

## NEW RECORDS OF BRACONIDAE (HYMENOPTERA: ICHNEUMONOIDEA) FROM IRAN, AND IN MEMORIAM DR. MAXIMILIAN FISCHER (7 JUNE 1929 – 15 JUNE 2019)

H. Ghahari<sup>1</sup>, A. Beyarslan<sup>2</sup>, N.G. Kavallieratos<sup>3</sup>

*New records of Braconidae (Hymenoptera: Ichneumonoidea) from Iran, and in memoriam Dr. Maximilian Fischer (7 June 1929 – 15 June 2019).* – Ghahari H., Beyarslan A., Kavallieratos N.G. – Braconids include important parasitoids of noxious insects in agricultural and natural ecosystems. In the current study, we present a total of 14 species of Braconidae as new records of the fauna of Iran belonging to six subfamilies: Alysiinae (three species in two genera), Aphidiinae (two species in one genus), Brachistinae (two species in two genera), Braconinae (two species in two genera), Cheloninae (four species in three genera), and Doryctinae (one species).

**Key words:** Braconidae, fauna, species diversity, parasitoid, Iran.

**Addresses:** 1- Department of Plant Protection, Yadegar- e- Imam Khomeini (RAH) Shahre Rey Branch, Islamic Azad University, Tehran, Iran; email: hghahari@yahoo.com

2- Department of Biology, Faculty of Arts and Science, Trakya University, Edrine, Turkey

3- Laboratory of Agricultural Zoology and Entomology, Department of Crop Science, Agricultural University of Athens, Athens, Greece

*Нові знахідки Braconidae (Hymenoptera: Ichneumonoidea) з Ірану, пам'яті Др. Максиміліана Фішера (7 червня 1929 – 15 червня 2019).* – Гхahari X., Беарслан А., Каваллієратос Н.Г. – Бракони́ди є значимими паразитами шкідливих комах у агро- та природних екосистемах. В роботі представлено загалом 14 видів Braconidae. Незважаючи на те, що фауна Braconidae Ірану відносно добре вивчена, наведені види є новими знахідками для Іранської ентомофауни. Дані види належать до шести підродин: Alysiinae (3 види з 2-х родів), Aphidiinae (2 види з 1-го роду), Brachistinae (2 види з 2-х родів), Braconinae (2 види з 2-х родів), Cheloninae (4 види з 3-х родів) та Doryctinae (1 вид). Матеріал для даної роботи був зібраний з використанням пасток Малеза. Крім того, деякі буди виведені із видів-господарів в інкубаторах при температурі  $25 \pm 2$  °C і вологості  $65 \pm 5\%$ . Іран – велика за площею країна, для якої характерні різні типи екосистем. Слід очікувати, що збільшення кількості та інтенсивності ентофауністичних досліджень у різних регіонах, особливо в центральній та східній частинах країни, дозволить встановити більш точну картину і назвати фактичну кількість видів родини Braconidae. Дослідження біології і екології паразитів та їх господарів є важливим для економіки країни, оскільки це допоможе вирішити проблеми біологічного контролю шкідливих видів комах.

Доктор Максиміліан Фішер був видатним фахівцем-систематиком по родині Braconidae (Hymenoptera). Впродовж своєї майже 70-річної дослідницької діяльності він опрацював величезну кількість екземплярів браконід з усіх зоогеографічних регіонів світу, описав понад 2000 нових для науки видів та опублікував близько 400 наукових робіт. Завдяки цим значним таксономічним здобуткам Др. М. Фішер став одним із найвідоміших світових спеціалістів по даній родині комах.

**Ключові слова:** браконіди, фауна, видове різноманіття, паразити, Іран.

**Адреси:** 1- кафедра захисту рослин, Ядегар- е- Імам Хомейні (РАН) відділення Шахре Рей, Ісламський університет Азад, Тегеран, Іран; -email: hghahari@yahoo.com

2- кафедра біології, факультет мистецтв і науки, Тракійський університет, Едріне, Туреччина

3- лабораторія сільськогосподарської зоології та ентомології, кафедра рослинництва, Сільськогосподарський університет Афін, Афін, Греція

### Introduction

Braconid wasps (Hymenoptera: Braconidae) include more than 21,220 species that belong to more than 1100 genera worldwide (Yu et al. 2016). They are primary parasitoids of insects (associated with more than 120 families) at their larval or adult stage. (Chen, van Achterberg 2019). These parasitoids may play efficient role as biological control agents of agricultural and forest pests (Shaw,

Huddleston 1991; Wharton 1993; Shaw 2006; Quicke 2015).

