriechbaumer, 1887	Guilan, Khuzestan, West Azarbaijan	Heinrich, 1929; Kolarov & Ghahari, 2008; Ghahari & Jussila, 2010b
79	Ichneumon inops Holmgren, 1880	Alborz	Falahatpisheh et al., 2021
80	Ichneumon insidiosus Wesmael, 1845	Kermanshah, Khuzestan	Kolarov & Ghahari, 2008
81	Ichneumon iranicus (Heinrich, 1929)	Golestan	Heinrich, 1929
82	Ichneumon languidus Wesmael, 1845	Guilan; Razavi Khorasan	Heinrich, 1929; Ghahari & Jussila, 2014
83	Ichneumon lautatorius Desvignes, 1856	Golestan, West Azarbaijan	Riedel & Aghadokht, 2017
84	Ichneumon ligatorius Thunberg, 1824	Razavi Khorasan	Kolarov & Ghahari, 2008
85	Ichneumon melanosomus Wesmael, 1855	Alborz, West Azarbaijan	Kolarov & Ghahari, 2008; Barahoei et al., 2012; Falahatpisheh et al., 2021
86	Ichneumon minutorius Desvignes, 1856	Razavi Khorasan	Kolarov & Ghahari, 2008; Ghahari & Jussila, 2014
87	Ichneumon molitorius Cuvier, 1833	Golestan; Guilan, Hamadan, Ilam	Heinrich, 1929; Kolarov & Ghahari, 2008; Aghadokht et al., 2017
88	Ichneumon novemalbatus Kriechbaumer, 1875	Not defined	Heinrich, 1929
89	Ichneumon persicus Heinrich, 1929	Guilan	Heinrich, 1929
90	Ichneumon proletarius Wesmael, 1848***	Guilan, Golestan, Sistan and Baluchestan, Qazvin, Tehran	Heinrich, 1929; Kolarov & Ghahari, 2008; Masnadi & Jussila, 2008; Ghahari & Schwarz, 2012; current study

No	Species	Distribution in Iran (provinces)	References
91	Ichneumon quadrialbatus (Gravenhorst, 1820)**	Guilan	current study
92	Ichneumon ruficinctus (Townes, Momoi and Townes, 1965)	Guilan	Heinrich, 1929
93	Ichneumon sarcitorius Linnaeus, 1758	East Azarbaijan; Fars, Golestan, Semnan, Mazandaran	Mojeni & Sedivy, 2001; Kolarov & Ghahari, 2008; Masnadi & Jussila, 2008; Sarafi et al., 2015; Hooshyar et al., 2019; Aghadokht et al., 2017
94	Ichneumon sarcitorius caucasicus Meyer, 1926	Alborz, Kerman, North Khorasan	Ghahari & Jussila 2014; Falahatpisheh et al., 2021
95	Ichneumon sarcitorius sarcitorius Linnaeus, 1758	Alborz, Gilan,Kerman, Mazandaran, North Khorasan, Razavi Khorasan	Ghahari & Jussila, 2014; Hooshyar et al., 2019; Falahatpisheh et al., 2021
96	<i>Ichneumon sarcitorius turkestanicus</i> (Heinrich, 1929) **	Alborz Guilan, Tehran	current study
97	Ichneumon sexcinctus Gravenhorst, 1829	Guilan, Lorestan	Heinrich, 1929; Ghahari & Gadalla, 2015
98	Ichneumon stramentarius Gravenhorst, 1820	Qazvin	Ghahari & Schwarz, 2012
99	Ichneumon tuberculipes Wesmael, 1848	Chaharmahal-o- Bakhtiari, Isfahan, Fars, Khuzestan, Qazvin	Kolarov & Ghahari, 2008; Ghahari & Schwarz, 2012
100	Ichneumon vafer meridionalis Heinrich, 1929	Guilan, Mazandaran, Golestan, Tehran, West Azarbaijan, East Azarbaijan, Razavi Khorasan	Heinrich, 1929; Kolarov & Ghahari, 2008; Riedel et al., 2010; Ghahari & Jussila, 2011b; Ghahari & Jussila, 2014
101	Ichneumon xanthorius Forster, 1771	Ilam, Mazandaran	Kolarov & Ghahari, 2008; Masnadi & Jussila, 2008
102	Melanichneumon glaucatoriops Heinrich, 1972	North Khorasan	Kolarov & Ghahari, 2008
103	Melanichneumon leucocheilus (Wesmael, 1845)	Golestan	Riedel & Aghadokht, 2017; Aghadokht et al., 2017

Table 1. Continued.

