



New records of Encyrtidae (Hymenoptera: Chalcidoidea) from the Netherlands

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ABSTRACT. The present study includes the material collected from various localities across the Netherlands between 1998 and 2025. During our survey, the number of encyrtid species recorded in the Netherlands increased by 23. Additionally, five genera: *Aphycoides* Mercet, 1921, *Mayrencyrtus* Hincks, 1944, *Rhopus* Forster, 1856, *Sectiliclava* Hoffer, 1957 and *Trjapitzinellus* Viggiani, 1967 were documented for the first time. Thus, the total number of encyrtid species known from the country is now 146. The encyrtid wasp fauna documented in this study is primarily characteristic of the Western Palaearctic and broader Palaearctic regions. The discovery of several new records further emphasizes the need for ongoing surveys to fully understand the encyrtid fauna of this region.

Keywords: biocontrol, chalcids, coccids, natural enemies, parasitic wasps

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INTRODUCTION

The superfamily Chalcidoidea is one of the most diverse groups of organisms on the planet, with more than 27,000 described species, however Heraty and Woolley (2025) estimated that there might be up to 500,000 species worldwide. In Britain, parasitic Hymenoptera comprise about 25% (or perhaps significantly more) of the total insect fauna (Shaw & Hochberg, 2001). Parasitoid wasps are the most successful group of insect parasitoids, representing more than half the known diversity of Hymenoptera and probably most of the unknown diversity (Polaszek & Vilhelmsen, 2023). One of the most important biological control agents in pest management is the chalcid wasp family Encyrtidae (Noyes, 2010). Despite their significance, the family Encyrtidae in the Netherlands are not among the best-studied groups and currently comprises 123 species (Japoshvili & Soethof, 2022). Therefore, studying the encyrtid fauna is extremely important for understanding biodiversity, ecology and biological control. The aim of the present study is to present an additional list of Encyrtidae species found in the Netherlands, including newly recorded species and genera. This contribution expands our knowledge of the Dutch encyrtid fauna and its significance for biodiversity and biological control.

MATERIAL AND METHODS

The material was collected across the Netherlands between 1998 and 2025 using sweep netting, beating, Malaise traps, light traps, and yellow pan traps. Species identification was performed by the authors using identification keys from Noyes & Hayat (1994), Trjapitzin (1989), Hayat (2006), as well as original species descriptions. Collection localities are listed under each species, with coordinates provided in

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DMS format. All material is deposited in the Naturalis Biodiversity Center Museum in Leiden (RMNH) and the Natuurmuseum Brabant in Tilburg (NMB), both in the Netherlands. Specimen photographs (in ethanol or pinned) were taken using a Sony® A7RIII camera body, Canon® 65mm MPE lens at 5× magnification and F2.8, and a Yongnuo® YN14EX ring flash. Photo stacking was performed with Helicon Focus 7. Photo adjustments and plates were done using Adobe Photoshop. Measurements were obtained from the photos and calibrated using the scale bars. New records for the Netherlands are marked with an asterisk.

RESULTS

Taxonomic hierarchy

Class Insecta Linnaeus, 1758

Order Hymenoptera Linnaeus, 1758

Family Encyrtidae Walker, 1837

Genus *Anagyrus* Howard, 1896

Anagyrus aligarhensis Agarwal & Alam, 1959*

Material examined. 1♀ (NMB), Tilburg-Leijkant, 51°32'4"N, 5°0'40"E, yellow pan trap, 10.ix.2019, Leg. T. Peeters.

Anagyrus belibus (Walker, 1837) (Fig. 1A)

Material examined. 1♀ (RMNH), Rozendaal-Rozendaalse Veld, 52°2'51"N, 5°58'34"E, sweep net, 24.vi.2024, Leg. R. Soethof.

Genus *Aphycooides* Mercet, 1921*

Aphycooides clavellatus (Dalman, 1820) (Fig. 1B)

Material examined. 1♀ (RMNH), Wassenaar-Dorp, 52°8'35"N, 4°23'14"E, yellow pan trap, 30.vii–1.viii.2020, Leg. P.H. Hoekstra; 1♀ (RMNH), Gelderland-Bergherbosch, 51°53'23"N, 6°12'52"E, sweep net, 27.vi.2022, Leg. R. Soethof.

