J Insect Biodivers Syst 01(2): 111–123 ISSN: 2423-8112

OPEN ACCESS

Research Article

JOURNAL OF
INSECT BIODIVERSITY AND SYSTEMATICS

JIBS

http://jibs.modares.ac.ir

http://zoobank.org/References/C5DCC7B4-2535-4955-B630-F482C2F0D427

A review of the subfamily Hormiinae (Hymenoptera: Braconidae) from Iran

Ali Ameri[1], Ali Asghar Talebi[1*], Ehsan Rakhshani[2] and Ahmet Beyarslan[3]

1 *Department of Entomology, Faculty of Agriculture, Tarbiat Modares University, P. O. Box: 14115-336, Tehran, Iran*
2 *Department of Plant Protection, College of Agriculture, University of Zabol, Zabol, Iran*
3 *Department of Biology, Art and science faculty, Eren Bitlis University, Turkey*

Received:
25 December 2015

Accepted:
27 January 2016

Published:
05 February 2016

Subject Editor:
Samira Farahani

ABSTRACT. This study was carried out to determine the species of the subfamily Hormiinae in Hormozgan province (Southern Iran), during February 2011–July 2013. Malaise traps, sweep nets and light traps were used to obtain adult specimens from various habitats in Hormozgan province. Five species were collected and identified of which *Pseudohormius turkmenus* Tobias & Alexeev, 1973 is newly recorded from Iran. The subfamily Hormiinae is reviewed and a key is provided for identification of Iranian species.

Key words: Taxonomy, *Hormius*, Hormozgan province, new records, Iran.

Citation: Ameri, A., Talebi, A.A., Rakhshani, E. and Beyarslan, A. 2015. A Review of the Subfamily Hormiinae (Hymenoptera: Braconidae) from Iran. *Journal of Insect Biodiversity and Systematic*, 1(2): 111–123.

Introduction

The family Braconidae is one of the largest groups of Hymenoptera with a conservative estimate of 40–50,000 species worldwide from the current described number of about 19801 species (Yu *et al*. 2012), including more than 45 subfamilies with a diverse habitat and biology (van Achterberg 1990, 1993; Shaw and Huddleston 1991).

The subfamily Hormiinae is a small subfamily of Braconidae and very closely allied to Doryctinae, Rhyssalinae and Rogadinae (Ashmead 1893) but are readily separated from these groups by subdiscoidal nervure (CU1a) being interstitial (Ashmead 1893) and second and third metasomal tergites largely membranous dorsally, nearly always less sclerotized than epipleuron and median carina of propodeum short or absent (van Achterberg 1993). The subfamily Hormiinae contains approximately 149 described species in two tribes and 15 genera, majority of species belonging to the genera *Hormius* Nees, *Parahormius* Nixon and *Allobracon* Gahanwith 59, 34 and 24 species, respectively (Yu *et al*. 2012).

The systematic position of several genera of Horimiinae are questionable (Wharton 1993) and likely will not be resolved until molecular data become available for them (Quicke 2015). Little is known about the biology of this group, despite specimens being fairly common. Many are gregarious and hosts generally seem to be Lepidoptera larvae living in

Corresponding author: Ali Asghar Talebi, E-mail: *talebia@modares.ac.ir*

silken retreats (Basinger 1938; Shaw and Huddleston 1991). Recorded host groups are mainly Gelechiidae and Tortricidae and possibly some Coleophoridae and Pyralidae, although as with many groups some of these may be erroneous. *Hormisca tatianae* Telenga, 1941 has been reared as a parasitoid of *Ancylosis* (*Heterographis*) *fulvobasella* (Lep.: Pyralidae) (Quicke 2015). Wharton (1993) considered the Hormiinae and Exothecinae to be synonymous and argued that if one did treat common usage, Hormiinae would be the appropriate group name. However, this synonymy merely resulted from a lack of any detailed phylogenetic investigation, partly because of their small body size.

In spite of limit of species, this subfamily have efficient role in biological control of several agriculture pests especially microlepidoptera (Yu *et al*. 2012).The Hormiinae includes several not necessarily closely related tribes that usually attack concealed hosts. Most species are larval idiobiont ectoparasitoods of Lepiodptera and Coleoptera and less commonly Hymenoptera and Diptera (Whitfield and Wharton 1997).

Many taxonomic studies have also dealt with subfamily Hormiinae thought the world (Ashmead 1900; Fahringer 1930; Belokobylskij 1980, 1989, 1995; Papp 1990, Wharton 1993; Marshall 1888; Szépligeti 1904; Shenefelt 1975; Telenga 1941; Tobias 1977, 1974). The subfamily Hormiinae has been poorly studied in Iran, indicating the necessity for further studies. Prior to this study, only five species in three genera were recorded for the country (Telenga 1941; Shenefelt 1975; Al-e-Mansour and Mostafavi 1993; Ghahari *et al*. 2009a, 2009b, 2011a, b; Rastegar *et al*. 2012).

The aim of this study was to determine the species of the subfamily Hormiinae in Hormozgan province, which is considered a representative of southern Iran. An original key is provided for identification of the species of the subfamily Hormiinae occurring in Iran.

Materials and Methods

The insects were mainly collected by light traps, Malaise traps and sweep nets at different locations of Hormozgan province and Queshm Island in Persian Gulf during February 2011–July 2013 (see the map in Ameri *et al.* 2014). The natural vegetations are forests, rangelands, and desert plants. Different climate conditions and specific flora such as special marine plants and mangrove, *Avicennia marina* (Forsk.) (Acanthaceae), forests make a specific ecosystem which inhabited by rare animal species (Mozaffarian 1991; Zaeifi 2001; Soltanipoor 2005). Specimens were collected in various habitats, including tropical fruit orchards, rangelands, sub-mountains vegetations, field crops, and mangrove forests by a week intervals. Traps were installed at various habitats including mixed deciduous forests, fruit orchards (tropical and sub-tropical trees), and field crops in different altitudes. The specimens were extracted from the collecting jars, and then treated with 100% ethanol for five min, followed by hexa-methyldisilazane for 30 min, and finally placed on the filter paper for drying (Heraty and Hawks 1998). The dried specimens were then card mounted and labeled. Relevant literature (van Achterberg 1995; Penteado Dias and van Achterberg 2004) was used for taxonomical examination and identification of species. Illustrations were taken using an Olympus™ AX70 microscope and Olympus™ SZX9 stereo-microscope equipped with a Sony™ digital camera. A series of 4–5 captured images were then merged into a single in-focus image using the image-stacking software Combine ZP 1.0. Data about distribution of each species in Iran and general bio geographical distributions are provided. In

the case of new records for Iran, locality, data, and short description are given.

