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First Record of *Diaparsis improvisator* Khalaim, 2005 (Hymenoptera: Ichneumonidae: Tersilochinae) from Iran

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ABSTRACT

Within the framework of a broader revisionary work on Ichenumonidae of Iran, we preliminarily studied the occurrence of Tersilochinae. Among the whole collected specimens during 2010-2011, there were specimens of this subfamily from Sistan and Baluchistan, Khorasan-e-Razavi and Kerman Provinces. Two species, *Aneuclis incidens* (Thomson, 1889) and *Diaparsis* (*Pectinoparsis*) *improvisator* Khalaim, 2005, were identified. *D. improvisator* is recorded from Iran for the first time.

Key words: Aneuclis incidens, *Diaparsis improvisator*, Tersilochinae, new record, Iran.

INTRODUCTION

The subfamily Tersilochinae has a worldwide distribution and rich fauna in the Holarctic region (Yu *et al*., 2005; Khalaim, 2007b). A number of undescribed taxa of Tersilochinae are known from the Nearctic, Australasian, Afrotropical and Oriental regions (Townes, 1971; Gauld, 1984; Khalaim and Sheng, 2009).

With moderately well studies in the Palaearctic (Horstmann, 1971, 1981; Khalaim, 2002a, b, 2003, 2004a, b, 2005, 2007a, 2008, 2011; Khalaim and Sheng, 2009; Khalaim *et al*., 2009; Khalaim and Yurtcan, 2011), this subfamily now comprises 234 species in 13 genera, of which about 160 species belong to 13 genera are recorded from Europe (Khalaim and Yurtcan, 2011) and eigth genera from South, Southeast and East Asia (Khalaim, 2011). Taxonomy and the faunal diversity of Tersilochinae is poorly studied in Asia including the scanty recorded species from the Oriental region. Totally, two genera (*Phradis* Foerster, 1869 and *Probles* Foerster, 1869) and 24 species were recorded from these areas (Yu *et al*., 2005) of which 16 species are recorded from the Palaearctic part of China (Khalaim, 2011). Only three species have recently been recorded from Iran (Ghahari and Jussila, 2010, 2011) (Table 1).

Tersilochines can easily be recognized by the following these characters: predominantly small-sized with 3.0-7.0 mm of body length, fore wing without an areola, first and second sections of *R* vein angled at 90°, 2*rs-m* vein thickened, maxillary and labial palpi 4- and 3-segmented respectively (Khalaim and Yurtcan, 2011).

Tersilochines are koinobiont endoparasitoids of various Coleoptera, especially of the family Curculionidae and recorded from Lepidoptera (Eriocraniidae) (Jordan, 1998) as well as and sawflies of the families Tenthredinidae (Kopelke, 1994; Al-Saffar and Aldrich, 1997) and Xyelidae (Khalaim and Blank, 2011). They oviposit into the host larva and kill the host in its pupation chamber (Hellén, 1958; Jordan, 1998).

Here we present the new information on occurrence of Tersilochinae in Iran which represented by a new species record from central and eastern Provinces.

MATERIAL AND METHODS

The ichneumonid specimens were collected using a standard sweeping net at different places in Khorasan-e-Razavi, Kerman as well as Sistan and Baluchistan Provinces during 2010-2011. The collected specimens were clipped directly from the net using an aspirator and dropped into ethanol 75%, then dried, pinned, mounted and labeled. Terminology of morphological characters follows Townes (1969). The specimens were deposited in the Insect Collection in Department of Plant protection, University of Zabol, Iran.

RESULTS AND DISCUSSION

Two species of the subfamily Tersilochinae belonging to two genera, *Aneuclis* Förster and *Diaparsis* Förster, were recognized among the collected specimens. Both genera belong to the "*Diaparsis*" genus group (as well as, *Sathropterus*) and can be recognized by the following characters: petiole with isolated glymma or lacking glymma (Fig. 1E), in fore wing the second recurrent vein interstitial (Fig. 1F), or postfurcal (Fig. 3F) and propodeum almost always with a basal keel (Figs. 1D, 3D). *Aneuclis* (Fig. 2) differs from the genus *Diaparsis* (Fig. 4) by the brachial cell of fore wing being widely open at apex because the posterior part of the postnervulus being absent (Fig. 1F). The recorded species were as follow:

Aneuclis incidens (Thomson, 1889) (Figs. 1, 2)

Material examined: 2♀♀ and 5♂♂ - on *Medicago sativa* L., SISTAN and BALUCHESTAN -Muhammadabad, 25.02.2010, leg. H. Barahoei, 4♂♂; on *Triticum aestivum* L., SISTAN and BALUCHESTAN - Khash, 28.04.2011, leg. S. Sedighi, 1♀; in Grape Garden, KHORASAN-E-RAZAVI - Bardaskan, 18.10.2011, leg. K. Fathabadi, 1♂; on vegetation, KERMAN - Bardseer, 15.05.2011, leg. R. Bani-Asad, 1♀.