Genus *Blastothrix* Mayr, 1876

Blastothrix gurselae Japoshvili & Karaca, 2004* (Fig. 1C)

Material examined. 1♀ (RMNH), Gelderland-Bergherbosch, 51°53'14"N, 6°11'48"E, sweep net, 29.viii.2023, Leg. R. Soethof.

Blastothrix hissarica Sugonjaev, 1972*

Material examined. 1♀ (RMNH), Zevenaar-Rosandse Polder, 51°54'39"N, 6°4'10"E, sweep net, 22.vi.2022, Leg. R. Soethof.

Blastothrix ilicicola Mercet, 1921*

Material examined. 1♀ (RMNH), Wehl-Stille Wald, 51°57'1"N, 6°11'26"E, sweep net, 25.v.2023, Leg. R. Soethof.

Blastothrix longipennis Howard, 1881*

Material examined. 1♀ (RMNH), Zevenaar-Ooy, 51°54'52"N, 6°3'5"E, sweep net, 2.v.2025, Leg. R. Soethof.

Blastothrix sericea (Dalman, 1820)*

Material examined. 1♀ (RMNH), Gelderland-Bergherbosch, 51°53'19"N, 6°12'19"E, sweep net, 2.ix.2022, Leg. R. Soethof.

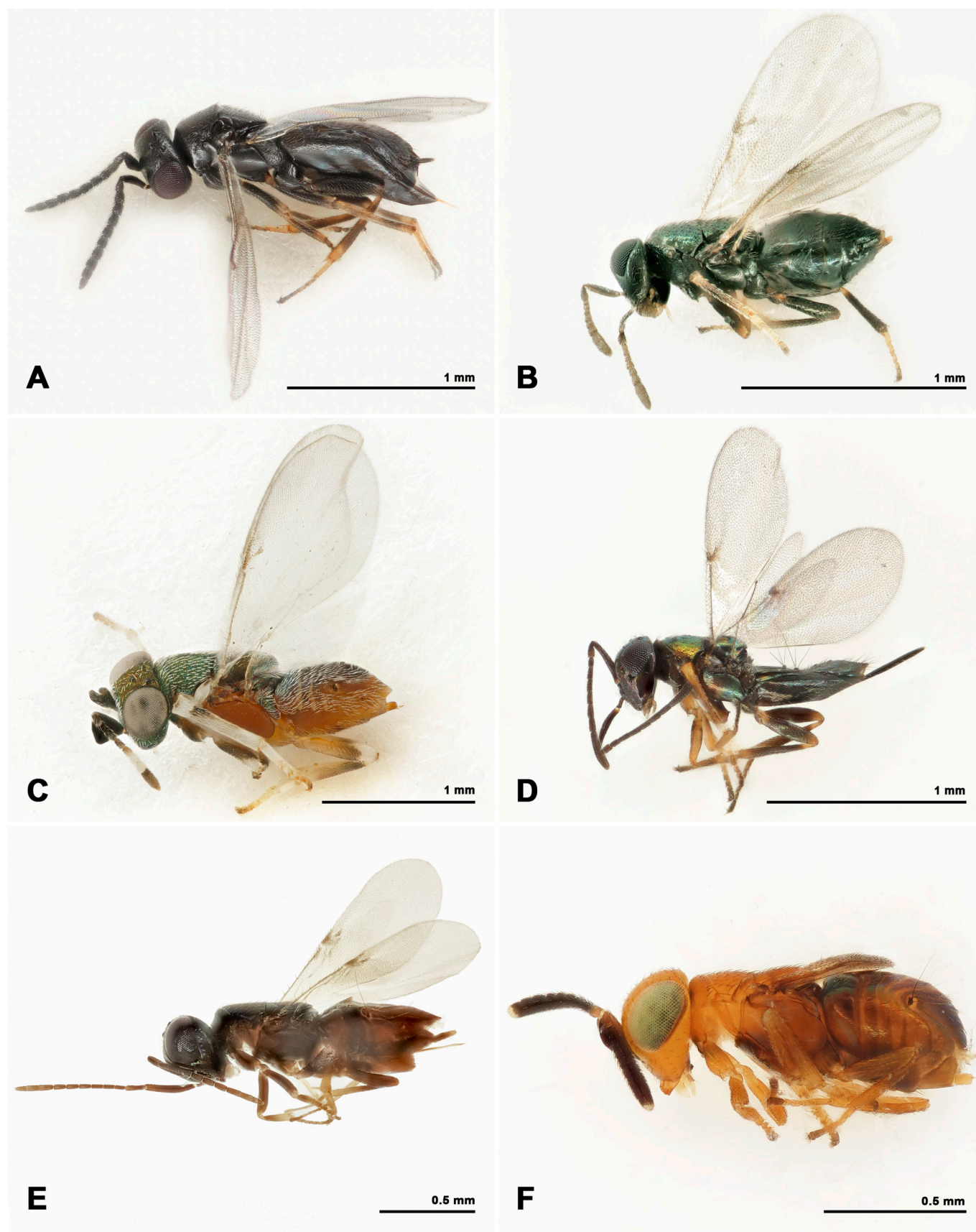


Figure 1. Encyrtids from the Netherlands, female, lateral habitus. **A.** *Anagyrus belibus* (Walker, 1837); **B.** *Aphycoides clavellatus* (Dalman, 1820); **C.** *Blastothrix gurselae* Japoshvili & Karaca, 2004; **D.** *Copidosoma bolivari* Mercet, 1921; **E.** *Mayrencyrtus imandes* (Walker, 1837); **F.** *Microterys jalysus* (Walker, 1837).

Genus *Cerchysiella* Girault, 1914***Cerchysiella laeviscuta* (Thomson, 1876)***

Material examined. 1♀ (NMB), Tiburg-Korvel, 51°33'19"N, 5°4'22"E, yellow pan trap, 11.viii.2019, Leg. T. Peeters.