The terminology for the various parts and wing venation is that of van Achterberg (1993), while Eady (1968) followed for surface-sculpture. Abbreviations used in the text are as follows: *POL*: Posterior ocellar line (distance between the inner edges of lateral ocellus), *OOL*: Ocelloocular line (distance from the outer edge of a lateral ocellus to the compound eye), *r*: transverse radial vein, *2-SR*: first intercubitus, *3-SR*: third intercubitus, *r-m*: transverse radial medial vein. The collected materials are deposited in the Department of Entomology, Tarbiat Modares University, Tehran, Iran.

Results

An examination of the collected specimens has revealed the occurrence of five species belonging to two genera of the subfamily Hormiinae, which were collected from various location of Hormozgan province in southern Iran. In the current study, one species marked by an asterisk (*) are recorded as new to the fauna of Iran and all species are new records for Hormozgan province.

Key to the species of Subfamily Hormiinae of Iran (based on females)

1. Apical fringe of fore wing largely absent; vein SR1 of forewing curved……. ……...……***Hormisca tatianae***

- Apical fringe of fore wing with normal hair; vein SR1 of forewing straight (Figs. 6, 15, 24, 33, 43)……..…….**2**

2. Mesoscutum with a wide and crenulate median depression between notauli, notauli wide and deep posteriorly (Figs. 30, 39) **(genus *Pseudohormius*)**……..……**3**

- Mesoscutum without wide longitudinal depressions and mostly smooth (Figs. 4, 12, 21) (**genus *Hormius***)……..……...**4**

3. Marginal cell of fore wing reaching wing apex (Fig. 42); temple 0.7 X as long as longitudinal eye diameter (Fig. 38); body entirely yellowish brown (Fig. 44)…..… ……..…...***Pseudohormius turkmenus***

- Marginal cell of fore wing terminating before wing apex (Fig. 33); temple 0.3 X as long as longitudinal eye diameter (Fig. 29); body entirely dark brown (Fig. 35)……. ……...…..***Pseudohormius flavobasalis***

4. Ovipositor 0.5 X length of metasoma… …….……..***Hormius similis***

- Ovipositor less than 0.4 X metasoma (Figs. 7, 8, 16, 17, 25, 26.)…….……..…..**5**

5. Marginal cell of fore wing reaching wing apex (Fig. 6).....***Hormius moniliatus***

- Marginal cell of fore wing terminating before wing apex (Figs. 15, 24) ……....**6**

6. Head in dorsal view and anterior part of propodeum smooth (Fig. 11, 14); oral cavity 0.4 X its distance to compound eye (Fig. 10); antenna with 25 segments……... ……..……..…..***Hormius radialis***

- Head in dorsal view with rugose punctate (Fig. 20); propodeum distinctly rugose (Fig. 23); oral cavity 2.1 X its distance to compound eye (Fig. 19); antenna with 21 segments…….. …….. ***Hormius sculpturatus***

List of the Iranian species of the subfamily Hormiinae

***Hormisca tatianae* Telenga, 1941**

Distribution in Iran: Guilan province (Ghahari *et al.*, 2009b).

General distribution: Afghanistan, Greece, Greece-main, Iran, Kazakhstan, Mongolia, Morocco, Tajikistan, Tunisia, Turkmenistan, Uzbekistan (Yu *et al.* 2012).

***Hormius moniliatus* (Nees, 1811) (Figs. 1–8)**

Material examined: Hormozgan province, Minab, Goleshvar (27°58′30.57″ N, 56°59′53.55″ E, 14 m a.s.l.), 05.04.2011, 4♀; Hajiabbad, Tezerj (27°17′51.81″ N, 55°45′14.76″ E, 867 m a.s.l.),

02.06.2011, 1♀; Bandar Abbas, southern Zakin (27°28′53.23″ N, 56°18′27.03″ E, 680 m a.s.l.), 16.05.2011, 7♀; 31.05.2011, 4♀; Bandar Abbas, Geno (27°24′16.16″ N, 56°08′51.80″ E, 1274 m a.s.l.), 07.05.2011,4♀; leg. A. Ameri, Malaise trap and sweep net.

Distribution in Iran: East Azarbayjan province, Arasbaran, Kaleibar (Ghahari *et al*. 2009a), Mazandaran (Ghahari *et al.* 2009b), Isfahan province, Isfahan (Ghahari *et al*. 2011b).

General distribution: Eeastern Palaearctic, Europe, Nearctic, Oceanic, Oriental, Western Palaearctic (Yu *et al*. 2012).

***Hormius radialis* Telenga, 1941 (Figs. 9–17)**

Material examined: Hormozgan province, Bandar Abbas, Geno (27°24′16.16″ N, 56°08′51.80″ E, 1274 m a.s.l.), 07.05.2011, 2♀; leg. A. Ameri, light trap.

Distribution in Iran: Isfahan (Ghahari *et al*. 2011b).

General distribution: Afghanistan, Azerbaijan, former Yugoslavia, Greece, Iran, Kazakhstan, Macedonia, Spain, Turkmenistan (Yu *et al*. 2012).

***Hormius sculpturatus* Tobias, 1967 (Figs. 18–26)**

Material examined: Hormozgan province, northern Zakin (27°51′51.50″ N, 56°18′34.17″ E, 1630 m a.s.l.), 05.06.2013, 8♀; Bandar Abbas, Geno (27°24′16.16″ N, 56°08′51.80″ E, 1274 m a.s.l.), 07.05.2013, 4♀; leg. A. Ameri, light trap.