The fauna of Iranian Braconidae has been relatively well studied, so that all subfamilies have been identified (e.g., Gadallah, Ghahari 2013a; 2013b; 2015; 2016; 2017; Barahoei et al. 2014; Gadallah et al. 2015a; 2015b; 2016a; 2016b; Ghahari 2016; Beyarslan et al. 2017) and numerous species checklists have been also updated several

times (Farahani et al. 2016; Samin et al. 2018a; 2018b). The objective of the present study was to introduce a total of 14 species of Braconidae species as new records for the fauna of Iran.

#### Material and methods

In this faunistic survey, some of the specimens have been collected by Malaise traps and some of them were obtained by rearing host species in incubators set at 25±2 °C, 65±5% RH and 14: 10 L: D. The collected specimens were killed with ethyl acetate, mounted on triangular labels and examined with an Olympus SZ61 Stereo microscope. Identifications of all the specimens were confirmed by the authorized braconologists. Nomenclature and classification of the present study suggested by Yu et al. (2016), and Chen and van Achterberg (2019) have been followed.

#### Results

List of species: in this faunistic paper, totally 14 species within six subfamilies were collected and identified as new records for the fauna of Iran.

#### Subfamily Alysiniinae Leach, 1815

##### Genus *Chorebus* Haliday, 1833

##### *Chorebus (Stiphrocera) albipes* (Haliday, 1839)

Material examined: Guilan province: Siahkal (Ziaratgah), 2♀♀, 1♂, 3.viii.2014, ex *Aulagromyza populi* (Kaltenbach, 1864) (Diptera: Agromyzidae).

##### *Chorebus (Phaenolexis) brevicornis* (Thomson, 1895)

Material examined: West Azarbaijan province, Khoy (Qarehghosh), 3♀♀, 11.viii.2012, ex *Melanagromyza aeneoventris* (Fallén, 1823) (Diptera: Agromyzidae).

##### Genus *Dacnusa* Haliday, 1833

##### *Dacnusa (Dacnusa) faeroensis* (Roman, 1917)

Material examined: Guilan province, Langrud (Talesh-Mahalleh), 1♀, 16.iv.2009.

#### Subfamily Aphidiinae Haliday, 1833

##### Genus *Aphidius* Nees von Esenbeck, 1819

##### *Aphidius (Aphidius) hortensis* Marshall, 1896

Material examined: Golestan province, Kordkoy (Gorji-Mahalleh), 3♀♀, 2♂♂, 10.v.2013, ex an unknown aphid species (Hemiptera: Aphididae) around wheat fields.

##### *Aphidius (Aphidius) sonchi* Marshall, 1896

Material examined: Khuzestan province, Andimeshk, 3♂♂, 6♀♀, 14.vii.2014, ex *Hyperomyzus lactucae* (Linnaeus, 1758)

(Hemiptera: Aphididae) on *Lactuca sativa* L. (Asteraceae).

#### Subfamily Brachistinae Foerster, 1863

##### Genus *Blacus* Nees, 1818

##### *Blacus (Blacus) instabilis* Ruthe, 1861

Material examined: Golestan province, Bandar-Torkman (Chapaghli), 2♂♂, 9.iv.2012.

##### Genus *Eubazus* Nees, 1812

##### *Eubazus (Brachistes) parvulus* (Reinhard, 1867)

Material examined: Kordestan province, Bijar (Chashmeh Adineh), 1♀, 1♂, 3.iv.2013.

#### Subfamily Braconinae Nees, 1811

##### Genus *Bracon* Fabricius, 1804

##### *Bracon (Glabrobracon) delusor* Spinola, 1808

Material examined: Kermanshah province, Sonqor (Chashmeh-Sefid), 2♀♀, 27.v.2011.

##### Genus *Coeloides* Wesmael, 1838

##### *Coeloides filiformis* Ratzeburg, 1852

Material examined: Fars province, Abadeh (Yaghub-Abad), 2♀♀, 6.iv.2015.

#### Subfamily Cheloninae Foerster, 1863

##### Genus *Chelonus* Panzer 1806

##### *Chelonus (Chelonus) caradrinae* Kokujev, 1914

Material examined: West Azarbaijan province, Oshnavieh (Sufian), 3♀♀, 14.v.2010, ex *Spodoptera exigua* (Hübner, 1808) (Lepidoptera: Noctuidae).

##### *Chelonus (Microchelonus) exilis* Marshall, 1885

Material examined: Mazandaran province, Qaemshahr (Kootena), 1♀, 12.v.2015.

##### *Chelonus (Microchelonus) vescus* (Kokuyev, 1899)

Material examined: Guilan province, Langrood (Golsefid), 2♀♀, 1♂, 18.vi.2009.

##### Genus *Phanerotoma* Wesmael, 1838

##### *Phanerotoma (Phanerotoma) planifrons* (Nees, 1816)

Material examined: Markazi province, Khomein, 3♀♀, 25.vi.2014, ex *Grapholita funebrana* (Treitschke, 1835) (Lepidoptera: Tortricidae).