Genus *Copidosoma* Ratzeburg, 1844***Copidosoma bolivari* Mercet, 1921* (Fig. 1D)**

Material examined. 1♀ (RMNH), Brummen-Empese en Tondense heide, 52°7'58"N, 6°5'21"E, sweep net, 15.vii.2024, Leg. R. Soethof.

Genus *Ercydnus* Haliday, 1832***Ercydnus sipylus* (Walker, 1837)***

Material examined. 1♀ (NMB), Tilburg-Kaaistoep, 51°32'36"N, 5°0'55"E, Malaise trap, 8-14.ix.2005, Leg. A. van Eck; 1♀ (NMB), Tilburg-Leijkant, 51°32'4"N, 5°0'40"E, yellow pan trap, 10.ix.2019, Leg. T. Peeters; 1♀ (RMNH), Wehl-Meerenbroek, 51°32'4"N, 5°0'40"E, sweep net, 10.vi.2023, Leg. R. Soethof.

Genus *Mahencyrtus* Masi, 1917***Mahencyrtus comara* (Walker, 1837)**

Material examined. 1♀ (NMB), Tilburg-Kaaistoep, 51°32'36"N, 5°0'55"E, Malaise trap, 8-14.ix.2005, Leg. A. van Eck; 1♀ (RMNH), Doetinchem-De Zumppe, 51°57'26"N, 6°19'14"E, sweep net, 19.ix.2020, Leg. R. Soethof; 1♂ (RMNH), Ameland-Lange Duinen, 53°27'21"N, 5°39'8"E, yellow pan trap, 26-28.v.2022, Leg. P.H. Hoekstra; 1♀ (RMNH), Veluwezoom-Imbosch, 52°4'32"N, 5°58'46"E, sweep net, 3.ix.2024, Leg. R. Soethof.

Mahencyrtus pulcherrimus* (Hoffer, 1969)

Material examined. 1♀ (NMB), Tilburg-Kaaistoep, 51°32'36"N, 5°0'55"E, Malaise trap, 8-14.ix.2005, Leg. A. van Eck.

Genus *Mayencyrtus* Hincks, 1944****Mayencyrtus imandes* (Walker, 1837) (Fig. 1E)**

Material examined. 1♀ (NMB), Udenhout-de Brand, 51°37'56"N, 5°8'0"E, Malaise trap, 6-13.vi.2020, Leg. IWG KNNV-Tilburg.