Distribution in Iran: Fars province (Al-e-Mansour and Mostafavi 1993).

General Distribution: Iran, Turkmenistan (Yu *et al*. 2012).

***Hormius similis* Szépligeti, 1896**

Distribution in Iran: Qazvin province (Ghahari *et al*. 2011a).

General Distribution: Azerbaijan, Bulgaria, Croatia, Czech Republic, former Yugoslavia, Germany, Greece, Hungary, Iran, Japan, Korea, Macedonia, Russia, Montenegro (Yu *et al*. 2012).

***Pseudohormius flavobasalis* (Hedwig, 1957) (Figs. 27–35)**

Material examined: Hormozgan province, Qale Qazi (27°26′53.33″N, 56°32′53.03″E, 42 m a.s.l.), 05.06.2013, 4♀, 4♂; leg. A. Ameri, light trap.

Distribution in Iran: Sistan and Baluchistan (Hedwig 1957).

General distribution: Iran, Turkmenistan (Yu *et al*. 2012).

Pseudohormius turkmenus* Tobias & Alexeev 1973 (Figs. 36–44)

Material examined: Hormozgan province, Sirik (26°30′48.53″ N, 57°7′23.00″ E, 30 m a.s.l.), 09.05.2011, 4♂, 13♀; leg. A. Ameri, light trap

Diagnosis (Female): Body length 2.3–2.4 mm; female antenna 24-segmented, temple 0.7 X length of longitudinal diameter of eye; head yellowish brown, 1.8 X as broad as long in dorsal view, post ocellar line (POL) about 0.55 X ocular ocellar line (OOL) (Fig. 38). oral cavity almost equal to its distance to compound eye, malar space 0.32 X longitudinal diameter of compound eye (Fig. 37); mesonotum in middle with distinct areolation and three sculptured longitudinal depression, side of meso-thorax smooth above (Fig. 39); thorax with its length 1.66 X its height, mesopleuron almost entirely rugose (Fig. 40); marginal cell of the forewing elongate, terminating near the wing apex, r-m vein 2.5 X r vein; 3-SR vein 2.0 X as long as r vein, 3SR vein 0.21 X 2SR, r-m weakly sclerotized (Fig. 42); ovipositor sheath about 0.4 X as long as metasoma (Fig. 43); body entirely yellowish brown (Fig. 44).

Distribution in Iran: New record for Iran.

General distribution: Russia, Tajikistan, Turkmenistan (Yu *et al*. 2012).

