

Eginia ocypterata (Diptera: Muscidae) in The Netherlands

The muscid fly *Eginia ocypterata* is known from four localities in The Netherlands, all in the dune district near Overveen, in the south-west corner of Noord-Holland. Details of the records are given and a summary is presented on habitat, adult phenology, and parasitism of *E. ocypterata* on julid millipedes (Diplopoda).

Entomologische Berichten 65(5): 142-144

Key words: rare species, habitat, parasitism, Diplopoda

Introduction

Eginia ocypterata (Meigen) was recorded from The Netherlands by Van der Wulp & De Meijere already in 1898. Nevertheless, it has been listed for the country as 'not present' (Oosterbroek 1981), and as 'could not be confirmed' (Prijs 2002). Therefore, it seems appropriate to publish the Dutch localities from which the species is known and to discuss its distribution in The Netherlands in relation to its hosts, julid millipedes (Diplopoda: Julida, Julidae).

Following McAlpine (1989), the species is treated here as belonging to the calyprate family Muscidae, as found in most of the recent checklists, where it is included furthermore in the subfamily Phaoniinae, tribe Eginini. Aberrant characters with respect to the Muscidae are the presence of hair-like bristles on the meron below the posterior spiracle, and the long anal vein which almost reaches the hind margin of the wing (figure 1). Because of these characters, *Eginia* and its close relatives are sometimes considered a distinct family, Eginidae, as in the German checklist of Teschner (1999).

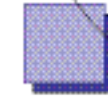
Dutch records

Eginia ocypterata, the only species in the genus, is widely distributed in the West Palaearctic, from the Iberian Peninsula to Denmark in the west to Georgia and the vicinity of St. Petersburg in the east, being absent from the British Isles and most of Scandinavia (Pont 1986, Gregor *et al.* 2002). Authors from Schiner (1862) onwards have commented that *E. ocypterata* is generally uncommon and found in very small numbers, although Karl (1937) mentions that it was found to be locally more common in the dunes of northern Germany.

As pointed out by Adrian Pont (pers. comm.), the general habitus of *Eginia* and related genera - long legs, powerful tarsomeres, eyes well separated, relatively short wings - strongly suggests that these flies spend most of their time on foot, searching for potential hosts, and that this cursorial behaviour is probably one of the reasons why they are not found so often.

Pjotr Oosterbroek & Herman de Jong

Sectie Entomologie
Zoölogisch Museum Amsterdam
Universiteit van Amsterdam
Plantage Middenlaan 64
1018 DH Amsterdam
oosterbroek@science.uva.nl



In The Netherlands the species is known from four localities. The records cover a period of more than 90 years: the first is from 1898, the latest from 1991. Remarkable is that only males were collected, all in July, and in a limited area of the southwestern dunes of the province of Noord-Holland (figure 2).

The first record dates back to Van der Wulp & De Meijere (1898), as *Syllegoptera ocypterata* Meigen: one from Overveen, collected in the dunes by 'Kink', almost certainly referring to J. Kinker, at the time a well-known collector of Diptera. As far as we know this specimen is no longer preserved.

The second male was recorded by De Meijere (1920), as *Eginia* (*Syllegoptera*) *ocypterata* Mg., from Velzen [= Velsen], which is about seven kilometres NNE of Overveen, 20 July 1918, now preserved in the Zoological Museum Amsterdam (ZMAN).

The third was collected at Oud-Bentveld, which is about five kilometres SSW of Overveen, on 23 July 1973 by Bob van Aartsen and also preserved in ZMAN.

The most recent record concerns two males, collected by the second author in the nature reserve Middenduin, which is just to the southwest of Overveen, on 3 July 1991. Both were captured in a deciduous woodland on the top of a dune ridge (now in the private collection of the second author).

Habitat

Very little is known about the habitat preferences. The type material of *E. cylindrica* Robineau-Desvoidy, a synonym of *E. ocypterata*, was collected among herbaceous plants in the Parisian Bois de Boulogne (Robineau-Desvoidy 1830), an old and extensive deciduous forest. According to Schiner (1862) *E. ocypterata* is found incidentally on Umbelliferae. Karl (1930, 1937) mentions that near the coast the species is found in dune valleys among grasses and other plants, and inland at dry places rich in plants. In the Central European mountains the species is recorded up to 2600 m (Verhoeff 1929).