Genus *Microterys* Thomson, 1876***Microterys interpunctus* (Dalman, 1820)***

Material examined. 1♀ (RMNH), Didam-Greffelkamp, 51°56'56"N, 6°6'12"E, sweep net, 2.vii.2022, Leg. R. Soethof.

***Microterys jalysus* (Walker, 1837)* (Fig. 1F)**

Material examined. 1♀ (RMNH), Zuid Holland-Coepelduynen, 52°12'54"N, 4°24'39"E, sweep net, 7.ix.2024, Leg. W. Langbroek.

Microterys lunatus* (Dalman, 1820)

Material examined. 1♀ (RMNH), Wehl-Stille Wald, 51°57'1"N, 6°11'26"E, sweep net, 1.v.2023, Leg. R. Soethof.

***Microterys nietneri* (Motschulsky, 1859)**

Material examined. 1♀ (RMNH), Almere-Verzetswijk, 52°22'49"N, 5°14'20"E, beating *Hedera helix*, 2.iii.2019, Leg. P.H. Hoekstra; 1♀ (NMB), Tilburg-Kaaistoep, 51°32'36"N, 5°0'53"E, Malaise trap, 6-13.viii.2020, Leg. IWG KNNV-Tilburg.

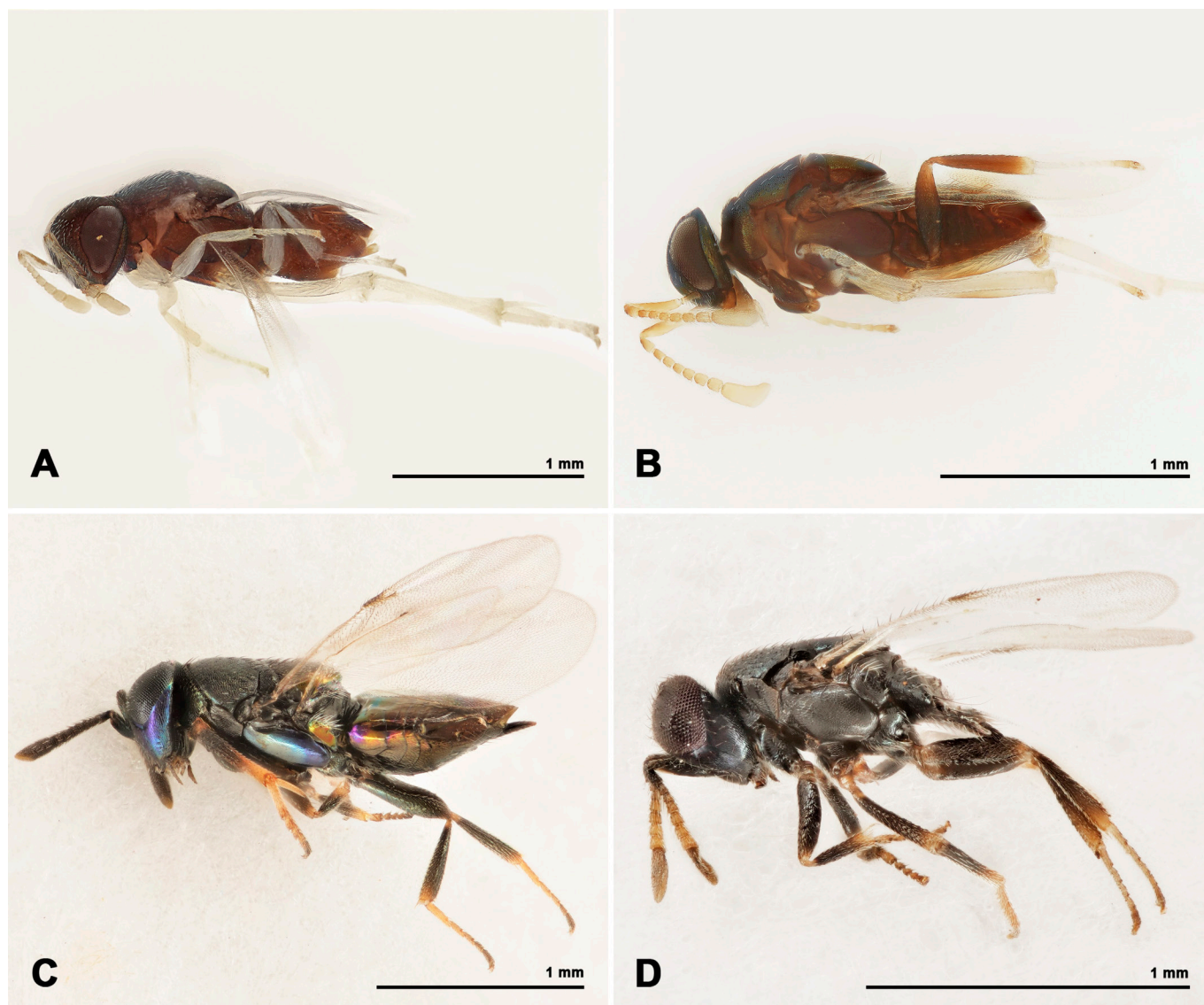


Figure 2. Encyrtids from the Netherlands, female, lateral habitus. **A.** *Parablastothrix plugarui* Trjapitzin, 1971; **B.** *Parablastothrix trjapitzini* Logvinovskaya, 1980; **C.** *Syrphophagus pertiades* (Walker, 1837); **D.** *Trjapitzinellus semidaliphagus* Viggiani, 1967.

Genus *Parablastothrix* Mercet, 1917

Parablastothrix plugarui Trjapitzin, 1971* (Fig. 2A)

Material examined. 1♀ (NMB), Tilburg-Kaaistoep, 51°32'33"N, 5°0'55"E, Malaise trap, 22–29.viii.1998, Leg. IWG KNNV-Tilburg.

Parablastothrix trjapitzini Logvinovskaya, 1980* (Fig. 2B)

Material examined. 1♀ (NMB), Tilburg-Kaaistoep West, 51°32'23"N, 5°0'34"E, light trap, 20.vii.2016, Leg. T. Peeters.