Table 1. Continued.

No	Species	Distribution in Iran (provinces)	References
104	Obtusodonta carnifex (Kriechbaumer, 1882)	Guilan	Heinrich, 1929
105	Obtusodonta equitatoria (Panzer, 1786)	Ardabil, Golestan, Isfahan, Qazvin	Masnadi & Jussila, 2008; Ghahari & Schwarz, 2012; Aghadokht et al., 2017
106	Obtusodonta erythrocephalus (Meyer, 1927)	Fars	Masnadi & Jussila, 2008
107	Platylabops cornicula (Wesmael, 1855)	Semnan	Kolarov & Ghahari, 2008
108	Platylabops humilis Wesmael, 1857	North Khorasan	Ghahari & Jussila, 2014
109	Platylabops mimus (Berthoumieu, 1899)	Golestan	Riedel & Aghadokht, 2017; Aghadokht et al., 2017
110	Probolus concinnus Wesmael, 1853	Alborz, East Azarbaijan	Kolarov & Ghahari, 2008; Barahoei et al., 2012; Falahatpisheh et al., 2021
111	Probolus crassulus Horstmann, 2000***	Guilan, Lorestan	Ghahari & Gadalla, 2015; current study
112	Probolus culpatorius (Linnaeus, 1758)***	Alborz, Golestan, Guilan	Masnadi & Jussila, 2008; current study
113	Pseudoamblyteles homocerus (Wesmael, 1854)***	Alborz, Razavi Khorasan, Sistan and Baluchestan	Hedwig, 1957; Barahoei et al., 2014b; current study
114	Pseudoplatylabus uniguttatus (Gravenhorst, 1829)	Golestan, West Azarbaijan	Riedel & Aghadokht, 2017
115	Pseudoplatylabus violentus (Gravenhorst, 1829)	Qazvin	Ghahari & Schwarz, 2012
116	Rictichneumon lombardi (Berthoumieu, 1897)	Chaharmahal-o- Bakhtiari, Qazvin	Ghahari & Jussila, 2016; Ghahari & Schwarz, 2012
117	Rictichneumon persicus Riedel, 2020	Lorestan	Riedel, 2020
118	Spilichneumon occisorius (Fabricius, 1793)	Southern Khorasan, Razavi Khorasan	Kolarov & Ghahari, 2008; Ghahari & Jussila, 2014
119	Spilichneumon tennecabunensis (Heinrich, 1929)	Guilan	Heinrich, 1929
120	Spilothyrateles illuminatorius (Gravenhorst, 1820)***	Alborz , Mazandaran, Guilan,Tehran	Kolarov & Ghahari, 2008; current study

Table 1. Continued	1.
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No	Species	Distribution in Iran (provinces)	References
121	<i>Spilothyrateles nuptatorius</i> (Fabricius, 1793)***	Alborz, Golestan, Khuzestan, Markazi, Qazin, Razavi Khorasan	Heinrich, 1929; Ghahari & Schwarz, 2012; Barahoei et al., 2014a, 2015; Riedel et al., 2019; Aghadokht et al., 2017; current study
122	Spilothyrateles punctus (Gravenhorst, 1829)	Guilan, Golestan	Heinrich, 1929; Kolarov & Ghahari, 2008
123	Stenichneumon culpator (Schrank, 1802)	Golestan, Sistan and Baluchestan, Lorestan	Heinrich, 1929; Kolarov & Ghahari, 2008; Ghahari & Gadalla, 2015; Aghadokht et al., 2017
124	Stenobarichneumon basalis (Perkins, 1960) **	Alborz	current study
125	Stenobarichneumon basiglyptus (Kriechbaumer, 1890)***	Golestan, Guilan, Khuzestan, Mazandaran, Yazd	Kolarov & Ghahari, 2008; current study
126	Stenobarichneumon citator (Thunberg, 1822)	Ardabil, Golestan, Khuzestan, Mazandaran, Yazd	Kolarov & Ghahari, 2008; Ghahari & Jussila, 2011c; Hooshyar et al., 2019
127	Thyrateles camelinus (Wesmael, 1845)	Guilan	Heinrich, 1929
128	Triptognathus atripes (Gravenhorst, 1820)	Guilan	Heinrich, 1929
129	Triptognathus bolivari (Berthoumieu, 1894)	Guilan, Ardabil	Heinrich, 1929; Masnadi & Jussila, 2008
130	Triptognathus fumigator (Gravenhorst, 1820)	Not defined	Selfa, 1996
131	Triptognathus rubrocinctus (Lucas, 1849)	Guilan	Heinrich, 1929
132	Triptognathus unifasciatus (Spinola 1843)	Guilan, Tehran, Qazvim	Heinrich, 1929; Masnadi & Jussila, 2008
133	<i>Virgichneumon albilineatus</i> (Gravenhorst, 1820) ***	Golestan, Guilan, Mazandaran	Hooshyar et al., 2019; Aghadokht et al., 2017; current study
134	<i>Virgichneumon albosignatus</i> (Gravenhorst, 1829)	Golestan, West Azarbaijan, Razavi Khorasan	Ghahari & Jussila, 2011a; Ghahari & Schwarz, 2011; Aghadokht et al., 2017
135	Virgichneumon callicerus (Gravenhorst, 1820)	Ardabil, East Azarbaijan, Fars, Khuzestan, Qazvin	Kolarov & Ghahari, 2008; Masnadi & Jussila, 2008; Ghahari & Schwarz, 2012; Safari et al., 2015; Ghahari & Jussila, 2016