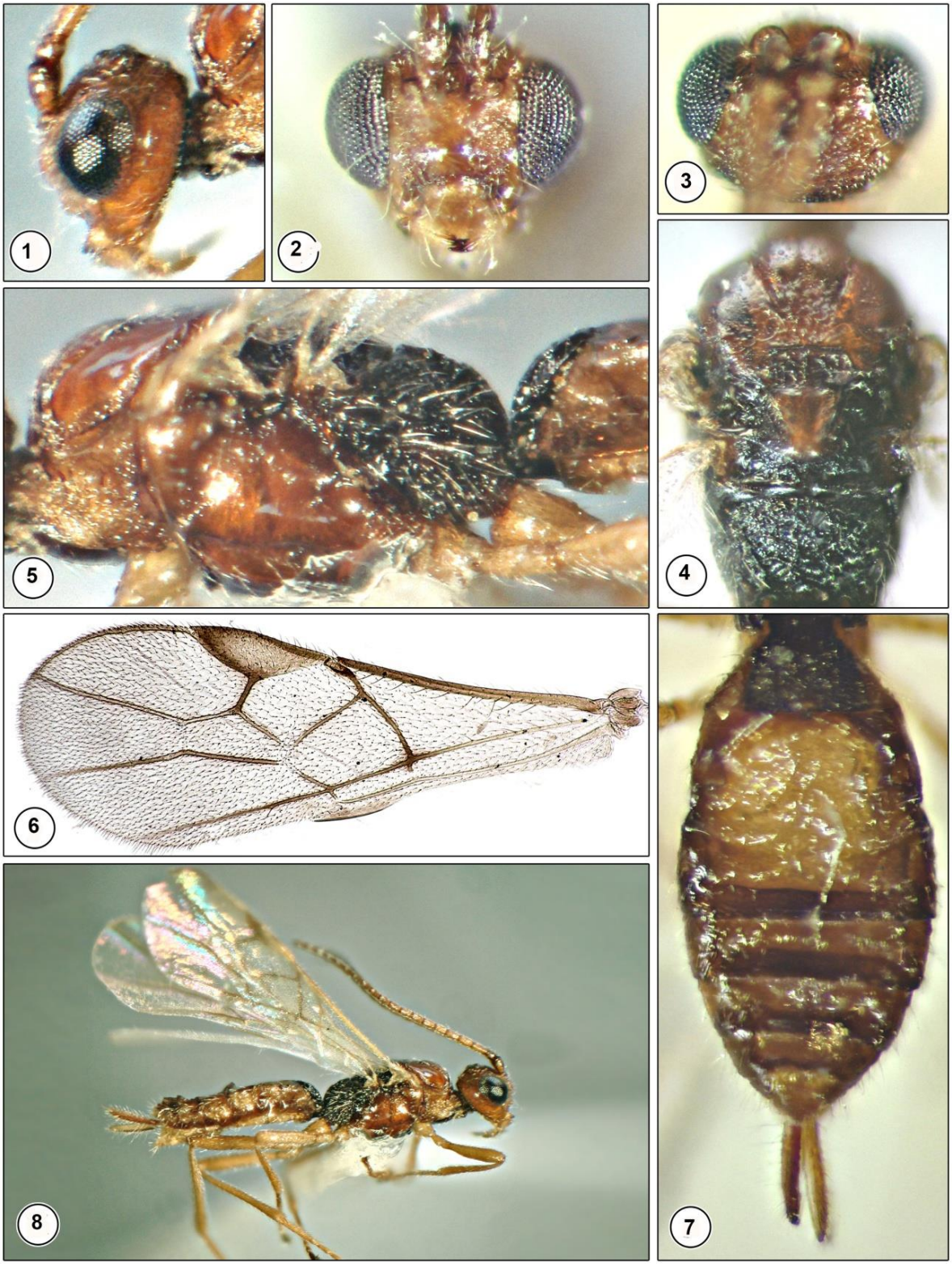
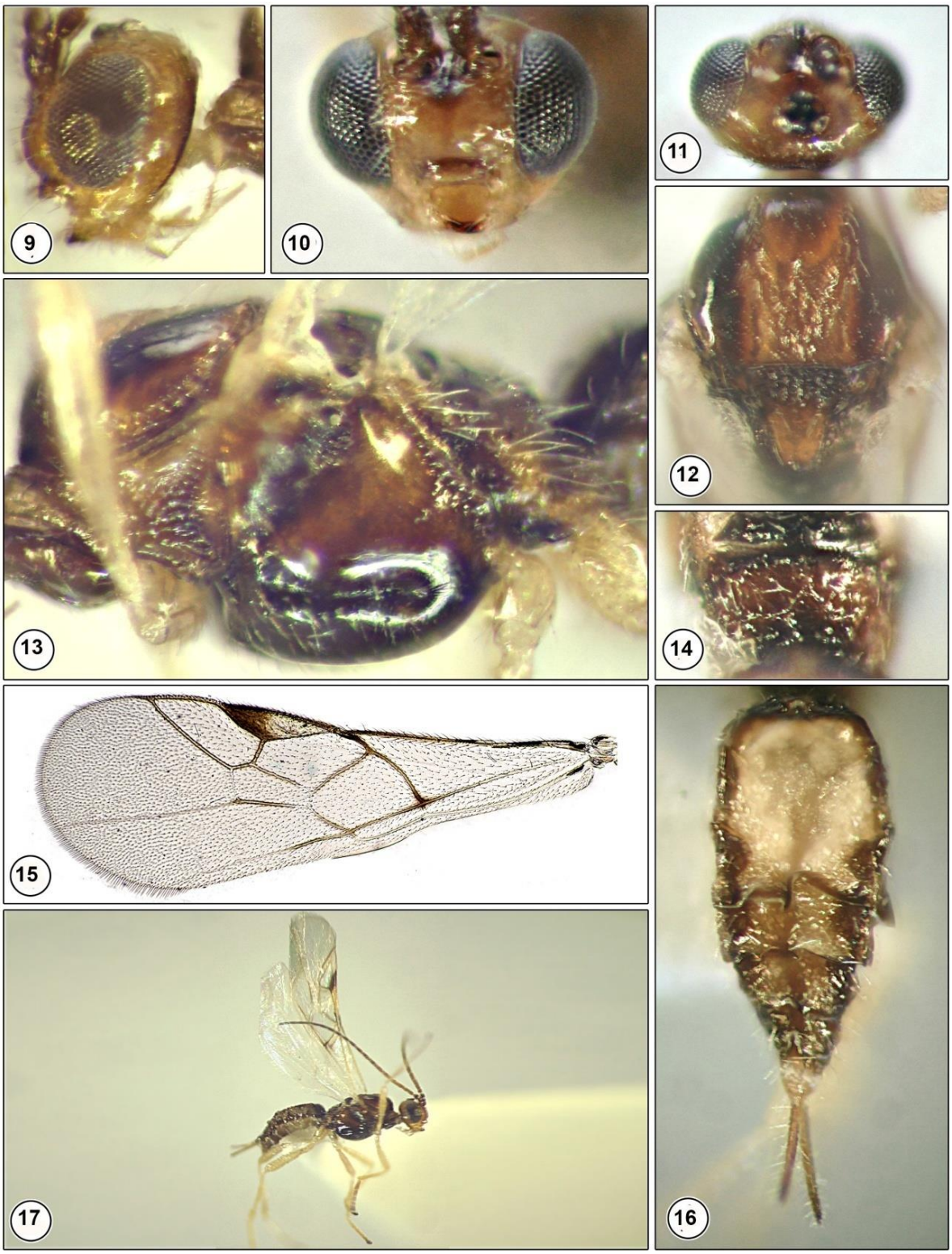
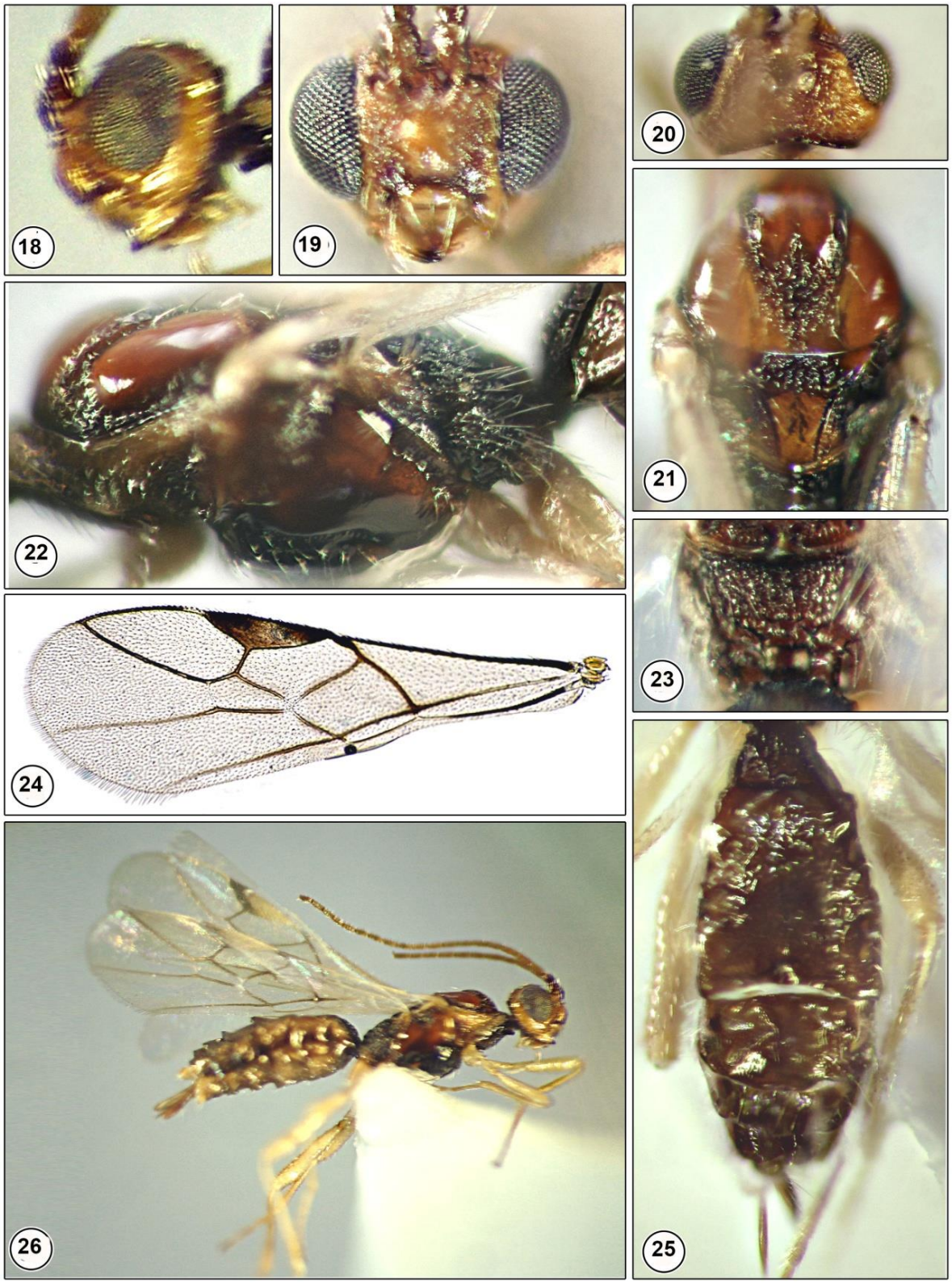