Genus *Rhopus* Forster, 1856*

Rhopus flavidus (Mercet, 1921)

Material examined. 1♀ (RMNH), Didam-Greffelkamp, 51°56'56"N, 6°6'12"E, sweep net, 22.ix.2022, Leg. R. Soethof.

Genus *Sectiliclava* Hoffer, 1957****Sectiliclava cleone* (Walker, 1844)**

Material examined. 1♀, 1♂ (NMB), Tilburg-Kaaistoep, 51°32'33"N, 5°0'55"E, Malaise trap, 8–15.viii.1998, Leg. IWG KNNV-Tilburg.

Genus *Syrphophagus* Ashmead, 1900***Syrphophagus annulipes* (Thomson, 1876)**

Material examined. 1♀ (RMNH), Almere-Hannie Schaftpark, 52°22'52"N, 5°13'57"E, sweep net, 23.viii.2019, Leg. P.H. Hoekstra; 1♀ (RMNH), Gelderland-Bergherbosch, 51°54'25"N, 6°14'32"E, sweep net, 27.viii.2024, Leg. R. Soethof.

***Syrphophagus pertiades* (Walker, 1837) (Fig. 2C)**

Material examined. 1♀ (RMNH), Gelderland-Bergherbosch, 51°53'2"N, 6°11'20"E, sweep net, 30.ix.2022, Leg. R. Soethof.

Genus *Trechnites* Thomson, 1876***Trechnites flavipes* (Mercet, 1821)***

Material examined. 1♀ (RMNH), Veluwezoom-Imbosch, 52°4'32"N, 5°58'46"E, sweep net, 3.ix.2024, Leg. R. Soethof.

Genus *Trichomasthus* Thomson, 1876***Trichomasthus albimanus* Thomson, 1876***

Material examined. 1♀ (RMNH), Hoenderloo-Deelerwoud, 52°5'21"N, 5°55'50"E, reared from *Eriopeltis festucae* (Boyer de Fonscolombe, 1834) (Hemi., Coccidae), 21.ix.2024, Leg. R. Soethof.

Genus *Trjapitzinellus* Viggiani, 1967****Trjapitzinellus semidaliphagus* Viggiani, 1967 (Fig. 2D)**

Material examined. 1♀ (RMNH), Gelderland-Bergherbosch, 51°53'2"N, 6°11'20"E, sweep net, 8.vii.2022, Leg. R. Soethof.