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No	Species	Distribution in Iran (provinces)	References
136	Virgichneumon digrammus (Gravenhorst, 1820)***	Alborz, Golestan, Guilan, Razavi Khorasan	Kolarov & Ghahari, 2008; current study
137	Virgichneumon dumeticola (Gravenhorst, 1829)***	Golestan, Guilan, West Azarbaijan	Riedel & Aghadokht, 2017; current study
138	Virgichneumon maculicauda (Perkins, 1953)	Mazandaran, Tehran, Semnan, Razavi Khorasan	Kolarov & Ghahari, 2008; Ghahari & Jussila, 2014
139	Virgichneumon monostagon (Gravenhorst, 1820)	Mazandaran	Ghahari & Jussila, 2010b
140	Vulgichneumon bimaculatus (Schrank, 1776)	Guilan, Golestan, Mazandaran	Heinrich, 1929; Kolarov & Ghahari, 2008
141	Vulgichneumon deceptor (Scopoli 1763)***	Alborz, Golestan, Guilan, Qazvin	Ghahari & Schwarz, 2012; Aghadokht et al., 2017; current study
142	Vulgichneumon saturatorius Linnaeus, 1758	Guilan, Lorestan	Heinrich, 1929; Ghahari & Gadalla, 2015, current study
143	Vulgichneumon suavis Gravenhorst, 1820	Golestan, Guilan, Ardabil	Heinrich, 1929; Kolarov & Ghahari, 2008; Aghadokht et al., 2017; current study

* New species for science; ** New record for the Iranian insect fauna; *** New provincial record.

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Conflict of Interests

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

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گونه جدید و گزارشهای جدید از قبیله Ichenumonini (از ایران (Ichneumonidae) (Ichneumoninae) از ایران

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چکیده: فون قبیله 1802 مرکزی ایران مورد بررسی قرار گرفت. نمونهها به وسیله تله (Ichneumoninae در شمال مرکزی ایران مورد بررسی قرار گرفت. نمونهها به وسیله تله مالیز از مارس تا نوامبر سال ۲۰۱۰ تا ۲۰۱۱ جمعآوری شد. در مجموع ۲۸ گونه شناسایی *گردید که سه گونه و یک زیرگونه برای اولین بار از ایران گزارش شد: Eutanyacra گردید که سه گونه و یک زیرگونه برای اولین بار از ایران گزارش شد: Eutanyacra گردید که سه گونه و یک زیرگونه برای اولین بار از ایران گزارش شد: Ichneumon quadrialbatus Stenobarichneumon quadrialbatus* Gravenhorst, 1820 *stenobarichneumon و Ichneumon sarcitorius turkestanicus* Heinrich, 1929 *Jehneumon sarcitorius turkestanicus* Heinrich, 1960 و *Anisopygus persicus* Shirzadegan, Talebi & Riedel **sp. nov.** شمال ایران توصیف شد. تعداد گونههای شناخته شده قبیله Ichneumonini در ایران به *Virgichneumon* از ایران رایه رسید. ویژگیهای مورفولوژیکی گزارشهای جدید و گونه (Gravenhorst, 1820) از ایران ارایه شد.

واژگان کلیدی: گزارش جدید، گونه جدید، Ichneumonini ،Ichneumoninae، ردهبندی، چکلیست، پراکنش، ایران