#### Subfamily Doryctinae Foerster, 1863

##### Genus *Monolexis* Foerster, 1862

##### *Monolexis fuscicornis* Foerster, 1863

Material examined: West Azarbaijan province, Maku (Mirza-Khalil), 2♀♀, 10.vii.2012, ex *Lyctus linearis* (Goeze, 1777) (Coleoptera: Bostrichidae).

## Discussion

Our findings revealed that 14 species are new Iranian records. Considering the fact that 983 braconid species have been recorded from Iran (see Samin et al. 2018b; Gadallah et al. 2018; Ghahari,

Bayarslan 2019; Ghahari, Gadallah 2019; Ghahari et al. 2019), the total number reached now 997 identified species. Among 30 subfamilies that are known from Iran, Braconinae is most diverse since it includes 163 recorded species (Fig. 1).

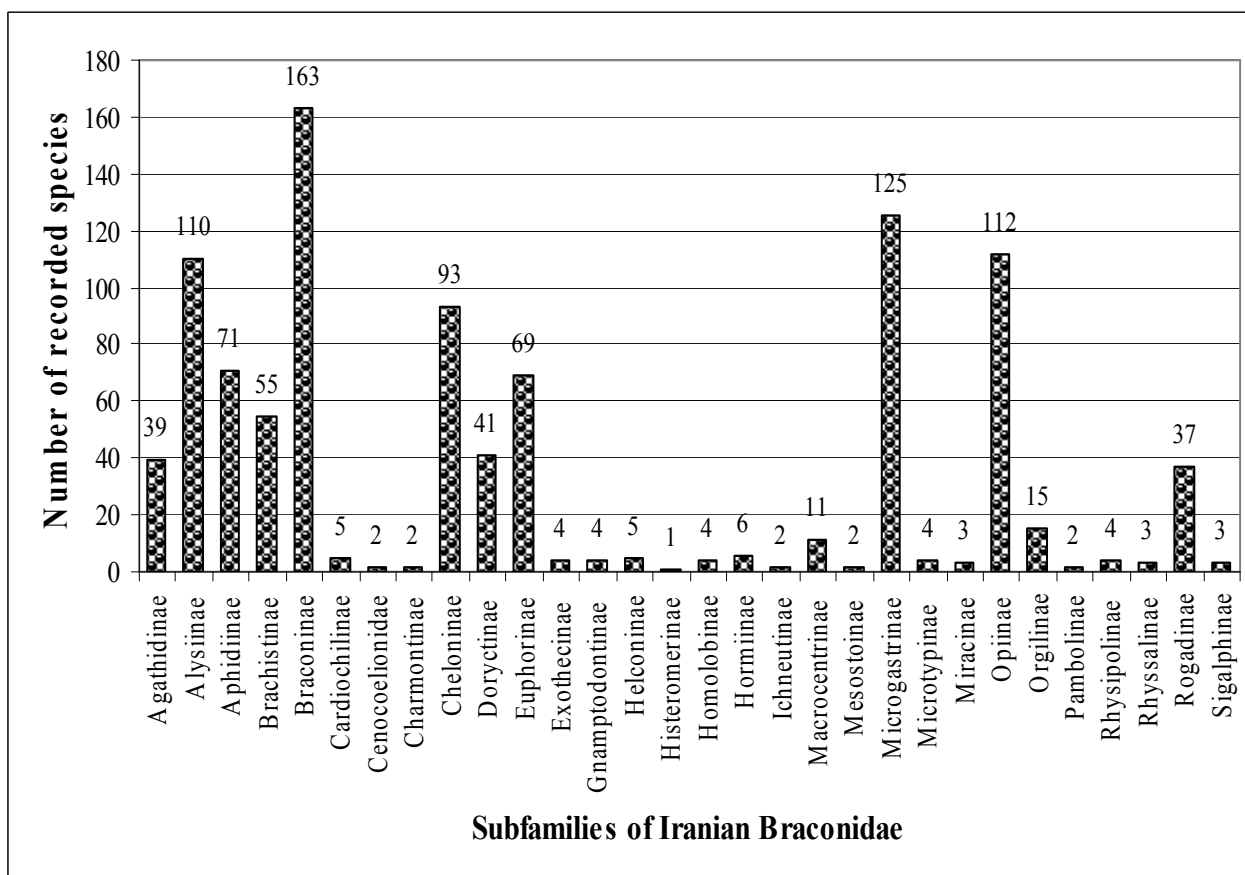


Fig. 1. Species diversity of Iranian Braconidae by subfamilies (Adapted from Samin et al. 2018b; plus five new papers: Gadallah et al. 2018; 2019; Ghahari, Bayarslan 2019; Ghahari, Gadallah 2019; Ghahari et al. 2019).

