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Remarkable nocturnal Ichneumonidae from the 'Gulke Putten' (Hymenoptera: Ichneumonidae)

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Abstract

From June to August 2019 several light traps were placed in or close to the nature reserve 'Gulke Putten' (Wingene/Ruiselede). Three specimens, collected during one night at the end of June, appeared to be unreported in Belgium: *Enicospilus cerebrator* Aubert, 1966, *Enicospilus myricae* Broad & Shaw, 2016 and *Netelia millieratae* (Kriechbaumer, 1897). Other catches in the summer also yielded interesting observations of several uncommon species.

Keywords: light traps, Mesochorinae, Ophioninae, Tryphoninae

Samenvatting

Van juni tot augustus 2019 werden verschillende lichtvallen geplaatst in of in de nabijheid van het natuurgebied Gulke Putten (Wingene/Ruiselede). Drie dieren, verzameld in één nacht, bleken nog niet gemeld te zijn in België: *Enicospilus cerebrator* Aubert, 1966, *Enicospilus myricae* Broad & Shaw, 2016 and *Netelia millieratae* (Kriechbaumer, 1897). Andere vangsten in de zomer leverden eveneens interessante vondsten op van enkele minder algemene soorten.

Résumé

De juin à août 2019, plusieurs pièges lumineux ont été placés dans ou à proximité de la réserve naturelle "Gulke Putten" (Wingene/Ruiselede). Trois espèces, collectées en une seule nuit, ne semblent pas signalées en Belgique: *Enicospilus cerebrator* Aubert, 1966, *Enicospilus myricae* Broad & Shaw, 2016 et *Netelia millieratae* (Kriechbaumer, 1897). D'autres captures donnent également lieu à des observations intéressantes ou à plusieurs espèces peu communes.

Introduction

Although Ichneumonidae in general receive little attention in comparison to other insects, nocturnal ichneumonids are relatively well studied. No doubt, one of the main reasons lays in the fact that species are easily collected as bycatch while observing moths with light traps. On the other hand entomologists made efforts in describing these species specifically, stimulating research. Especially dr. Gavin Broad (NHM) took special interest in this segment of ichneumonids, making a key for the identification of British and Irish nocturnal Ichneumonidae (BROAD, 2012). Furthermore many relevant genera received new and contemporary keys (e.g. BROAD & SHAW, 2016 and JOHANSSON, 2018 for *Enicospilus*; JOHANSSON & CEDERBERG, 2019 for *Ophion*; TOLKANITZ, 2015 for *Metopius*; RIEDEL, 2018 and *in prep*., for *Mesochorus*).

Material and methods

Methodology

In total three locations were sampled and catches took place in only two events. On the evening of 29 to 30 June wasps were caught in 'Gulke Putten, partim Disveld', forest parcel near open habitats along a public walking trail (51°04'27"N 3°20'49"E). One bigger skinner trap with a normal light bulb (100W) was used, together with two "Sylviana GRO-LUX F30W/GRO 3FT T8 lamps" (30W), which are lamps used in aquaria. Another skinner trap was positioned in a more urban environment, namely in a lawn at the back of a building (51°04'26"N 3°21'11"E). Although located next to a street, this locality is situated only 300 meters from the closest forest environment and is also officially recognized as 'visiegebied', integrated in the Gulke Putten. This trap consisted of a normal skinner trap, using a 'Black Light' bulb. Thirdly two traps were placed closely together in the heathland habitat at the Radio Sending Station, a strictly inaccessible area, functioning as a military zone. This took place at the second catching occasion in the evening of 26 August, and on the morning of August the 27th the traps were checked. One skinner trap used a mercury vapor lamp (180W), the other trap had the same set-up mentioned above (a normal light bulb 100W and two smaller, additional lamps).

Habitat

The Gulke Putten Nature reserve (120 ha) represents a mixed landscape of forests, meadows and heatland relicts on acid sandy soils with local seepage. The Intermediate Atlantic Heath habitat is of European interest and has been restored by clear cutting coppice woodland and coniferous plantations. Spontaneous regeneration of nutrient poor vegetations, like species-rich Nardetum and Calluna-Molinia heaths were enhanced by sod cutting and careful mowing management preventing forest overgrowing. Small shallow ponds were restored to develop humidity gradients. The mosaic of different processes and vegetation patterns resulted in a remarkable diversity of both botanical, mycological and faunistic interest (KUIJKEN & VERSCHEURE, 2008).