Distribution: Transpalaearctic species (Khalaim, 2004b).

Diagnosis: This species is recognizable with combination of these characters: Antenna 16-17 segmented, second recurrent vein interstitial (Fig. 1F), foveate groove of mesopleuron absent or weak, hind coxa usually darkened (Fig. 1E), ovipositor sheath about twice or occasionally 3 times as long as tergite I (Figs. 1D, 1E).

Biology: Parasitoid of *Meligethes auneus* (Fabricius, 1775) and *M. viridescens* (Fabricius, 1775) (Col., Nitidulidae) (Khalaim, 2004b, 2011).

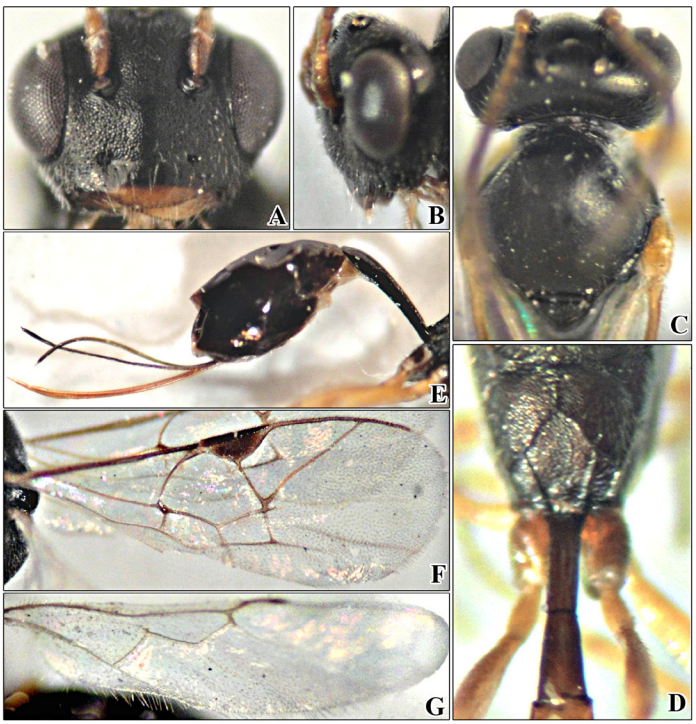

Fig. 1. *Aneuclis incidens*, female: A. Frontal view of head, B. lateral view of head, C. Dorsal view of head and mesonotum, D. Dorsal view of propodeum and petiole, E. Lateral view of patiol and gaster, F. Fore wing, G. Hind wing.

Fig. 2. Adult specimens of *Aneuclis incidens*: A. Female, B. Male.

Diaparsis (Pectinoparsis) improvisator Khalaim, 2005 (Figs. 3, 4)

Material examined: 4♀♀ and 1♂ - on *Medicago sativa* L., KHORASAN-E-RAZAVI - Sabzevar, 05.05.2011, leg. K. Fathabadi.

Distribution: Russia, Japan and South Korea (Khalaim, 2011), new record from Iran.

Biology: unknown.

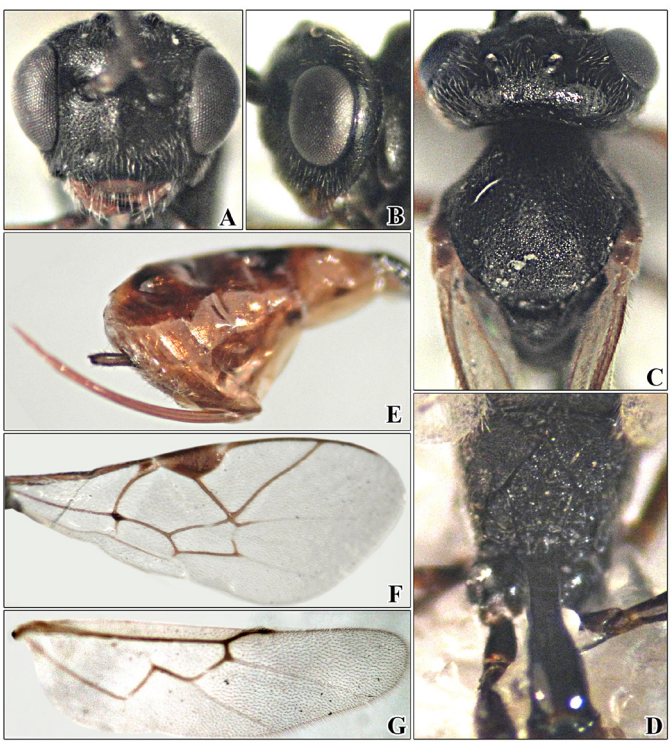

Fig. 3. *Diaparsis improvisator,* female: A. Frontal view of head, B. lateral view of head, C. Dorsal view of head and mesonotum, D. Dorsal view of propodeum and petiole, E. Lateral view of patiol and gaster, F. Fore wing, G. Hind wing.