Due to fact that Iran is a large country which comprises variable ecosystems, more faunistic surveys in different regions (especially central and eastern parts) are expected to shed light on the actual number of Braconidae and further enhancing their host spectrum. The knowledge of parasitoids and their hosts is important at a country level since it may resolve targeted biological control efforts against noxious species.

### In Memoriam Dr. Maximilian Fischer (7 June 1929 – 15 June 2019)

Dr. Maximilian Fischer was born on 7 June 1929 in Vienna, Austria.

He studied science and philosophy at the University of Vienna from 1947 until 1953. He took zoology as the main subject and botany as a

subsidiary subject and also underwent the courses for teaching Natural History and Philosophy at secondary schools. He passed the examination for the latter, successfully completed his doctoral thesis, and finished his academic education as Doctor of Philosophy in July 1953.

Dr. Fischer was an outstanding specialist on the family Braconidae (Hymenoptera). During his nearly 70 years of research activity, he identified a large number of braconid specimens from all zoogeographical regions, described over 2.000 species new to science, and published about 400 scientific papers (Gusenleitner 2019). Owing to these huge taxonomic accomplishments he became one of the most famous braconologists of the world.



Dr. Maximilian Fischer at his working desk in the Natural History Museum Vienna, 2008.

I (H. Ghahari) had numerous contacts with Max. We started cooperating on Iranian Braconidae in 2007 (see below for his first two emails: Figs. 1, 2). Max was unselfish in identifying many of my specimens of Braconidae from Iran. He received several parcels from me (Figs. 3, 4), and, in spite of being very busy with his own scientific projects, he

was always ready for fast identification, as well as editing our manuscripts. It is my honor that we have co-authored 22 papers on Iranian Braconidae (see Appendix 1).

Dr. Maximilian Fischer passed away on 15 June 2019 in Vienna.

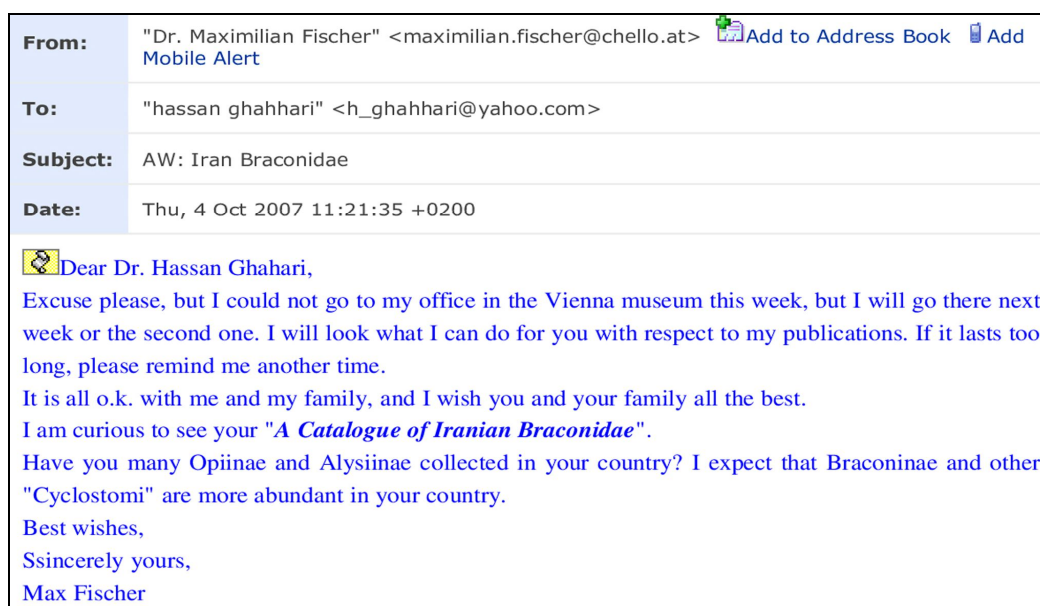


Fig. 1. The first communication of M. Fischer to H. Ghahari (4 October 2007).

