Yuzuncu Yil University
Journal of Agricultural Sciences
(Yüzüncü Yıl Üniversitesi Tarım Bilimleri Dergisi)
https://dergipark.org.tr/en/pub/yyutbd

ISSN: 1308-7576 e-ISSN: 1308-7584

Research Article

New Records on The Ichneumonidae (Hymenoptera) Fauna From Türkiye

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Article Info

Received: 28.02.2025
Accepted: 21.11.2025
Online published: 15.12.2025
DOI: 10.29133/yyutbd.1648536

Keywords

Bingöl,
Biodiversity,
Ichneumonidae,
New record,
Türkiye

Abstract: This faunistic research was conducted to determine the species of Ichneumonidae collected in the Karlıova district of Bingöl province between 2022-2023. As a result of this research, two different subfamilies (Campopleginae Forster, 1869; and Tryphoninae Shuckard, 1840) belonging to two genera, and two species were identified. *Diadegma tenuipes* (Thomson, 1887) and *Ctenochira arcuata* (Holmgren, 1857) are new records for the Ichneumonidae fauna of Türkiye. With this study, Ichneumonidae species in Karlıova district (Bingöl) were determined, and new information about their distributed and new localities was added.

To Cite: Dalan, M, Çoruh, S, 2025. New Records on The Ichneumonidae (Hymenoptera) Fauna From Türkiye. *Yuzuncu Yil University Journal of Agricultural Sciences*, 35(4): 670-678. DOI: https://doi.org/10.29133/yyutbd.1648536

1. Introduction

The Ichneumonidae, known as “ichneumon wasps”, “ichneumonid wasps”, “ichneumonids” or “Darwin wasps”, are a family of “parasitoid wasps” of the insect order Hymenoptera.

They are among the most diverse groups within the Hymenoptera, with roughly 25 000 species described as of 2016 (Yu et al., 2016).

They play an important role as regulators of insect populations in both natural and semi-natural systems, making them promising agents for biological control (Klopfstein et al., 2019; Çelik et al., 2023).

Ichneumon wasps (Hymenoptera: Ichneumonidae) are important parasitoids of other insects, especially several agricultural pests (Ghahari and Jussila, 2011). The Ichneumonidae are among the largest families in the animal kingdom. This family is important because its larvae can be either endo- or ectoparasitoids of holometabolous insect larvae or pupae, as well as of Chelicerata (Fernandes et al., 2019).

The studies on this group produced in recent years are quite intense and significant. In a thesis study prepared in our country, the number of Ichneumonidae species in Türkiye was updated to 1460 (İneciklioğlu, 2022), and this number was further increased by many studies (Ataş and Çoruh, 2022; Barik, 2022; Birol, 2022; Bulak Korkmaz and Çoruh, 2022; Çoruh, 2022; Çoruh and Riedel, 2022; Çoruh et al., 2022a; Çoruh et al., 2022b; Doğru, 2022; Kaplan and Riedel 2022; Kolarov and Çoruh, 2022; Teymuroğlu and Çoruh, 2022; Kaplan, 2023; Ataş and Çoruh, 2023; Barik and Çoruh, 2023a and

2023b; Narmanlıoğlu and Çoruh, 2023; Ayhan and Çoruh, 2024; Çoruh and Dalan, 2024; Çoruh and Kolarov, 2024; Kaplan, 2024; Bulak Korkmaz and Çoruh, 2024; Korukcu and Çoruh, 2024).

This study was conducted to identify Ichneumonidae (Hymenoptera) species in Karlıova district of Bingöl province and to contribute to Ichneumonidae biodiversity research.

2. Materials and Methods

2.1. Data sampling

Adults of Ichneumonidae species collected from flowering plants and weeds in the deep passes and valleys of Karlıova (Kargapazarı) district of Bingöl province (Figure 1-2) constitute the material of the study. Adult specimens were collected by insect sweep in the years 2022-2023 vegetation period and between the altitudes of 1802-1816 m (Table 1).