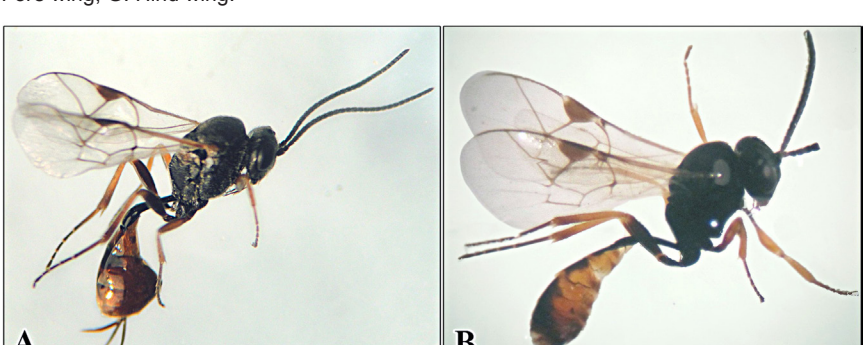

Fig. 4. Adult specimens of *Diaparsis improvisator*, A. Female, B. Male.

Diagnosis: This species is recognizable with combination of the following characters: Fore wing with second recurrent vein postfurcal (Fig. 3F), tarsal claws distinctly pectinate, ovipositor short and weakly up curved (Fig. 3E), ovipositor sheath as long as first tergite I (Figs. 3D, 3E).

Aneuclis incidens (Thomson, 1889) has already been recorded from Northern provinces of Iran (Ghahari and Jussila, 2011) (Table 1). Occurrence of only two other species of Tersilochinae in Iran including, *Barycnemis alpina* (Strobl, 1901) and *Diaparsis jucunda* (Holmgren, 1860) (Ghahari and Jussila, 2010; 2011) indicate that a very small number of known species are present in Iran. The fourth genus and species, *Diaparsis improvisator* is recorded in the present study. The subfamily Tersilochinae is considered to has a worldwide distribution with many species occurring in the Palaearctic region (Yu *et al*., 2005).

Table 1. List of Ichneumonid species known from Iran belonging to the subfamily Tersilochinae.

Species	Distribution in Iran	References
Aneuclis incidens (Thomson, 1889)	Mazandaran	Ghahari and Jussila, 2011
Barycnemis alpina (Strobl, 1901)	Golestan	Ghahari and Jussila, 2010
Diaparsis jucunda (Holmgren, 1860)	Mazandaran	Ghahari and Jussila, 2011
Diaparsis (Pectinoparsis) improvisator Khalaim, 2005	Khorasan -e- Razavi	New record

All aforementioned genera include many species in the Palaearctic region (Khalaim 2003, 2004b, 2011; Khalaim and Sheng, 2009), and it is expected that many more species are occuring in Iran yet to be discovered.

Both *A. incidens* and *D. improvisator* were swept from alfalfa fields. They are probably in associated with curculionid beetles which were feeding on alfalfa. Such evidence should be confirmed in subsequent studies.

Further investigations on the faunal diversity and occurrence of other species of Tersilochinae in Iran, as well as studies on their host association are necessary to find reliable data about species richness of this small group of Ichneumonids.

REFERENCES

Al-Saffar, Z. Y., Aldrich, J. C., 1997, Factors influencing the survival of *Pontania proxima* that attack crack willow *Salix fragilis*. Biology and Environment. *Proceedings of the Royal Irish Academy*, 97B (3): 219-223.

Ghahari, H., Jussila, R., 2010, A contribution to the knowledge of ichneumon wasps (Hymenoptera: Ichneumonidae) from Iranian cotton fields and surrounding grasslands. *Zoosystematica Rossica*, 19(2): 357-360.

Ghahari, H., Jussila, R., 2011, A study on the ichneumonid wasps (Hymenoptera: Ichneumonidae) from some regions of Iran. *Linzer biologische Beiträge*, 43(1): 753-758.

Gauld, I. D., 1984, An introduction to the Ichneumonidae of Australia. *British Museum (Natural History)*, 895: 1-413.

Hellén, W., 1958, Die Tersilochinen Finnlands (Hym., Ichn.). *Notulae Entomologicae*, 38: 4-23.

Horstmann, K., 1971, Revision der europoischen Tersilochinen 1 (Hymenoptera, Ichneumonidae). *Veroff entlichungen der Zoologischen Staatssammlung (München)*, 15: 47-138.

Horstmann, K., 1981, Revision der europeischen Tersilochinen II (Hymenoptera, Ichneumonidae). *Spixiana Supplement*, 4: 1-76.