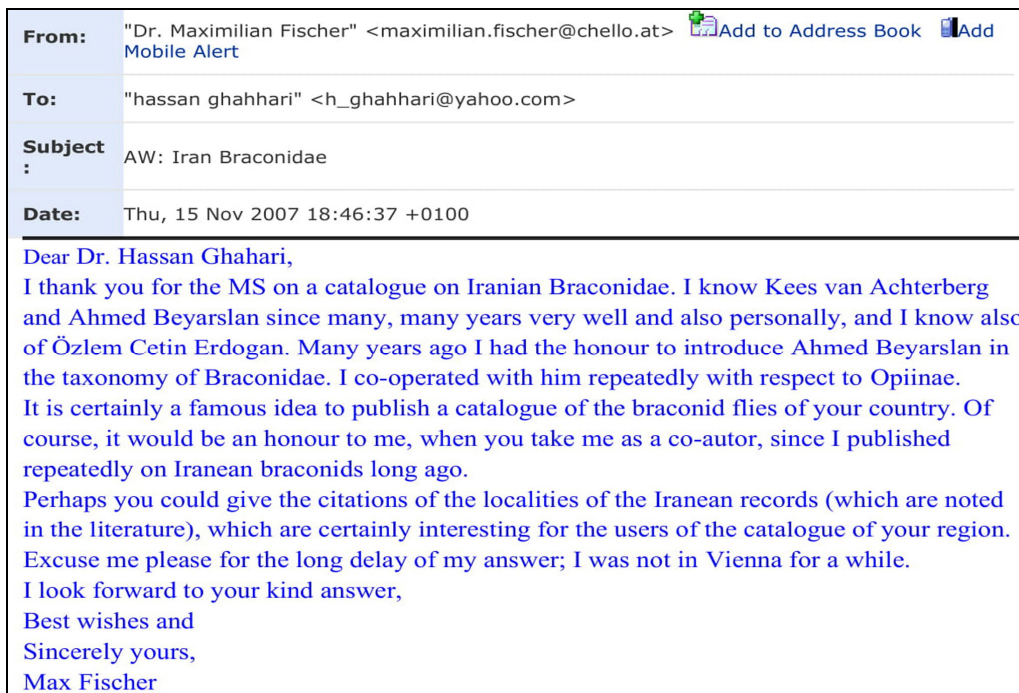


Fig. 2. The second communication of M. Fischer to H. Ghahari (15 November 2007).

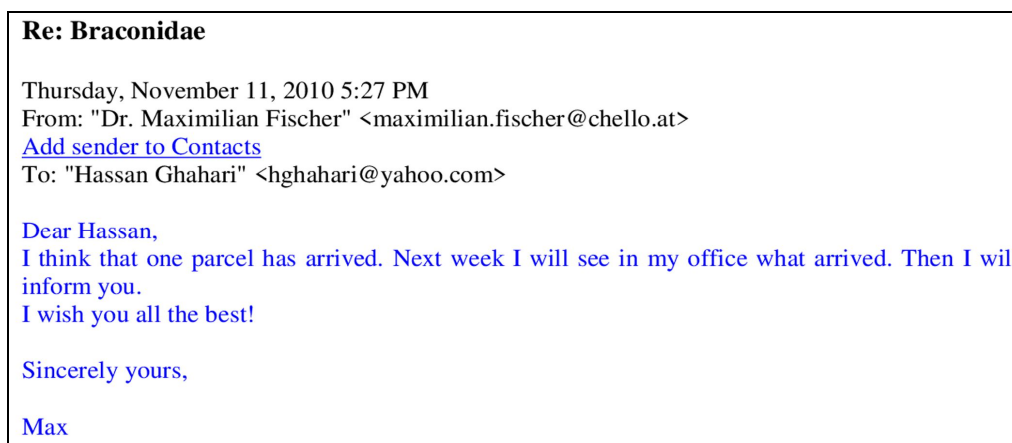


Fig. 3. Communication of H. Ghahari and M. Fischer about the identification of Iranian Braconidae (November 11, 2010).

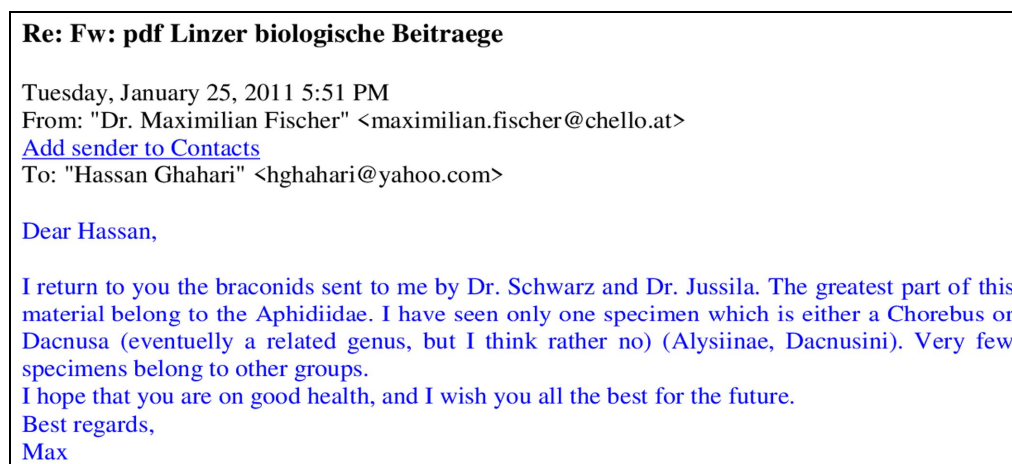


Fig. 4. Communication of H. Ghahari and M. Fischer about the identification of Iranian Braconidae (January 25, 2011).