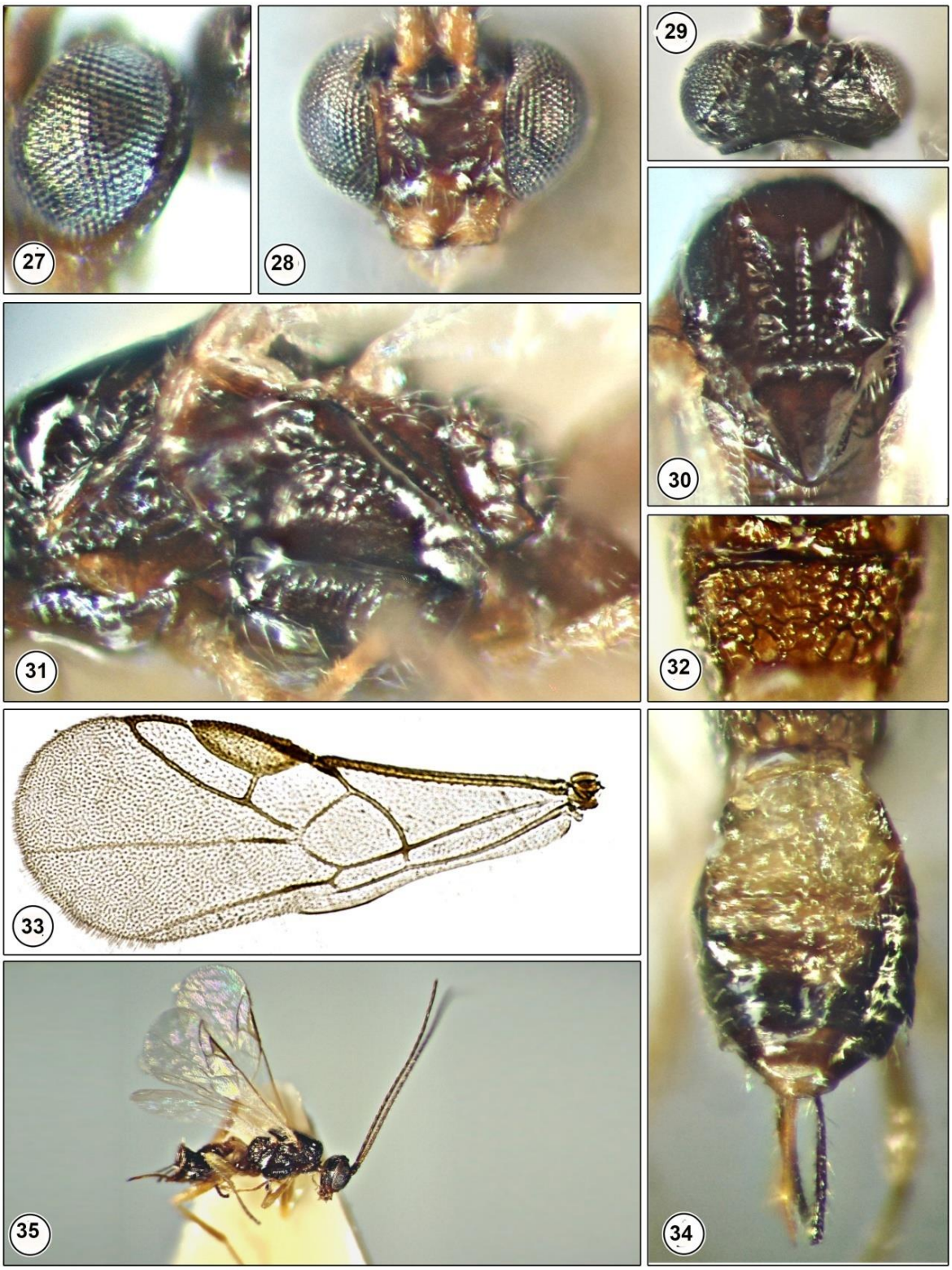
Figure 1–8. *Hormius moniliatus*; **1.** Head, lateral view, **2.** Head, frontal view, **3.** Head, dorsal view, 4. Mesonotum and Propodeum, dorsal view, **5.** Meonotum, lateral view, **6.** Fore wing, 7. Metasoma, dorsal view, **8.** General habitus.