Jordan, T., 1998, *Tersilochus curvator* Horstmann und *Tersilochus* sp. n. (Ichneumonidae, Tersilochinae), neue Parasitoiden der an Birken minierenden Trugmotten (Lepidoptera, Eriocraniidae). *Bonner Zoologische Beitrage*, 47(3-4): 411-419.

Khalaim, A. I., 2002a, A review of the subgenera *Nanodiaparsis*, *Ischnobatis* and *Lanugoparsis* subgen. n., genus *Diaparsis* Forster (Hymenoptera, Ichneumonidae) with descriptions of new species. *Entomologicheskoe obozrenie*, 81(2): 386-393. (In Russian).

Khalaim, A. I., 2002b, A review of the species of the genus *Gelanes* (Hymenoptera, Ichneumonidae, Tersilochinae) of the Palaearctic Region. *Vestnik Zoologii*, 36(6): 3-12. [In Russian].

Khalaim, A. I., 2003, Review of the Palaearctic subgenus *Rugodiaparsis* Horstmann, 1971 of the genus *Probles* Forster, 1869 (Hymenoptera: Ichneumonidae: Tersilochinae). *Russian Entomological Journal*, 12(1): 75-78.

Khalaim, A. I., 2004a, A review of the Palaearctic species of the genera *Barycnemis* Forst., *Epistathmus* Forst. and *Spinolochus* Horstm. (Hymenoptera: Ichneumonidae, Tersilochinae). *Proceedings of the Russian Entomological Society*, 75(1): 46-63.

Khalaim, A. I., 2004b, A review of the genera *Aneuclis* Forster and *Sathropterus* Forster (Hymenoptera, Ichneumonidae, Tersilochinae). *Entomologicheskoe obozrenie*, 83(3): 664-678. [In Russian].

Khalaim, A. I., 2005, A review of the subgenera *Diaparsis* s. str. and *Pectinoparsis* subgen. n. of the genus *Diaparsis* Forster (Hymenoptera, Ichneumonidae, Tersilochinae). *Entomologicheskoe obozrenie*, 84(2): 407-426. [In Russian].

Khalaim, A. I., 2007a, *Subfamily Tersilochinae*. *In*: Key to the insects of Russian Far East. Vol. IV. Neuropteroidea, Mecoptera, Hymenoptera. Pt 5. Vladivostok: Dal'nauka, 566-597. [In Russian].

Khalaim, A. I., 2007b, First records of *Meggoleus*, *Heterocola* and *Phradis* (Hymenoptera: Ichneumonidae: Tersilochinae) from the Afrotropical region, with description of four new species. *African Invertebrates*, 48(2): 101-110.

Khalaim, A. I., 2008, Two new species of the genus *Diaparsis* Forster from southern China (Hymenoptera: Ichneumonidae: Tersilochinae). *Zoosystematica Rossica*, 17(1): 89-92.

Khalaim, A. I., 2011, Tersilochinae of South, Southeast and East Asia, excluding Mongolia and Japan (Hymenoptera: Ichneumonidae). *Zoosystematica Rossica*, 20(1): 96-148.

Khalaim, A. I., and Sheng, M. L., 2009, Review of Tersilochinae (Hymenoptera, Ichneumonidae) of China, with descriptions of four new species. *ZooKeys*, 14: 67-81.

Khalaim, A. I., and Blank, S. M., 2011, Review of the European species of the genus *Gelanes* Horstmann (Hymenoptera: Ichneumonidae: Tersilochinae), parasitoids of xyelid sawflies (Hymenoptera: Xyelidae). *Proceedings of the Zoological Institute RAS*, 315(2): 154-166.

Khalaim, A. I., Yurtcan, M., 2011, A survey on Tersilochinae (Hymenoptera: Ichneumonidae) species of Turkey, with a key to European genera. *Turkish Journal of Zoology*, 35(3): 381-394.

Khalaim, A. I., Bordera, S., Rodriguez-Berrio, A., 2009, A review of the European species of *Phradis* (Hymenoptera: Ichneumonidae: Tersilochinae), with description of a new species from Spain. *European Journal of Entomology*, 106(1): 107-118.

Kopelke, J. P., 1994, Der Schmarotzerkomplex (Brutparasiten und Parasitoide) der gallenbildenden Pontania-Arten (Hymenoptera: Tenthredinidae). *Senckenbergiana Biologica*, 73(1-2): 83-133.

Townes, H. K., 1969, The genera of Ichneumonidae, Part 1. *Memoirs of the American Entomological Institute*, 11: 1-300.

Yu, D. S., Van Achterberg, K., Horstmann, K., 2005, *World Ichneumonoidae 2004*. Taxonomy, Biology, Morphology and Distribution. (CD-ROM). *Taxapad*.

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