### Papers dedicated to Dr. M. Fisher:

Fischer, M. (2004) From my entomological life. *Proceedings of the Russian Entomological Society*, 75(1): 73–81.

Gusenleitner, F. (2019) Maximilian Fischer (\*7. Juni 1929, †15. Juni 2019): Ein Leben für das Naturhistorische Museum Wien und für die Wissenschaft. *Linzer biologische Beiträge*, 51(2): 1211–1300.

Gusenleitner F., Zettel, H. (2019) Auf den Spuren der Grabwespen - Herrn Mag. Dr. Hermann Dollfuß zum 80. Geburtstag. *AÖE News*, 1: 6–15.

Lödl, M. (2020) Hofrat Univ.-Doz. Mag. Dr. Maximilian Fischer (1929-2019). *Annalen des Naturhistorischen Museums in Wien*, Serie B, 122: 5–9.

Schönmann, H. (1994) Hofrat Univ.-Doz. Mag. Dr. Maximilian Fischer zum 65. Geburtstag. *Annalen des Naturhistorischen Museums in Wien*, Serie B, 96: 1–18.

Zettel, H. (2020) Hofrat Univ.-Doz. Mag. Dr. Maximilian Fischer (1929–2019) - eine persönliche Hommage. *AÖE News*, 1: 89–93.

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BARAHOEI, H., RAKHSHANI, E., NADER, E., STARÝ, P., KAVALLIERATOS, N.G., TOMANOVIĆ, Ž., MEHRPARVAR, M. (2014) Checklist of Aphidiinae parasitoids (Hymenoptera: Braconidae) and their host aphid associations in Iran. *Journal of Crop Protection*, 3(2): 199–232.

BEYARSLAN, A., GADALLAH, N.S., GHAHARI, H. (2017) An annotated catalogue of the Iranian Microtypinae and Rogadinae (Hymenoptera: Braconidae). *Zootaxa*, 4291(1): 99–116.

CHEN, X.X., VAN ACHTERBERG, C. (2019) Systematics, phylogeny, and evolution of braconid wasps: 30 years of progress. *Annual Review of Entomology*, 64: 1–24.

FARAHANI, S., TALEBI, A.A., RAKHSHANI, E. (2016) Iranian Braconidae (Insecta: Hymenoptera: Ichneumonoidea): diversity, distribution, and host association. *Journal of Insect Biodiversity and Systematics*, 2: 1–92.

GADALLAH, N.S., GHAHARI, H. (2013a) An annotated catalogue of the Iranian Agathidinae and Brachistinae (Hymenoptera: Braconidae). *Linzer biologische Beiträge*, 45(2): 1873–1901.

GADALLAH, N.S., GHAHARI, H. (2013b) An annotated catalogue of the Iranian Cheloninae (Hymenoptera: Braconidae). *Linzer biologische Beiträge*, 45(2): 1921–1943.

GADALLAH, N.S., GHAHARI, H. (2015) An annotated catalogue of the Iranian Braconinae (Hymenoptera: Braconidae). *Entomofauna*, 36: 121–176.

GADALLAH, N.S., GHAHARI, H. (2016) An updated checklist of the Iranian Miracinae, Pambolinae and Sigalphinae (Hymenoptera: Braconidae). *Orsis*, 30: 51–61.

GADALLAH, N.S., GHAHARI, H. (2017) An annotated catalogue of the Iranian Doryctinae and Exothecinae (Hymenoptera: Braconidae). *Transactions of the American Entomological Society*, 143: 669–691.

GADALLAH, N.S., GHAHARI, H., FISCHER, M., PERIS-FELIPO, F.J. (2015a) An annotated catalogue of the Iranian Alysiniinae (Hymenoptera: Braconidae). *Zootaxa*, 3974(1): 1–28.

GADALLAH, N.S., GHAHARI, H., PERIS-FELIPO, F.J. (2015b) Catalogue of the Iranian Microgastrinae (Hymenoptera: Braconidae). *Zootaxa*, 4043(1): 1–69.

GADALLAH, N.S., GHAHARI, H., PERIS-FELIPO, F.J., FISCHER, M. (2016a) Updated checklist of Iranian Opiinae (Hymenoptera: Braconidae). *Zootaxa*, 4066(1): 1–40.

GADALLAH, N.S., GHAHARI, H., VAN ACHTERBERG, C. (2016b) An annotated catalogue of the Iranian Euphorinae, Gnampodontinae, Helconinae, Hormiinae and Rhysipolinae (Hymenoptera: Braconidae). *Zootaxa*, 4072(1): 1–38.