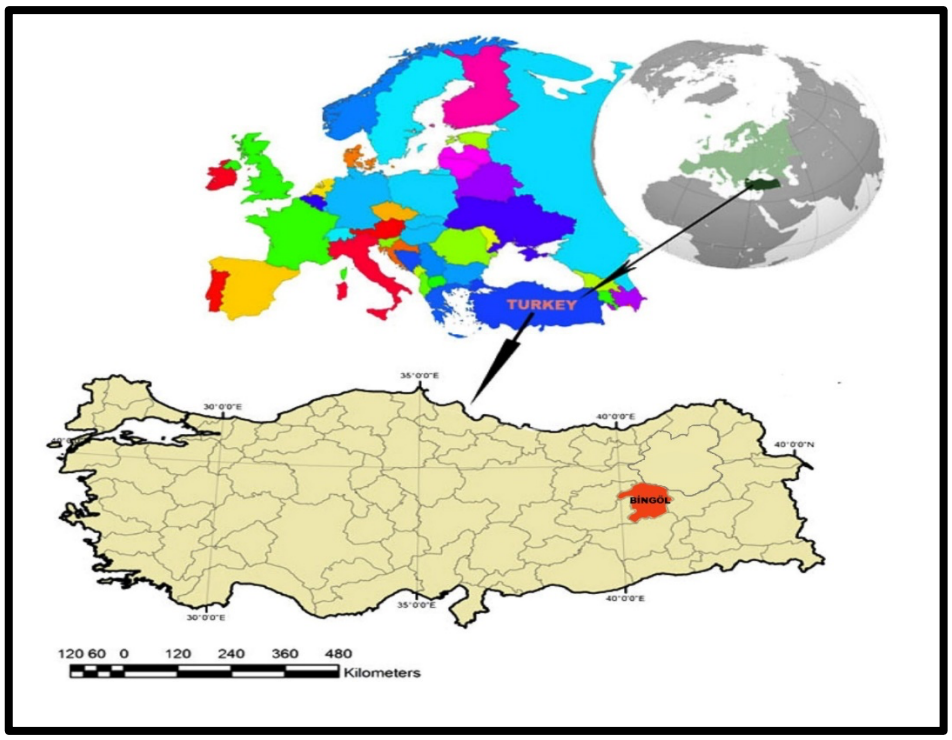


Figure 1. Map of study area.

2.2. Study area

Survey studies were carried out in the Karlıova district of Bingöl province. The fact that the research area is a region that has never been studied before, that it has deep gorges and valleys, that it is located between mountains and small lakes at different altitudes, and that it hosts the outflow of water resources were effective in choosing the region as the study area.

Figure 2. Pictures of study area.

Karlıova district is located in the Upper Euphrates Region of Eastern Anatolia. The settlement, located in the northeast of the Central district of Bingöl province, is located in the middle part of the mountains, which extend roughly in the east-west direction and are mostly 3000 m high (Karagöl Mountains 3057 m, Bingöl Mountain 3193 m, Satan Mountains 2839 m, Şerafettin Mountains 2388 m). The region, whose altitude exceeds 1900 meters and where high, flat areas cover a large area, is also characterized by being the hydrographic border of several rivers (Peri Stream, Göynük Stream, Murat River). The district's surface area is 1311 km². Its ratio to the provincial surface area is 16.60%. The district's altitude above sea level is 1940 meters. Its distance from the city center is 70 km. Sunrise can be watched within the borders of this district (Anonymous, 2024a and 2024b)

The study material was collected from Kargapazarı in the Karlıova district of Bingöl province (Table 1).

Table 1. Data of collected species

Locality	Altitude (m)		Cordinates
KARGAPAZARI	1816	39°18'44.99"N	41° 5'52.61"E
KARGAPAZARI	1802	39°17'41.28"N	41° 4'23.16"E

2.3. Laboratory studies

All the materials used in the study were collected and photographed by the first author. Ichneumonid adults transported to the laboratory were prepared for identification, the subfamily density composition was determined using discriminatory taxonomic characters, and the specimens were preserved. After the field studies were completed, genus and species information was obtained, and identified samples were used to identify the samples. Some of the identifications were made in the Hikmet ÖZBEK Taxonomy Laboratory by the second author. At the same time, the unidentified samples were identified by Dr. Janko KOLAROV (Plovdiv University, Faculty of Pedagogy, Bulgaria).