All Dutch material of *E. ocypterata* originates from the so-called Koeleria-Berberidion landscape (Doing 1974), which encompasses the eastern part of the younger dune area between Santpoort and Bentveld, Noord-Holland, with spurs to

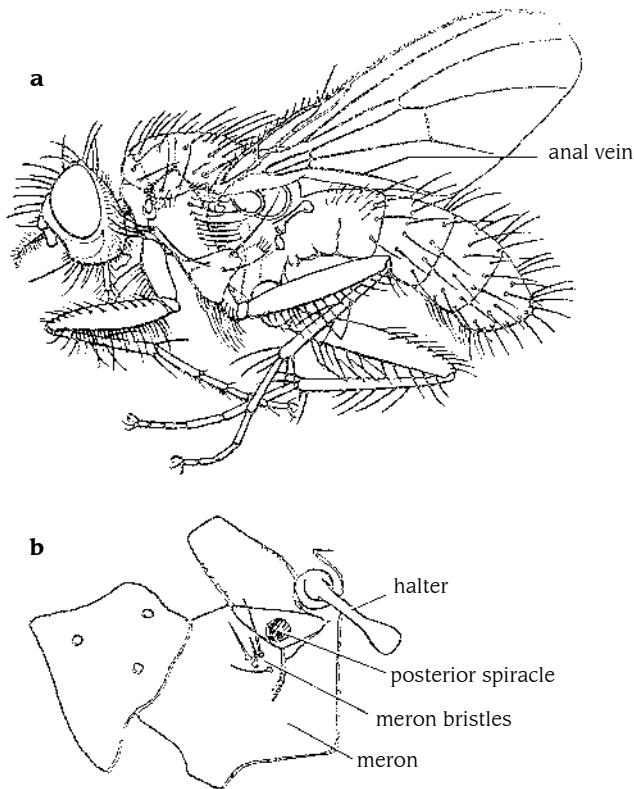


Figure 1. *Eginia ocypterata*, **a** male (after Séguy 1923); **b** lateral hind part of thorax showing meron and its bristles (after Gregor *et al.* 2002). *Eginia ocypterata* **a** mannetje (naar Séguy 1923); **b** zijaanzicht van achterste helft van het borststuk met meron en meronale borstels (naar Gregor *et al.* 2002).

the north and the south. The landscape is bordered to the east by a relatively high dune ridge. Large parts of the slopes and the tops of the dunes are dominated by extensive fields of burnet-rose (*Rosa pimpinellifolia* L.). The valleys and the feet of the slopes are covered with brushwood (containing *Euonymus europaeus* L. and *Crataegus monogyna* Jacquin) and deciduous woods. The landscape is characterized by a rich flora and a varied vegetation.

Phenology

The Dutch records are all from July, but in other parts of Europe the species has been collected in May (Central Europe, Kowarz 1893) or June (France, Robineau-Desvoidy 1830), whereas the general flight period is given as May to August (Gregor *et al.* 2002) or June to August (Germany, Karl 1937; Denmark, Verner Michelsen pers. comm.), with a peak from late May to the end of July (Adrian Pont, pers. comm., based on records for 148 males and nine females).

An adult *E. ocypterata* reared from the millipede *Ommatoiulus sabulosus* (Linnaeus) emerged on 1 September (Verhoeff 1926, without specification on rearing conditions).

Parasitism

As far as known two European Diptera are parasitoids of julid millipedes (Diplopoda, Julida, Julidae), namely *E. ocypterata* (Calypttratae, Muscidae) and *Pelidnoptera nigripennis*

(Fabricius) (Acalyptratae, Phaeomyiidae). Females of both species lay their eggs externally on the head and first segments of the host (figure 3). The first-instar larva of *P. nigripennis* enters the host through the intersegmental membrane and forms a breathing tube. Larvae of *E. ocypterata* seem to enter their host in the second-instar phase, by boring through the host cuticle directly underneath the egg. They do not form a breathing tube (Bailey 1989).

Parasitism and life cycle of *P. nigripennis* in Portugal on *Ommatoiulus moreleti* (Lucas) have been studied in detail (Baker 1985, Skidmore 1985, Ferrar 1987, Bailey 1989). The adults lay their eggs on their hosts in spring. The parasitoid spends the summer as first-instar larva, kills the host during the autumn when in third-instar phase and overwinters in the pupal stage inside the host.