Results

MATERIAL EXAMINED

The formatting follows the European guidances on taxonomy from CETAF (BÉNICHOU *et al*., 2018).

BELGIUM

• 1 ♀; *Cidaphus alarius*; Ruiselede, Gulke Putten – Disveld; 51°04'27"N 3°20'49"E; 30 Jun. 2019; A. De Ketelaere & L. Lams leg.; light trap; F. Verheyde det. & coll. 20190630-175678377 • 1 ♀; *Enicospilus cerebrator*; Ruiselede, Gulke Putten – Disveld; 51°04'27"N 3°20'49"E; 30 Jun. 2019; A. De Ketelaere & L. Lams leg.; light trap; F. Verheyde det. & coll. 20190630-175447511 • 1 ♀; *Enicospilus myricae*; Wingene, Gulke Putten visiegebied – Doomkerke ('t Haantje); 51°04'26"N 3°21'11"E; 29 Jun. 2019; F. Verheyde leg.; light trap; F. Verheyde det. & coll. 20190629-176172008 • 1 ♀; *Enicospilus ramidulus*; Wingene, Gulke Putten visiegebied – Doomkerke ('t Haantje); 51°04'26"N 3°21'11"E; 29 Jun. 2019; F. Verheyde leg.; light trap; F. Verheyde det. • 1 ♀; *Netelia inedita*; Ruiselede, Gulke Putten – Disveld; 51°04'27"N 3°20'49"E; 30 Jun. 2019; A. De Ketelaere & L. Lams leg.; light trap; G. Broad det. F. Verheyde coll. 20190630-176170341 • 1 ♀; *Netelia millieratae*; Ruiselede, Gulke Putten – Disveld; 51°04'27"N 3°20'49"E; 30 Jun. 2019; A. De Ketelaere & L. Lams leg.; light trap; F. Verheyde det. & coll. 20190630-176168049 • 1 ♀; *Netelia tarsata*; Ruiselede, Gulke Putten – (centrale B); 51°04'47"N 3°20'27"E; 27 Aug. 2019; A. De Ketelaere leg.; light trap;

F. Verheyde det. & coll. 20190827-181868612 • 2 ♀; *Netelia virgata*; Ruiselede, Gulke Putten – (centrale B); 51°04'47"N 3°20'27"E; 27 Aug. 2019; A. De Ketelaere leg.; light trap; F. Verheyde det. & coll. 20190827-181868439 • 1 ♀; *Ophion parvulus*; Ruiselede, Gulke Putten – (centrale B); 51°04'47"N 3°20'27"E; 27 Aug. 2019; A. De Ketelaere leg.; light trap; F. Verheyde det. & coll. 20190827-181868567.

Species reported for the first time in Belgium

***Enicospilus cerebrator* Aubert, 1966**
(Fig. 1a–b)

Enicospilus-species are easily recognized as Ophioninae, having an overall testaceous colour, long antennae, large ocelli and distinctive wing venation, with the fore wing discosubmarginal cell extending beyond vein *2m-cu* (BROAD *et al*., 2018). The genus can be distinguished from *Ophion* FABRICIUS, 1798 by its strongly narrowed mandibles, a large glabrous patch in the fore wing discosubmarginal cell (often with detached sclerites) and fore wing vein *RS*+2*r* partly thickened (BROAD & SHAW, 2016).

Just like most species within the genus, *E. cerebrator* is hard to identify in the field and should be collected. The fore wing has distinct, pigmented proximal and central sclerites, while the mesosoma is lacking dark patches and is uniformly testaceous. In contrast to *E. ramidulus*, a species we also observed (see below), the metasoma is not abruptly black-tipped, although in our specimen last two abdominal segments were indeed infuscate. Moreover, temples are strongly narrowed behind the eyes (Fig. 1a), distinguishing it from *E. myricae*. Finally, our specimen has 54 flagellomeres, which excludes *E. adustus*, usually having at least 58 flagellar segments (BROAD & SHAW, 2016).