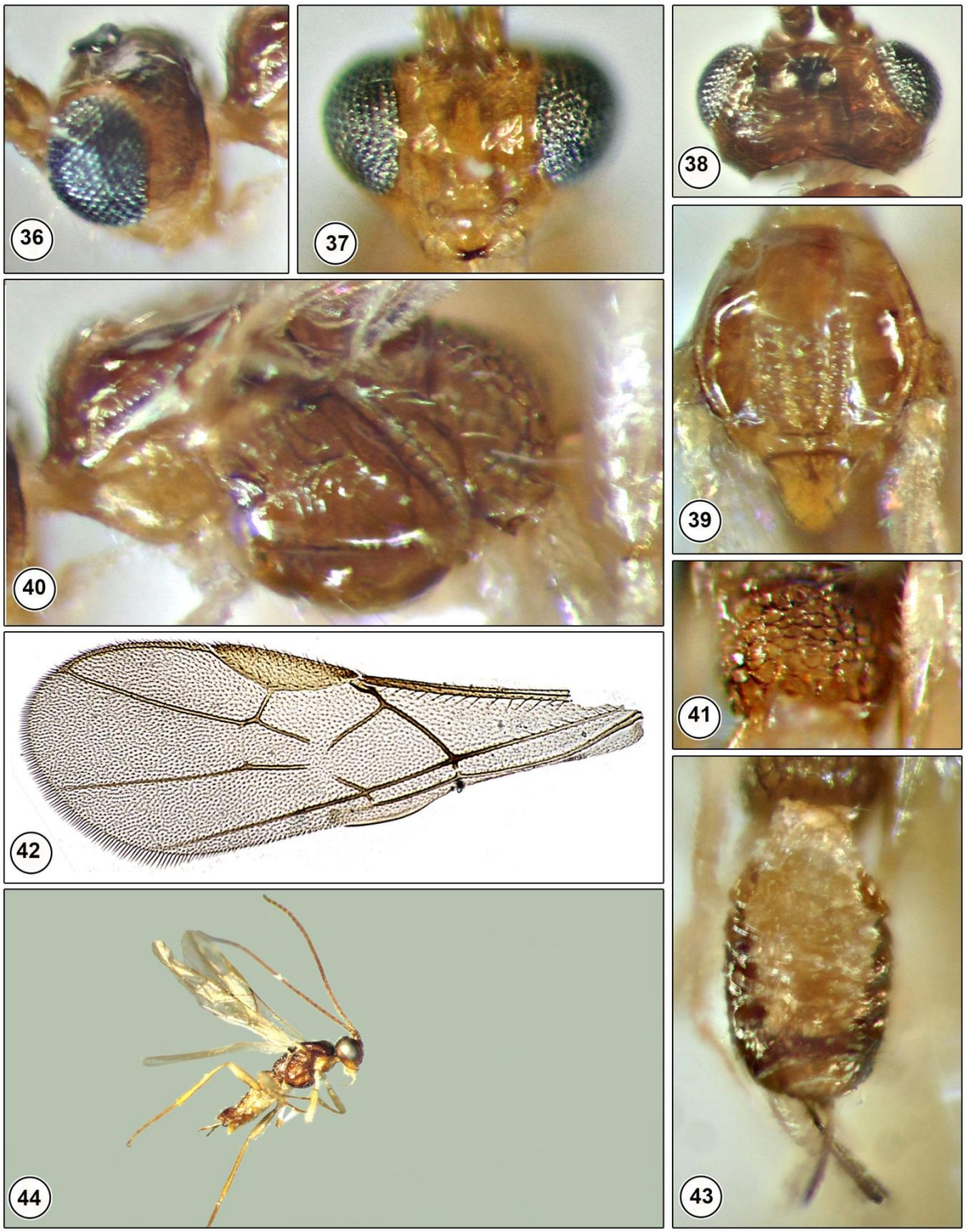
Figures 9–17. *Hormius radialis*; **9.** Head, lateral view, **10.** Head, frontal view, **11.** Head, dorsal view, **12.** Mesonotum, dorsal view, **13.** Mesonotum, lateral view, **14.** Propodeum, **15.** Fore wing, **16.** Metasoma, dorsal view, **17.** General habitus.



Figures 18–26. *Hormius sculuptratus*; **18.** Head, lateral view, **19.** Head, frontal view, **20.** Head, dorsal view, **21.** Mesonotum, dorsal view, **22.** Mesonotum, lateral view, **23.** Propodeum, **24.** Fore wing, **25.** Metasoma, dorsal view, **26.** General habitus.



Figures 27–35. *Pseudohormius flavobasalis*; **27.** Head, lateral view, **28.** Head, frontal view, **29.** Head, dorsal view, **30.** Mesonotum, dorsal view, **31.** Mesonotum, lateral view, **32.** Propodeun, **33.** Fore wing, **34.** Metasoma, dorsal view, **35.** General habitus.



Figures 36–44. *Pseudohormius turkmenus*; **36.** Head, lateral view, **37.** Head, frontal view, **38.** Head, dorsal view, **39.** Mesonotum, dorsal view, **40.** Mesonotum, lateral view, **41.** Propodum, **42.** Fore wing, **43.** Metasoma, dorsal view, **44.** General habitus.