In contrast to the above, very little is known about parasitism by *E. ocypterata*. The only reliable rearing records are those given by Verhoeff (1926, 1929) for the millipede species *Cylindroiulus meinerti* (Verhoeff) and *Ommatoiulus sabulosus* (Linnaeus). Furthermore, it is assumed that the extensive report by Haase (1885) on eggs and larvae found on *Ophiulus fallax* Meinert also refers to *E. ocypterata* (Bailey 1989). Schubart (1934) includes a list of millipede host species of *E. ocypterata*.

Of the 21 species of Julidae known from The Netherlands, eight occur in the dunes. Of these, six are found in the area from which *E. ocypterata* is known, including *Cylindroiulus* (three species), *Ommatoiulus* (1) and *Ophiulus* (1) (Berg 1995, pers. comm.). Additional collecting in the dunes near Overveen could provide valuable information on biology and parasitism of *E. ocypterata*. The general flight period, from



Figure 2. Map of The Netherlands showing the four localities from which *Eginia ocypterata* is known. *De vier vindplaatsen van Eginia ocypterata in Nederland.*

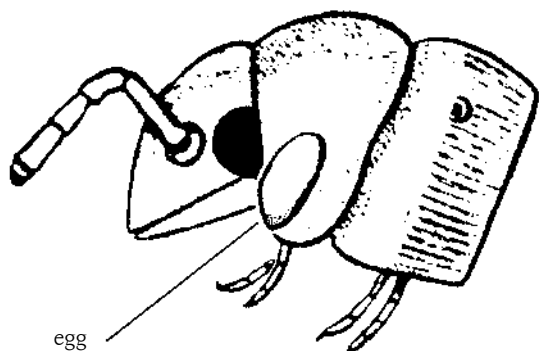


Figure 3. Position of egg, presumably of *Eginia ocypterata* on *Ophiyulus fallax* (after Haase 1885).

Positie van ei, waarschijnlijk van Eginia ocypterata op Ophiyulus fallax (naar Haase 1885).

May to August, corresponds to the several cases in which *E. ocypterata* eggs have been found on the head, collum and/or anterior segments of millipedes by Verhoeff (1929). These records are all from June. Hence, the best time to rear *E. ocypterata* from parasitized millipedes seems to be spring to early summer; the best time to search for millipedes carrying *E. ocypterata* eggs is apparently June to August.

Most millipede species occurring in the dunes are probably too small to be likely host candidates. Also, they lead a rather sheltered life, especially during daytime, living underneath the humus layer, under or in rotten logs or under bark. One of the larger species is *Ommatoiulus sabulosus*. This is at times a rather 'visible' species: at least during a few weeks in spring, and especially in the dunes, it can be found walking in the open on the ground in large numbers. Therefore, future research on the biology of *E. ocypterata* could well start by concentrating on this species.

Acknowledgements

The authors would like to thank the following persons for their kind help and very valuable information about *Eginia* and/or julid millipedes: Matty Berg (Amsterdam), Frantisek Gregor (Brno), Cas Jeekel (Oisterwijk), Bernard Merz (Genève), Verner Michelsen (Copenhagen), Adrian Pont (Goring-on-Thames), Hubert Schumann (Berlin), Rob de Vos (Zaanstad), Joachim Ziegler (Berlin).

References

- Bailey TB 1989. The millipede parasitoid *Pelidnoptera nigripennis* (F.) (Diptera: Sciomyzidae) for the biological control of the millipede *Ommatoiulus moreleti* (Lucas) (Diplopoda: Julida: Julidae) in Australia. *Bulletin of Entomological Research* 79: 381-391.
- Baker GH 1985. Parasites of the millipede *Ommatoiulus moreletii* (Lucas) (Diplopoda: Julidae) in Portugal, and their potential as biological control agents in Australia. *Australian Journal of Zoology* 33: 23-32.
- Berg MJ 1995. Preliminary atlas of the millipedes of The Netherlands. *EIS-Nederland* 79: 1-65.
- Doing H 1974. Landschapsoecologie van de duinstreek tussen Wassenaar en IJmuiden. *Mededelingen Landbouwhogeschool Wageningen* 74-12: 1-111.
- Ferrari P 1987. A guide to the breeding habits and immature stages of Diptera Cyclorrhapha. *Entomonograph* 8: 1-907.
- Gregor F, Rozkosny R, Bartk M & Vanhara, J 2002. The Muscidae (Diptera) of Central Europe. *Folia Facultatis Scientiarum Naturalium Universitatis Masarykianae Brunensis, Biologia* 107: 1-280.