***Enicospilus myricae* Broad & Shaw, 2016**
(Figs 2a–b)

As mentioned above, *E. myricae* closely resembles *E. cerebrator* (and *E. adustus*). The sclerites in the fore wing and mesosoma are quite similar. However, the temples are more rounded (Fig. 2a), buccate, and with distinct ocular-ocellar space. Furthermore, first metasomal tergite has a better-defined dorsal dip (more shallow in *E. cerebrator*) in lateral view (Fig. 2b). In comparison *to E. cerebrator* our specimen was also slightly larger (fore wing length 12 mm c. 10 mm) with more, namely 60 flagellomeres.

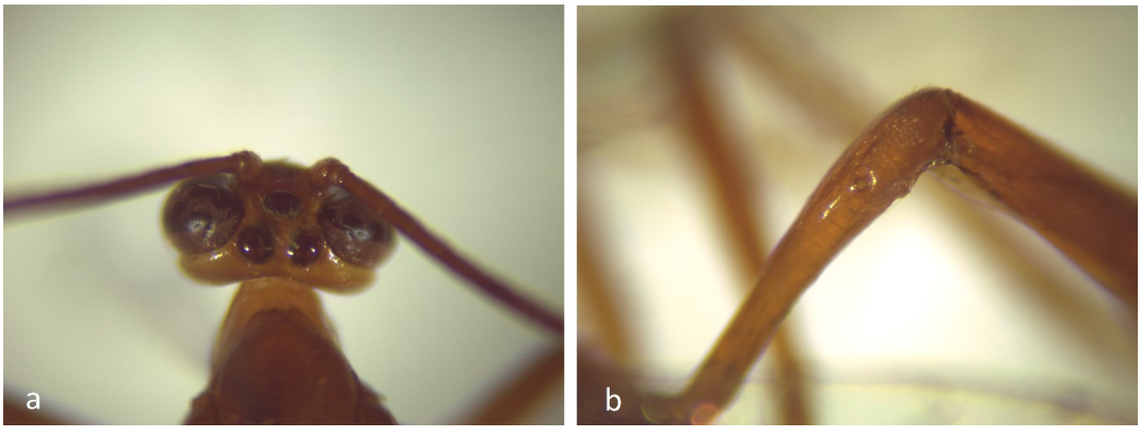

Fig. 1a–b. *Enicospilus cerebrator* ♀, leg. A. De Ketelaere & L. Lams, Ruiselede, 30.VI.2019. © Fons Verheyde.

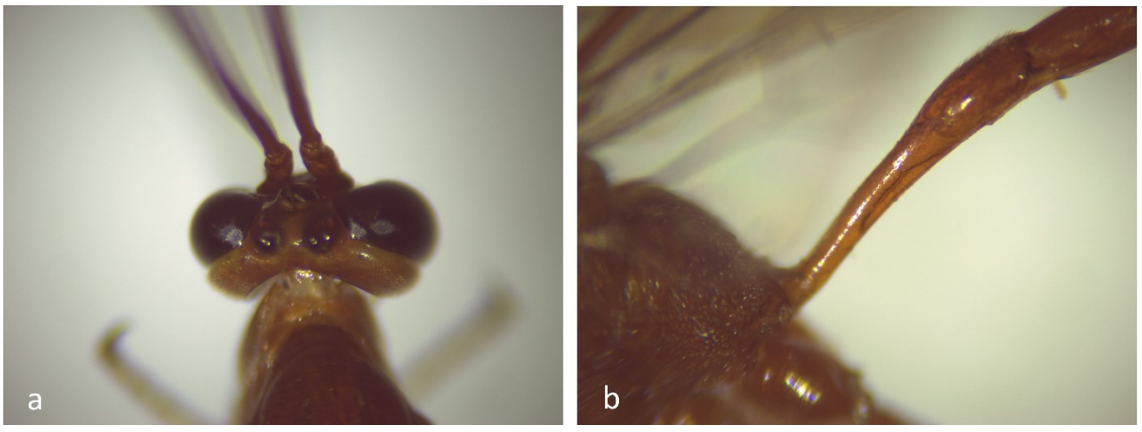

Fig. 2a–b. *Enicospilus myricae* ♀, leg. F. Verheyde, Wingene, 30.VI.2019. © Fons Verheyde.