After the species were identified, the appearance of each species was monitored using the digital shooting unit (Canon EOS 1100D camera, Canon EF 100 mm, f/2.8L Macro lens, Kaiser digital shooting unit) installed at the Ataturk University Biodiversity Application and Research Center, and the Lenovo Research brand camera Helicon Focus 6.7.1. program. Names of the species, their worldwide distribution, and hosts (if any) were used for a limited number from the Yu et al. (2016) catalogue.

3. Results

During field studies, two genera belonging to the subfamilies Campopleginae Förster, 1869, and Tryphoninae Shuckard, 1840 were collected, and two species were identified. *Diadegma tenuipes* (Thomson, 1887) and *Ctenochira arcuata* (Holmgren, 1857) were recorded as new for the Ichneumonidae fauna of Türkiye. The species are listed below:

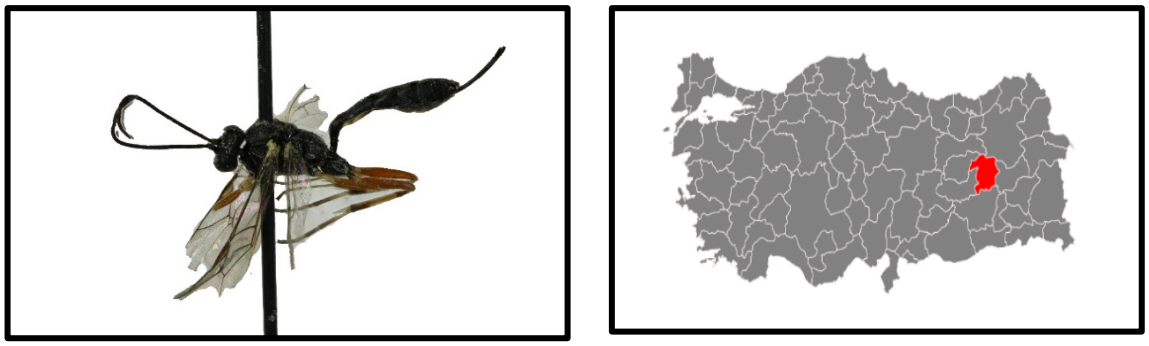
Subfamily: Campopleginae Förster, 1869

**Diadegma tenuipes* (Thomson, 1887) (Figure 3a)

Material examined: Kargapazarı: 39° 17' 41.28" N, 41° 4' 23.16" E, 1802 m, 20.IX.2022, 2 ♀♀.

Hosts: *Bacotia claustrella* (Bruand, 1845), *Coleophora solitariella* Zeller, 1849, *Eupoecilia ambiguella* Hübner (1796), *Grapholita molesta* (Busck, 1916), *Lobesia botrana* (Denis &. Schiffermuller, 1775), *Megalophanes stetinensis* (E. Hering, 1846), *Mompha epilobiella* Römer, 1794, *Pieris rapae* Linnaeus, 1758; *Plutella xylostella* Linnaeus, 1758, *Strongylogaster* Dahlbom, 1835, *Zele albiditarsus* Curtis, 1832.

New record for Turkish fauna (Figure 3b, Table 2).



a b

Figure 3. *Diadegma tenuipes* (Thomson, 1887): a) Habitus, b) Distribution of Türkiye.