GADALLAH, N.S., GHAHARI, H., PAPP, J., BEYARSLAN, A. (2018) New records of Braconidae (Hymenoptera) from Iran. *Wuyi Science Journal*, 34: 43–48.

GADALLAH, N.S., GHAHARI, H., KAVALLIERATOS, N.G. (2019) An annotated catalogue of the Iranian Charmontinae, Ichneutinae, Macrocentrinae and Orgilinae (Hymenoptera: Braconidae). *Journal of the Entomological Research Society*, 21(3): 333–354.

GHAHARI, H. (2016) Five new records of Iranian Braconidae (Hymenoptera: Ichneumonoidea) for Iran and annotated catalogue of the subfamily Homolobinae. *Wuyi Science Journal*, 32: 35–43.

- GHAHARI, H., BEYARSLAN, A. (2019) A faunistic study on Braconidae (Hymenoptera: Ichneumonoidea) from Iran, and in Memoriam Dr. Jenő Papp (20 May 1933 – 11 December 2017). *Acta Biologica Turcica*, 32(4): 248–254.
- GHAHARI, H., GADALLAH, N.S. (2019) New records of Braconid wasps (Hymenoptera: Ichneumonoidea: Braconidae) from Iran. *Entomological News*, 128(4): 384–392.
- GHAHARI, H., FISCHER, M., BEYARSLAN, A., NAVAEIAN, M., HOSSEINI BOLDAJI, S.A. (2019) New records of Brachistinae, Braconinae, Cheloninae and Microgastrinae (Hymenoptera: Braconidae) from Iran. *Wuyi Science Journal*, 35(2): 135–141.
- QUICKE, D.L.J. (2015) *The braconid and ichneumonid parasitoid wasps: Biology, systematics, evolution and ecology*. Wiley Blackwell, Chichester, 688 pp.
- SAMIN, N., CORONADO-BLANCO, J.M., KAVALLIERATOS, N.G., FISCHER, M., SAKENIN, H. (2018a) Recent findings on Braconidae (Hymenoptera: Ichneumonoidea) of Iran with an updated checklist. *Acta Biologica Turcica*, 31(4): 160–173.
- SAMIN, N., CORONADO-BLANCO, J.M., FISCHER, M., VAN ACHTERBERG, C., SAKENIN, H., DAVIDIAN, E. (2018b) Updated checklist of Iranian Braconidae (Hymenoptera: Ichneumonoidea) with twenty-three new records. *Natura Somogyiensis*, 32: 21–36.
- SHAW, M.R., HUDDLESTON, T. (1991) Classification and biology of Braconid wasps (Hymenoptera: Braconidae). Handbooks for the identification of British insects. *Royal Entomological Society of London*, 7(11): 1–126.
- SHAW, S.R. (2006) Chapter 12.2. Familia Braconidae, pp. 487–525. In: Hanson, P.E., Gauld, I.D. (Eds), Hymenoptera de la Región Neotropical. *Memoirs of the American Entomological Institute*, 77: 1–994.
- WHARTON, R.A. (1993) Bionomics of the Braconidae. *Annual Review of Entomology*, 38: 121–143.
- YU, D.S., VAN ACHTERBERG, K., HORSTMANN, K. (2016) *World Ichneumonoidea 2011. Taxonomy, Biology, Morphology and Distribution*. Taxapad.com. Canada.