***Netelia millieratae* (Kriechbaumer, 1897)**
(Fig. 3)

Belonging to Tryphoninae, *Netelia* Gray, 1860 distinguishes itself from other (testaceous) ichneumonids caught on light (i.e. Ophioninae) by having a triangular (rarely open) areolet in the fore wing (see also Fig. 4) and a rather long ovipositor (Figs. 3-4.; BROAD *et al*., 2018). *N. millieratae* is placed in the subgenus *Paropheltes* Cameron, 1907. Characteristic are the weak to absent lateral carina of the scutellum. Our species is not that hard to recognize: the fore wing areolet is petiolate and it has an extensive yellow color pattern. The lower edges and paired median stripes of mesoscutum (median lobe orange), and the sides of the scutellum are yellow in both sexes (Fig. 3; BROAD, 2012).

Fig. 3. *Netelia millieratae* ♀, leg. A. De Ketelaere & L. Lams, Ruiselede, 30.VI.2019. © Fons Verheyde.

Other species

Next to more common species such as *Enicospilus ramidulus* (Linnaeus, 1758) and *Cidaphus alarius* (Gravenhorst, 1829) with respectively 64 and 5 unique and validated records between 2016 and 2019 (numbers from waarnemingen.be, 9/10/2019), some rather rare species were also caught. *Netelia inedita* (Kokujev, 1899) and *Netelia tarsata* (Brischke, 1880) also belong to the abovementioned subgenus *Paropheltes*. While *N. tarsata* is readily recognized by a brown median lobe on the mesoscutum and distinctive wing venation, *N. inedita* is a more

difficult case and should be collected to (at least) check the amount of flagellomeres and carina on the propodeum (see BROAD, 2012). Finally, *Netelia virgata* (Geoffroy, 1785) from the subgenus *Bessobates* Townes, Townes & Gupta, 1961 is very easy to recognize by its conspicuous dark markings on the mesoscutum.

Fig. 4. *Netelia inedita* ♀, leg. A. De Ketelaere & L. Lams, Ruiselede, 30.VI.2019. © Fons Verheyde.

Discussion

All caught ichneumonids parasitize lepidopterans from the Noctuidae Latreille, 1809. Most of them are specialized in Hadeninae. Due to the scarcity of host evidence it is difficult to make any conclusive remarks based on the host range. However, the following species have been reported on many different lepidopterans, including common moth species: *E. repetinus*, *N. tarsata* and *N. virgata.* Others are only scarcely documented. Hosts seem to be rather uncommon. For example *E. cerebrator* and *N. inedita* are reported on *Hecatera dysodea* (Denis & Schiffermüller, 1775) while *E. myricae* has been reported on *Orthosia gracilis* (Denis & Schiffermüller, 1775). For *O. parvulus* two hosts are reported: *Ipimorpha retusa* (Linnaeus, 1761) and *Apterogenum ypsillon* (Denis & Schiffermüller, 1775). Both are uncommon but not rare. Surprisingly, the only known host of *N. millieratae, Coenocalpe millierata* (Staudinger, 1901) has not yet been reported in Belgium, although it is known from France (YU, 2009; JOHANSSON, 2018; JOHANSSON & CEDERBERG, 2019; FAUNA EUROPAEA).

Next to the abundance of possible hosts, general appearance and visibility are crucial parameters in estimating rarity, due to the fact that citizen science is mainly based on photographic evidence. It is from this perspective we can safely state that three *Netelia*-species are genuinely uncommon, conceivably rare in Belgium, namely *N. millieratae, N. tarsata* and *N. virgata*. Interestingly, the two latter species, with a relative wide host range (see above), are seldomly reported. They are mentioned in the check-list from Gembloux (THIRION, 2005), and *N. virgata* has also been reported in 1891 and 1942 respectively, in Stockel and Schelderode (LECLERCQ, 1959). On waarnemingen.be however both species are only reported once since 2010, while other (unidentifiable) *Netelia* species (‘*Netelia spec*.’) were registered in at least 110 records (estimation based on waarnemingen.be, 9/10/2019).

The remaining (hypothetically) uncommon species (*E. cerebrator, E. myricae*, *N. inedita* and *O. parvulus)* are mainly testaceous and difficult to recognize without collecting them. Furthermore, in the case of *Enicospilus* taxonomic changes were made and *E. myricae* was

only recently described as a new species. Records thus remain scarce. There are some indications however that these species are in fact not uncommon at all. *E. cerebrator* for example was found to be widespread in Britain (BROAD & SHAW, 2016). As is often the case in entomological research, more (and more systematic) research will be necessary to make any conclusive remarks on the distribution and abundance of these curious creatures.

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