- Haase E 1885. Ein neuer Schmarotzer von *Iulus*. *Zoologische Beiträge*, Breslau 8: 252-255.
- Karl O 1930. Thalassobionte und thalassophile Diptera Brachycera. *Tierwelt der Nord- u. Ostsee* 19 (11, e2): 33-84.
- Karl O 1937. Die Fliegenfauna Pommerns. *Diptera Brachycera*. *Stettiner Entomologische Zeitung* 98: 125-159.
- Kowarz F 1893. Die Coenosinen mit unverkürzter sechster Längsader. *Wiener Entomologische Zeitung* 12: 138-147.
- McAlpine JF 1989. Phylogeny and classification of the Muscomorpha. *Monograph Research Branch Agriculture Canada* 32 (Manual of Nearctic Diptera 3): 1397-1518.
- Meijere JCH de 1920. Derde supplement op de Nieuwe Naamlijst van Nederlandsche Diptera. *Tijdschrift voor Entomologie* 62: 161-195.
- Oosterbroek P 1981. De Europese Diptera. *Wetenschappelijke Mededelingen van de KNNV* 148: 1-81.
- Pont AC 1986. Family Muscidae. In: *Catalogue of Palaearctic Diptera Volume 11: Scathophagidae Hypodermatidae* (Soós & Papp L eds): 57-215. Akadémiai Kiadó.
- Prijs HJ 2002. Family Muscidae. In: *Checklist of the Diptera of The Netherlands* (Beuk PLT ed): 324-333. KNNV Uitgeverij.
- Robineau-Desvoidy JB 1830. *Essai sur les myodaires. Mémoires Présentés par divers Savants à l'Académie Royale des Sciences de l'Institut de France et imprimés par son ordre, sciences mathématiques et physiques* 2: 1-813.
- Schiner JR 1862. *Fauna Austriaca*. Vol. 1. Gerold, Wien: i-lxxx, 1-674.
- Schubart O 1934. *Tausendfüßler oder Myriapoda*. 1: *Diplopoda*. *Tierwelt Deutschlands* 28: 1-138.
- Séguy E 1923. *Diptères Anthomyiides*. *Faune de France* 6: 178-179.
- Skidmore P 1985. The biology of the Muscidae of the world. *Series Entomologica* 29: i-xiv, 1-550.
- Teschner D 1999. Eginidae. In: *Checkliste der Dipteren Deutschlands* (Schumann H, Bährmann R & Stark A eds). *Studia Dipterologica, Supplement* 2: 148.
- Verhoeff KW 1926. *Klasse Diplopoda*. *Klassen und Ordnungen des Tierreichs* 5 (2) 2: 141-143.
- Verhoeff KW 1929. Zur Systematik, vergleichenden Morphologie und Geographie europäischer Diplopoden, zugleich ein zoogeographischer Beitrag. *Zoologische Jahrbücher, Abtheilung für Systematik, Oekologie und Geographie der Tiere* 57: 555-659.
- Wulp FM van der & Meijere JCH de 1898. *Nieuwe Naamlijst van Nederlandsche Diptera*. *Tijdschrift voor Entomologie* 41, Supplement: i-viii, 1-149.

Received 8 March 2005, accepted 29 July 2005.

Samenvatting

Eginia ocypterata (Diptera: Muscidae) in Nederland

De muscide *Eginia ocypterata* is uit Nederland van vier locaties bekend die alle dicht bijeen liggen in de Noord-Hollandse duinen bij Oud-Bentveld, Overveen en Velsen. De oudste Nederlandse waarneming dateert uit 1898, de meest recente uit 1991. Alle zijn gedaan in de maand juli en alle zijn mannetjes. Voor geheel Europa wordt een vliegperiode opgegeven van mei tot augustus, met een piek van eind mei tot eind juli. De relatieve zeldzaamheid van de soort in collecties en het feit dat ook elders in Europa veel meer mannetjes dan vrouwtjes worden verzameld heeft mogelijk te maken met een onopvallende levenswijze, die meer lopend dan vliegend is. Larven van *E. ocypterata* zijn interne parasieten van miljoenpoten (Diplopoda) uit de familie Julidae. Een daarvan is de in Nederland voorkomende *Ommatoiulus sabulosus*, die met name in de duinen in grote aantallen kan voorkomen. Kweken van *E. ocypterata* uit geparasiteerde exemplaren van *O. sabulosus* zou een eerste stap kunnen zijn om meer te leren over de levenswijze van deze vlieg.