Subfamily: Tryphoninae Shuckard, 1840

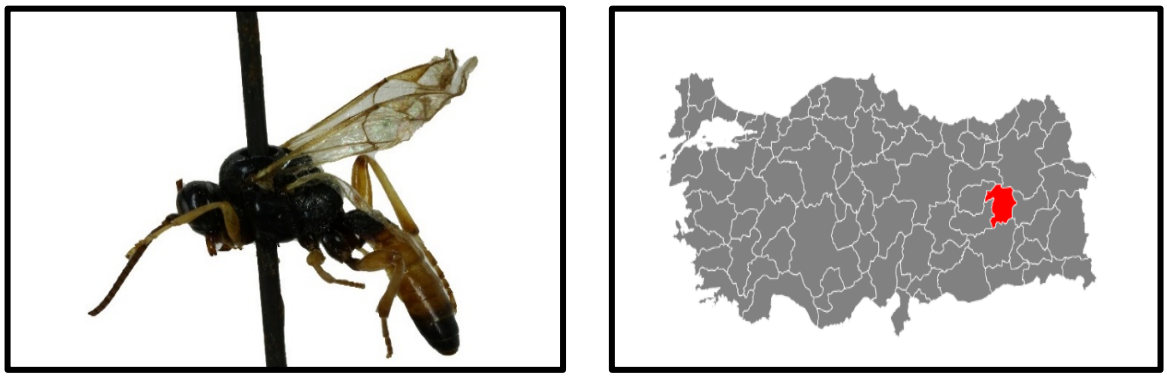
**Ctenochira arcuata* (Holmgren, 1857) (Figure 4a)

Material examined: Kargapazarı: 39° 18' 44.99" N, 41° 5' 52.61" E, 1816 m, 20.IX.2022, ♂.

Host: Unknown

Distribution: Nearctic and Palaearctic (Armenia, Azerbaijan, Belgium, Bulgaria, Canada, Czechoslovakia, Finland, France, Germany, Iran, Ireland, Italy, Kyrgyzstan, Mongolia, Netherlands, Norway, Poland, Romania, Russia, Russia-Arkhangel'sk Oblast, Russia-Irkutsk Oblast, Russia (Khabarovsk Kray, Komi Respublika, Magadanskaya Oblast, Murmansk Oblast, Novgorod Oblast, Tula Oblast, Volgograd Oblast, Yakutskaya Respublika), Sweden, Switzerland, U.S.A (Alaska, Colorado, Idaho, Nevada, South Dakota, Washington), Ukraine and United Kingdom).

New record for Turkish fauna (Figure 4b, Table 2).



a b

Figure 4. *Ctenochira arcuata* (Holmgren, 1857): a) Habitus, b) Distribution of Türkiye.

Table 2. Distribution of the species in Türkiye

Taxa name	Provinces	Reference
SUBFAMILY CAMPOPLEGINAE FORSTER, 1869		
Cins *Diadegma* Förster, 1869		
* *Diadegma tenuipes*	Bingöl	Present study
SUBFAMILY TRYPHONINAE SHUCKARD, 1840		
Genus *Ctenochira* Förster, 1855		
**Ctenochira arcuata*	Bingöl	Present study

*New record.

4. Discussion

The Ichneumonidae family within the Hymenoptera order plays an important role in species diversity. The main reason for this importance is that many species are evaluated as biological control agencies. In the "Turkish Ichneumonidae Catalogue," which has evaluated Ichneumonids over many years, 393 species are listed under 19 subfamilies, each with initial details.

The work carried out over the past 29 years initially gained momentum in Thrace, Eastern Anatolia, and the Mediterranean regions, and later spread throughout Turkey. Today, it has been found that the number of Ichneumonidae species is approximately 1500 (Barik and Çoruh, 2023a).

A total of 548 ichneumonid species belonging to 158 genera from 20 subfamilies have been recorded so far from the study area (Figure 5), including the region where most studies in Türkiye have been carried out and where the study was conducted. In comparison, 316 species have been considered as new records for our country (Barik, 2022).