Genus *Tyndarichus* Howard, 1910***Tyndarichus melanacis* (Dalman, 1820)***

Material examined. 1♀ (RMNH), Gelderland-Bergherbosch, 51°54'1"N, 6°14'26"E, sweep net, 28.ix.2023, Leg. R. Soethof.

DISCUSSION

Our survey documented 28 encyrtid species representing 17 genera within the Netherlands. Five genera and 23 species are new records for the Netherlands, bringing the total number of encyrtid species recorded in the country to 146, representing a significant (18.7%) expansion of the fauna. This study significantly expands our knowledge of the Encyrtidae fauna in the Netherlands, with several genera and species newly recorded for the country. Although these findings are important for documenting biodiversity and identifying potential biological control agents, the host associations of most species remain unknown. This is primarily because many specimens were collected using passive traps, which do not provide information about host-parasitoid relationships. Future research focusing on rearing and host association studies will be essential to fully understand the ecological roles and biocontrol potential of these encyrtid wasps.

The encyrtid wasp fauna documented in this study is primarily characteristic of the Western Palaearctic and broader Palaearctic regions. Many species, such as *Anagyrus belibus*, *Aphycoides clavellatus*,

and *Microterys interpunctus*, have wide distributions across Europe and adjacent parts of the Palaearctic, reflecting strong biogeographical links with neighbouring European countries (Trjapitzin, 1989; UCD, 2025). The presence of species like *Anagyrus aligarhensis*, which also occurs in the Oriental region, suggests an occasional faunal exchange between the Palaearctic and Oriental zones, possibly influenced by climate or human activity. Overall, the diversity and composition of species recorded in the Netherlands highlight the country's position as a transitional zone within Western Europe, where elements from different biogeographical regions meet. The discovery of several new records further emphasizes the need for ongoing surveys to fully understand the encyrtid fauna of this region.

AUTHOR'S CONTRIBUTION

The authors confirm their contribution to the paper as follows: G. Japoshvili: performed and confirmed identification, prepared plates and structured the manuscript; R. Soethof: collected data, made identifications and photography. The authors read and approved the final version of the manuscript.

FUNDING

This research received no specific grant from any funding agencies.

AVAILABILITY OF DATA AND MATERIAL

The specimens listed in this study are deposited at the Naturalis Biodiversity Center Museum in Leiden and the Natuurmuseum Brabant in Tilburg, both in the Netherlands, and are available from the curator, upon request.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study only included arthropod material, and all required ethical guidelines for the treatment and use of animals were strictly adhered to in accordance with international, national, and institutional regulations. No human participants were involved in any studies conducted by the authors for this article.

CONSENT FOR PUBLICATION

Not applicable.

CONFLICT OF INTERESTS

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

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گزارش‌های جدید زنبورهای (Hymenoptera: Chalcidoidea) Encyrtidae از هلند

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چکیده: مطالعه حاضر گزارش شناسایی نمونه‌های جمع‌آوری‌شده از مناطق مختلف در هلند بین سال‌های ۱۹۹۸ تا ۲۰۲۴ است. بر اساس این مطالعه، تعداد ۲۳ گونه به فون زنبورهای Encyrtidae ثبت‌شده در هلند اضافه شد. علاوه بر این، حضور گونه‌های پنج جنس شامل *Mayrencyrtus* Hincks, 1944، *Aphycoides* Mercet, 1921، *Rhopus* Forster, 1856 و *Sectiliclava* Hoffer, 1957 و *Trjapitzinellus* Viggiani, 1967 برای اولین بار مستند شدند. بنابراین، تعداد کل گونه‌های انسیرید شناخته‌شده از این کشور اکنون به ۱۴۶ رسید. فون زنبورهای Encyrtidae گزارش شده در این مطالعه عمدتاً عناصر متعلق به مناطق پالئارکتیک غربی و دیگر بخش‌های پالئارکتیک هستند. ثبت گزارش جدید از حضور گونه‌های متعدد بر این اصل تأکید دارد که برای شناخت کامل فون زنبورهای Encyrtidae این منطقه به انجام بررسی‌های مداوم نیاز می‌باشد.

واژگان کلیدی: مهار زیستی، کالسیدها، شپشک‌های گیاهی، دشمنان طبیعی، زنبورهای انگل.