Discussion

The present study is the first taxonomic work of the subfamily Hormiinae (Hymenoptera: Braconidae) in Iran. The previous faunistic studies on Hormiinae of Iran have been conducted in northern and northwestern parts of Iran (Al-e-Mansour and Mostafavi 1993; Ghahari et al. 2009a, 2009b, 2011a, 2011b; Rastegar et al. 2012). The Hormiinae fauna of Iran (including the current study) consists of six species belonging to three genera. One species *Pseudohormius turkmenus* Tobias & Alexeev, 1973 is reported for the first time in Iran. With the results obtained in this work, the total number of Hormiinae of Iran increased to seven species. Majority of the recorded species are widely distributed in the Western Palaearctic region and also in the Eastern Palaearctic region to some extent (Yu et al. 2012). The knowledge of subfamily Hormiinae from Iran is limited particularly from the genus *Hormius* and *Pesudohormius*. In this study, the specimens were collected with light and Malaise traps, and therefore nothing is known about biology of the collected species. All species except *H. moniliatus* were collected using light trap.

Several species of Hormiine wasps have been used in biological control programs. So far, 28 species belonging to several families of Lepidoptera were recorded as hosts of this subfamily. For example, *H. moniliatus* parasitizing caterpillars of a wide range of microlepidopterans (Samartsev and Belokobylskij 2013) and *P. turkmenus* has a good potential for control of *Bucculatrix bechsteinella* (Bechstein & Scharfenberg, 1805) (Lep.: Bucculatricidae) in orchards of most parts of Europe (Durdyev 1990).

The diverse range of the vegetation and isolated nature of the Hormozgan province and its islands (Mozaffarian 1991; Zaeifi 2001), are two major reasons which provide a diversity hot spot for the braconids (and other parasitoids). Further faunistic research, as well as studies on the host association of subfamily Hormiinae, is necessary to reveal the true diversity of this small group of insect parasitoids.

Acknowledgements

We would like to thank the Department of Entomology, Tarbiat Modares University for providing financial support for this research. The authors cordially thank to three anonymous reviewers for their valuable comments on the earlier version of this paper.

Reference

Al-e-Mansour, H. and Mostafavi, M. S. 1993. The first record of Braconidae bees on forest and range vegetation in the Fars province. *Proceeding of 11th Iranian Plant Protection Congress*, University of Guilan, p. 236.

Ameri, A., Talebi, A.A., Rakhshani, E., Beyarslan, A. and Kamali, K. 2014. Taxonomic study of *Opius* in southern Iran with elven new recored. *Zootaxa*, 3884 (1): 1–26. DOI: http://dx.doi.org/10.11646/zootaxa.3884.1.1

Ashmead, W.H. 1893. Synopsis of the Hormiinae of North America. *Transactions of the American Entomological Society*, 20: 39–44.

Ashmead, W.H. 1900. Classification of the Ichneumon flies, or the superfamily Ichneumonoidea. *Proceedings of the United States National Museum*, 23 (1206): 1–220.

Basinger A.J. 1938. The orange tortrix, *Argyrotaenia citrana*. *Hilgardia*, 11, 635–69.

Belokobylskij, S.A. 1980. The genus *Hormius* (Hymenoptera, Braconidae) in the south of the Soviet Far East. (in Russian). *Entomologicheskoye Obozreniye*, 59: 368–371. *Entomological Review*, 59(2): 112–114.

Belokobylskij, S.A. 1989. Braconids of the tribe Hormiini (Hymenoptera, Braconidae) from Australia. *Entomological Review*, 69(2): 89–108.

Belokobylskij, S.A. 1995. The Vietnam species of the genus *Hormius* Nees, 1818, with a key to the Oriental species (Hymenoptera, Braconidae). *Entomofauna*, 16(8): 189–214.

Durdyev, S.K. 1990. First raising of *Pseudohormius turkmenus* Tobias et Alexeev (Hymenoptera, Braconidae) from *Bucculatrix crataegi* (Lepidoptera, Bucculatricidae) in orchards of the south Turkmenistan. *Izvestiya Akademii Nauk Turkmenskoi Ssr Seriya Biologicheskikh Nauk*, (2): 75–77.

Eady, R.D. 1968. Some illustrations of micro-sculpture in the Hymenoptera. *Proceeding of Royal Entomological Society of London*, 43 (4–6): 66–72.

Fahringer, J. 1932. Opusculabraconologica. Band 3. Palaearktischen Region. Lieferung 4. Opusculabraconologica. pp. 241–320. Fritz Wagner, Wien.

Ghahari, H., Fischer, M. and Papp, J. 2011a. A study on the Braconidae (Hymenoptera: Ichneumonoidea) from Qazvin province, Iran. *Entomofauna*, 32(9): 197–204.

Ghahari, H., Fischer, M. and Papp, J. 2011b. A study on the braconid wasps (Hymenoptera: Braconidae) from Isfahan province, Iran. *Entomofauna*, 32(16): 261–270.

Ghahari, H., Fischer, M., Cetin Erdogan, O, Beyarslan, A. and Havaskary, M. 2009a. A contribution to the knowledge of the braconid-fauna (Hymenoptera, Ichneumonoidea, Braconidae) of Arasbaran, northwestern Iran. *Entomofauna*, 30(20): 329–333.

Ghahari, H., Fischer, M., Cetin Erdogan, O., Tabari, M., Ostovan, H. and Beyarslan, A. 2009b.A contribution to Braconidae (Hymenoptera) from rice fields and surrounding grasslands of Northern Iran. *Munis Entomology and Zoology*, 4(2): 432–435.

Hedwig, K. 1957. Ichneumoniden und Braconiden aus den Iran 1954 (Hymenoptera). *Jahresheft des Vereins für Vaterlaendische Naturkunde*, 112(1): 103–117.

Heraty, J. M. and Hawks, D. 1998. Hexamethyl-disilazane: A Chemical Alternative for Drying Insects. *Entomological News*, 109: 369–374.

Marshall, T.A. 1889. A monograph of British Braconidae. Part III. *Transactions of the Entomological Society of London*, 1889: 149–211.

Mozaffarian, V. 1991. A Short Survey of Hormozgan Province Vegetation (Iran). *Mitteilungen der Botanischen Staatssamm lung München*, 30: 417–429.