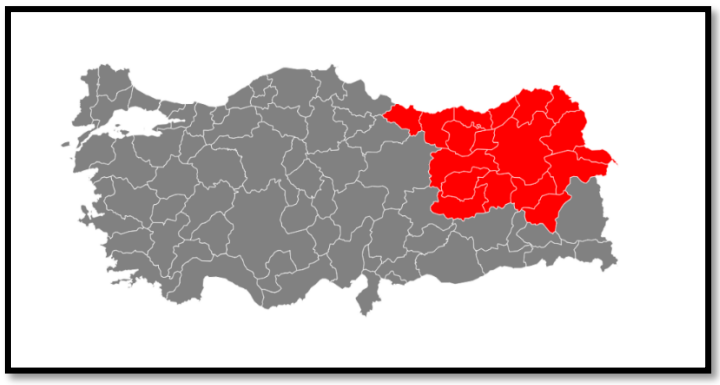


Figure 5. Map of region.

In this study, new records were given for the Ichneumonidae fauna in Karlıova, Bingöl province. Field studies were conducted primarily between 2022 and 2023. Karlıova district was selected as the study area, and samples were collected from Kargapazarı at varying altitudes (1802-1816 m) in November.

Table 3. Data of collected species: Individual numbers (IN), vertical distribution (VD), seasonal dynamics (SD), geographical regions (GR), zoogeographical regions (ZR), first record of Turkey (FRT) of specimens.

Taxa name	IN	VD	SD	GR	ZR	FRT
SUBFAMILY CAMPOPLEGINAE FORSTER, 1869						
Genus *Diadegma* Förster, 1869						
* *Diadegma tenuipes*	1	A	N	EAR	P	New record
SUBFAMILY TRYPHONINAE SHUCKARD, 1840						
Genus *Ctenochira* Förster, 1855						
* *Ctenochira arcuata*	1	A	N	EAR	HOL	New record

Vertical distribution (VD) (meter): A: 1751-2000 m. Seasonal dynamics (SD): N: November. Geographical regions (GR): EAR: Eastern Anatolia Region. Zoogeographical regions (ZR): HOL: Holarctic, P: Palearctic.
*New record.

The samples were collected from distances between 1802 m and 1816 m. While the samples used in the study were collected mainly in November, it was interesting that they were collected then. While this situation is directly proportional to the preferred months of visit, it is very valuable that the new records were collected in November. This supports the idea that ichneumonids can live actively even in months when air temperatures are low and in systems at high altitude.

The zoogeographic distribution of the species constituting the study was also attempted to be analysed. This species has a distribution area in the West Palaearctic and Holarctic Regions.

Taxonomy and systematics play a pivotal role in species conservation and management. Without these two concepts, our understanding of biodiversity would be fragmented, impeding our ability to address pressing issues such as habitat loss, species conservation, and the impacts of climate change. Furthermore, taxonomy plays a pivotal role in species conservation and management. The additional records obtained in this study will provide a solid basis for future studies.

Ethical Statement

Ethical approval is not required for this study because the study is field research.

Conflict of Interest

The authors declare that there are no conflicts of interest.

Funding Statement

The study was carried out by the researchers' own means.

Author Contributions

Authors declare the contribution of the authors is equal.

Acknowledgements

We would like to thank to Dr. Celalettin Gözüaçık (Iğdır University) and Dr. Yeşim Bulak Korkmaz (Atatürk Üniversitesi) whose ideas and contributions we benefited from at every stage of the study. Additionally, we would like to thank Atatürk University Biodiversity Application and Research Center, where we took photos and Dr. Janko Kolarov for identifiying Ichneumonidae species.

References

Anonymous, (2024a). *Karlıova.* https://tr.wikipedia.org/wiki/Karlıova, Access date: 22.03.2024.

Anonymous, (2024b). *Karlıova İlçesinin Coğrafi Konumu.* https://bingol.ktb.gov.tr/TR-57004/karliova-ilcesinin-cografi-konumu.html, Access date: 28.03.2024.

Ataş, M., & Çoruh, S. (2022). A new ichneumonid parasitoid of the sawfly *Cimbex quadrimaculata* (Muller) (Hymenoptera: Cimbicidae) in Turkey. *Munis Entomology & Zoology, 17*(1), 359-342.