#### Appendix 1: Co-papers of H. Ghahari with M. Fischer

- GHAHARI, H., FISCHER, M., ERDOĞAN, Ö.Ç., BEYARSLAN, A., HAVASKARY, M. (2009) A Contribution to the Knowledge of the Braconid-Fauna (Hymenoptera, Ichneumonoidea, Braconidae) of Arasbaran, Northwestern Iran. *Entomofauna*, 30: 329–336.
- GHAHARI, H., FISCHER, M., ERDOĞAN, Ö.Ç., TABARI, M., OSTOVAN, H., BEYARSLAN, A. (2009) A contribution to Braconidae (Hymenoptera) from rice fields and surrounding grasslands of northern Iran. *Munis Entomology and Zoology*, 4: 432–435.
- GHAHARI, H., FISCHER, M., ERDOĞAN, Ö.Ç., BEYARSLAN, A., HEDQVIST, K.J., OSTOVAN, H. (2009) Faunistic note on the Braconidae (Hymenoptera: Ichneumonoidea) in Iranian alfalfa fields and surrounding grasslands. *Entomofauna*, 30: 437–444.
- GHAHARI, H., GADALLAH, N.S., ERDOĞAN, Ö.Ç., HEDQVIST, K.J., FISCHER, M., BEYARSLAN, A., OSTOVAN, H. (2009) Faunistic note on the Braconidae (Hymenoptera: Ichneumonoidea) in Iranian cotton fields and surrounding grasslands. *Egyptian Journal of Biological Pest Control*, 19: 115–118.
- GHAHARI, H., FISCHER, M., ERDOĞAN, Ö.Ç., BEYARSLAN, A., OSTOVAN, H. (2010) A contribution to the braconid wasps (Hymenoptera: Braconidae) from the forests of northern Iran. *Linzer biologische Beiträge*, 42(1): 621–634.
- GHAHARI, H., FISCHER, M., HEDQVIST, K.J., ERDOĞAN, Ö.Ç., VAN ACHTERBERG, C., BEYARSLAN, A. (2010) Some new records of Braconidae (Hymenoptera) for Iran. *Linzer biologische Beiträge*, 42(2): 1395–1404.
- GHAHARI, H., FISCHER, M. (2011) A contribution to the Braconidae (Hymenoptera: Ichneumonoidea) from north-western Iran. *Calodema*, 134: 1–6.
- GHAHARI, H., FISCHER, M. (2011) A study on the Braconidae (Hymenoptera: Ichneumonoidea) from some regions of northern Iran. *Entomofauna*, 32: 181–196.
- GHAHARI, H., FISCHER, M. (2011) A contribution to the Braconidae (Hymenoptera) from Golestan National Park, northern Iran. *Zeitschrift Arbeitsgemeinschaft Österreichischer Entomologen*, 63: 77–80.
- GHAHARI, H., FISCHER, M., SAKENIN, H., IMANI, S. (2011) A contribution to the Agathidinae, Alysinae, Aphidiinae, Braconinae, Microgastrinae and Opiinae (Hymenoptera: Braconidae) from cotton fields and surrounding grasslands of Iran. *Linzer biologische Beiträge*, 43(2): 1269–1276.
- GHAHARI H., FISCHER, M., PAPP, J. (2011) A study on the braconid wasps (Hymenoptera: Braconidae) from Isfahan province, Iran. *Entomofauna*, 32: 261–272.
- GHAHARI H., FISCHER, M., PAPP, J. (2011) A study on the Braconidae (Hymenoptera: Ichneumonoidea) from Qazvin province, Iran. *Entomofauna*, 32: 197–208.
- GHAHARI H., FISCHER, M., PAPP, J. (2011) A study on the Braconidae (Hymenoptera: Ichneumonoidea) from Ilam province, Iran. *Calodema*, 160: 1–5.
- SAKENIN, H., FISCHER, M., SAMIN, N., IMANI, S., PAPP, J., GHAHARI, H., RASTEGAR, J. (2011) A faunistic survey on the braconid wasps (Hymenoptera: Braconidae) from northern Iran. *Global Conference on Entomology*, Chiang Mai, Thailand, March 5-9, 2011, p. 123.

- GHAHARI H., FISCHER, M. (2012) A faunistic survey on the braconid wasps (Hymenoptera: Braconidae) from Kermanshah province, Iran. *Entomofauna*, 33: 305–312.
- GHAHARI H., FISCHER, M., TOBIAS, V. (2012) A study on the Braconidae (Hymenoptera: Ichneumonoidea) from Guilan province, Iran. *Entomofauna*, 33: 317–324.
- GHAHARI H., FISCHER, M., PAPP, J., TOBIAS, V. (2012) A contribution to the knowledge of braconids (Hymenoptera: Braconidae) from Lorestan province Iran. *Entomofauna*, 33(7): 65–72.
- GHAHARI, H., FISCHER, M., JUSSILA, R. (2012) Braconid and ichneumonid wasps (Hymenoptera, Ichneumonoidea) as the parasitoids of *Plutella xylostella* (L.) (Lepidoptera: Plutellidae) in Iran. *Entomofauna*, 33: 281–288.
- GADALLAH, N.S., GHAHARI, H., FISCHER, M., PERIS-FELIPO, F.J. (2015) An annotated catalogue of the Iranian Alysinae (Hymenoptera: Braconidae). *Zootaxa*, 3974(1): 1–28.
- SAMIN, N., FISCHER, M., GHAHARI, H. (2015) A contribution to the study on the fauna of Braconidae (Hymenoptera, Ichneumonoidea) from the province of Semnan, Iran. *Arquivos Entomoloxicos*, 13: 429–433.
- GADALLAH, N.S., GHAHARI, H., PERIS-FELIPO, F.J., FISCHER, M. (2016) Updated checklist of Iranian Opiinae (Hymenoptera: Braconidae). *Zootaxa*, 4066(1): 1–40.
- GHAHARI, H., FISCHER, M., BEYARSLAN, A., NAVAEIAN, M., HOSSEINI BOLDAJI, S.A. (2019) New records of Brachistinae, Braconinae, Cheloninae and Microgastrinae (Hymenoptera: Braconidae) from Iran. *Wuyi Science Journal*, 35(2): 135–141.