Papp, J. 1990. New Braconid wasps (Hymenoptera, Braconidae) in the Hungarian Natural History Museum, 1. *Annales Historico-Naturales Musei Nationalis Hungarici*, 82: 175–190.

Penteado-Dias, A.M. and van Achterberg, C. 2004. A new species of *Allobracon* Gahan (Braconidae: Hormiinae) from Brazil, and the first record of green Hormiinae. *Zoologische Mededelingen Leiden*, 78(12): 241–248.

Quicke, D.L.J. 2015. Biology, Systematics, Evolution and Ecology of Braconid and Ichneumonid Parasitoid Wasps. Wiley Blackwell, Chichester, 688 pp.

Rastegar, J., Sakenin, H., Khodaparast, S. and Havaskary, M. 2012. On a Collection of Braconidae (Hymenoptera) from East Azerbaijan and Vicinity, Iran. *Calodema*, 226: 1–4.

Samartsev K.G. and Belokobylskij S.A. 2013. On the fauna of the true cyclostome braconid wasps (Hymenoptera, Braconidae) of Astrakhan' Province. *Entomological Review*, 93(6): 755–774. DOI: 10.1134/S0013873813060080.

Shaw, M.R. and Huddleston, T. 1991. *Classification and Biology of Braconid Wasps Hymenoptera: Braconidae)*. British Museum of Natural History, London.

Shenefelt, R.D. 1975. Braconidae 8. Exothecinae, Rogadinae. Hymenopterorum Catalogus (nova editio). Pars 12. pp.1115–1262.

Soltanipoor, M.A. 2005. Medicinal Plants of the Geno Protected Area. *Pajouhesh and Sazandegi*, 68: 27–37.

Szépligeti, G. 1904. Hymenoptera. Fam. Braconidae. *Genera Insectorum*, 22: 1–253.

Telenga, N. A. 1941. Family Braconidae, subfamily Braconinae (continuation) and Sigalphinae. Fauna USSR. *Hymenoptera*, 5(3): 466 pp.

Tobias, V.I. 1974. Contribution to the knowledge of the Braconids (Hymenoptera, Braconidae). (in Russian) *Nasekomye Mongolii*, 4(2): 261–274.

Tobias, V.I. 1977. A new genus and new species of Braconidae (Hymenoptera) from Mongolia. *Nasekomye Mongolii*, 5:470–480.

Tobias, V.I. 1986. Subfamily Braconinae. In: Medvedev, G.S. (Ed.), Keys to the Insects of the European Part of the USSR. Vol.3. Hymenoptera. Part 4. Nauka publisher, Leningrad, pp. 156–254.

van Achterberg, C. 1990. Illustrated key to the subfamilies of the Holarctic Braconidae (Hymenoptera: Ichneumonoidea). *Zoologische Mededelingen Leiden*, 64(1): 1–20.

van Achterberg, C. 1993. Illustrated key to the subfamilies of the Braconidae. (Hymenoptera: Ichneumonoidea). *Zoologische Verhandelingen Leiden*, 283: 1–189.

van Achterberg, C. 1995. Generic revision of the subfamily Betylobraconinae (Hymenoptera: Braconidae) and other groups with modified fore tarsus. *Zoologische Verhandelingen Leiden*, 298: 1–242 pp.

Wharton, R.A. 1993. Review of the Hormiini (Hymenoptera: Braconidae) with a description of new taxa. *Journal of Natural History*, 27: 107–171. DOI:10.1080/00222939300770061.

Whitfield, J.B. and Wharton, R.A. 1997. Hormiinae. pp. 285–301. *In:* Wharton, R.A., Marsh, P.M. and Sharkey, M.J. (Eds.), *Manual of the New World genera of the family Braconidae (Hymenoptera)*. International Society of Hymenopterists, Special Publication No. 1. 439 pp.

Yu, D.S., van Achterberg, K. Horstmann, K. 2012. World Ichneumonoidae 2011. Taxonomy, Biology, Morphology and Distribution. (CD-ROM) Taxapad, available at *http://www.taxapad.com* accessed 25 September 2015).

Zaeifi, M. 2001. The Flora of Hormozgan Province. Bandar Abbas: Research Centre of Agriculture and Natural Resources Publications, 75 pp.

مروری بر زیر خانواده Hormiinae (Hymenoptera: Braconidae) در ایران

علی عامری سیاهویی[1]، علی اصغر طالبی[1*]، احسان رخشانی[2]، اهمت بایرسلان[3]

۱ گروه حشره شناسی، دانشکده کشاورزی، دانشگاه تربیت مدرس، صندوق پستی ۱۴۱۱۵-۳۳۶ تهران – ایران
۲ گروه گیاهپزشکی، دانشکده کشاورزی، دانشگاه زابل، زابل، ایران
۳ گروه زیست‌شناسی، دانشکده علوم و هنر، دانشگاه ارن بیتلیس، ترکیه، ایران

* پست الکترونیکی نویسنده مسئول مکاتبه: *talebia@modares.ac.ir*

تاریخ دریافت: ۰۴ دی ۱۳۹۴، تاریخ پذیرش: ۰۷ بهمن ۱۳۹۴، تاریخ انتشار: ۱۶ بهمن ۱۳۹۴

چکیده: این تحقیق جهت شناسایی زیرخانواده Hormiinae (Hymenoptera: Braconidae) در سالهای ۲۰۱۱ تا ۲۰۱۳ در استان هرمزگان انجام گرفت. جمع‌آوری نمونه ها بوسیله تله نوری، تور زدن و تله مالیز در زیستگاههای مختلف انجام شد. در مجموع تعداد ۵ گونه جمع آوری و شناسایی گردید که گونه *Pseudohormius turkmenus* Tobias & Alexeev, 1973 گزارش جدید برای ایران بود. در این تحقیق ضمن مرور کلیه گونه‌های این زیرخانواده کلید شناسایی این زیر خانواده در ایران ارایه گردید.

واژگان کلیدی: تاکسونومی، *Hormiu* ، استان هرمزگان، گزارش جدید، ایران