Ataş, M., & Çoruh, S. (2023). Parasitoids of *Chlorophorus damascenus* (Chevrolat) (Coleoptera: Cerambycidae) in vineyards of Southeastern Anatolia Region. *Acta Entomologica Serbica, 28* (2), 41-47. https://doi.org/10.5281/zenodo.10033775

Ayhan, G., & Çoruh, S. (2024). New and additional records of Cryptinae and Phygadeuontinae (Hymenoptera: Ichneumonidae) Ağrı province and Mount Ararat in Türkiye. *Turkish Journal of Entomology, 48*(3), 291-304. https://doi.org/10.16970/entoted.1489514

Barik, G. (2022). *Ichneumonidae (Hymenoptera) species from Erzurum Yakutiye and Uzundere district.* (Master). Atatürk University, Institute of Science, Erzurum, Türkiye.

Barik, G., & Çoruh, S. (2023a). A faunistic study of Ichneumonidae (Hymenoptera) from Northeastern Anatolia Region (Erzurum: Yakutiye and Uzundere) of Türkiye. *Turkish Journal of Entomology, 47*(1), 15-30. https://doi.org/10.16970/entoted.1178705

Barik, G. & Çoruh, S. (2023b). A faunistic study of Ichneumonidae (Hymenoptera) from Northeastern Region of Turkey (Erzurum, Yakutiye and Uzundere). *Trends in Entomology, 19*, 75-88.

Birol, O. (2022). A study of Ichneumonidae (Hymenoptera) with new records to Turkish Fauna. *International Journal of Sciences: Basic and Applied Research, 62*(2), 265-275.

Bulak Korkmaz, Y., & Çoruh, S. (2022). Contribution to the knowledge of the Ichneumonidae (Hymenoptera) fauna of Iğdır province the East of Türkiye. *Journal of Anatolian Environmental and Animal Sciences*, *7*(3), 274-283. https://doi.org/10.35229/jaes.1114322.

Bulak Korkmaz, Y., & Çoruh, S. (2024). Doğu Anadolu Bölgesi çin yeni bir kayıt *Heterischnus ridibundus* (Costa, 1885) (Hymenoptera: Ichneumonidae: Ichneumoninae). *Turkish Journal of Agricultural and Natural Sciences, 11*(1), 49-56. https://doi.org/10.30910/turkjans.1378547

Çelik, S., Tozlu, G., & Kotan, R. (2023). The investigation of effect of bacteria in biological control of red spider mite (*Tetranychus* spp.) and plant yield parameter in cotton (*Gossypium hirsutum* L.). *Yuzuncu Yil University Journal of Agricultural Sciences, 33(*4): 689-699. https://doi.org/10.29133/yyutbd.1319995.

Çoruh, S. (2022). An overview on the subfamily Cremastinae Förster, 1869 (Hymenoptera: Ichneumonidae) from Turkey. *Acta Entomologica Serbica*, *27*(1), 25-34. https://doi.org/10.5281/zenodo.6334642

Çoruh, S., & Riedel M. (2022). An overview of the subfamily Banchinae Wesmael, 1845 (Ichneumonidae: Hymenoptera) of Turkey, with the addition of four new records. *Acta Entomologica Bulgarica, 74*(1), 27-36.

Çoruh, S., & Kolarov, J. (2024). A taxonomical and biogeographical analysis of the fauna Metopiinae (Hymenoptera: Ichneumonidae) of Türkiye. *Kahramanmaraş Sütçü İmam University Journal of Agricultural and Natural*, *273*, 622-634. https://doi.org/10.18016/ksutarimdoga.vi.1330418

Çoruh, S., & Dalan, M. (2024). An evaluation of the Tersilochinae (Hymenoptera: Ichneumonidae) fauna of Türkiye and the new record of *Aneuclis incidens* (Thomson, 1889) for the Province of Bingöl (Karlıova). *Journal of Tekirdağ Agricultural Faculty, 21*(4), 892-904. https://doi.org/10.33462/jotaf.1284429

Çoruh, S., Kolarov, J., & Ercelep, Ö. S. (2022a). A Contribution to the Ichneumonidae (Hymenoptera) of Trabzon. *Atatürk Üniversity, Journal of Agricultural Faculty, 53*(1), 8-13. DOI: 10.54614/AUAF.2022.909906

Çoruh, S., Tezcan, S., & Gülperçin, N. (2022b). Contribution to the knowledge of the Ichneumonidae (Hymenoptera) fauna of Western Turkey with first record of *Phygadeuan geniculatus* for Turkish fauna. *Munis Entomology & Zoology, 17*(2), 1112-1119.

Doğru, T. (2022). *Ichneumonidae (Hymenoptera) species in Turkey with their determined hosts*. (Master). Trakya University, Institute of Science, Edirne, Türkiye.

Fernandes, D. R. R., Pádua, D. G., Lara, R. I. R., Perioto, N. W., Burla, J. P., & Castiglioni, E. (2019). Subfamily composition of Ichneumonidae (Hymenoptera: Ichneumonoidea) from eastern Uruguay. *Entomological Communications, 1*, ec01016. https://doi.org/10.37486/2675-1305.ec01016

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

İneciklioğlu, H. (2022). *Checklist of Ichneumonidae (Hymenoptera) of Thrace region.* (Master). Trakya University, Institute of Science, Edirne, Türkiye.

Kaplan, E. (2023). A new species of the genus *Trathala* (Hymenoptera: Ichneumonidae), with new and additional records of the family Ichneumonidae from Türkiye. *Zoology in the Middle East, 69* (4), 364-371. https://doi.org/10.1080/09397140.2023.2266916

Kaplan, E. (2024). Four new species of Darwin wasps from Türkiye. *Zootaxa, 5424*(17), 456-466**.** DOI: 10.11646/zootaxa.5424.4.4

Kaplan, E., & Riedel, M. (2022). New and additional records from Bingol and Diyarbakır Provinces for the Turkish Ichneumonidae (Hymenoptera) fauna. *Transactions of the American Entomological Society, 148*, 35-49. https://doi.org/10.3157/061.148.0103

Klopfstein, S., Santos, B. S., Shaw, M. R., Alvarado, M., Bennett, A. M. R., Pos, A. D., Giannotta, M., & Broad, G. R. (2019). Darwin wasps: a new name heralds renewed efforts to unravel the evolutionary history of Ichneumonidae. *Entomological Communications, 1*, ec01006. https://doi.org/10.37486/2675-1305.ec01006

Kolarov, J., & Çoruh, S. (2022). New records on the Ichneumonidae fauna (Hymenoptera) of the Black Sea Coast of Turkey. *Journal of the Entomological Research Society*, *24*(1), 63-74. https://doi.org/10.51963/jers.v24i1.2136

Korukcu, K. H., & Çoruh, S. (2024). Contribution to the Knowledge Ichneumonidae (Hyemnoptera) Fauna of Aras Valley. *Turkish Journal of Agricultural and Natural Sciences, 11*(4), 933-949. https://doi.org/10.30910/turkjans.1469845

Narmanlıoğlu, H. K., & Coruh, S. (2023). New a Species as Parasitoid of the Apple Ermine Month *Yponomeuta malinellus* Zeller, 1838 (Lepidoptera: Yponomeutidae) in the Çoruh Valley, Erzurum Province, Türkiye. *Journal of the Entomological Research Society, 25*(2), 295-304. https://doi.org/10.51963/jers.2023.88

Teymuroğlu, E., & Çoruh, S. (2022). Harmful and benefical insects species determined in sugar beet areas in Çayırlı district of Erzincan province and short biology of *Spodoptera exigua* (Hbn.) (Lepidoptera: Noctuidae). *Journal of Tekirdağ Agricultural Faculty, 19*(3), 483-495. https://doi.org/10.33462/jotaf.976126

Yu, D. S. Ki, Achterberg, C. Van, & Horstmann, K. (2016). Taxapad 2016, Ichneumonoidea 2015. Database on flash-drive. www.taxapad.com, Nepean, Ontario, Canada.