THE DUTCH SPECIES OF THE DANCE FLY GENUS *HILARA* (DIPTERA: EMPIDIDAE)

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Most *Hilara* species are small flies, with a body length ranging between 3 and 4 mm. They are often found skimming the water surface, occasionally in large swarms. The males nearly always have a swollen fore basitarsus provided with silk glands. When they catch a prey they wrap it in silk and offer it to a female. As soon as the female snatches this package the male grabs her in a split-second movement, after which copulation takes place. In this survey we treat the distribution of the Dutch species, their flight period as well as some ecological data. In total 57 species are now known from The Netherlands, of which 13 are mentioned here for the first time. Six species have been described based on type material originating from The Netherlands.

INTRODUCTION

Hilara Meigen, 1822 (Diptera: Empididae) is a genus of the subfamily Empidinae, tribe Hilarini. In Europe this subfamily is represented by only three large genera: *Hilara* and two genera in the tribe Empidini, viz. *Empis* Linnaeus, 1758 and *Rhamphomyia* Meigen, 1822. *Empis* and *Rhamphomyia* are easily recognised by the presence of a tuft of metapleural bristles. The radial fork in the wing is more widely open in *Empis* than in *Hilara*, and lacking in *Rhamphomyia*. In contrast to the other two genera *Empis* species have a long proboscis, with the labrum often much longer than the height of the head.
The genus *Hilara* consists of small to medium-sized species with a uniformly greyish or black body, which may be shining or more or less dusted. The smallest species are 2 mm long and the largest species (e.g. *Hilara lugubris*) up to 7 mm. Generally the body length lies between 3 and 4 mm. *Hilara* species are also characterised by a narrow radial fork, which is shaped rather like a lyre. The eyes are dichoptic in both sexes (except the *H. flavipes*-complex); the proboscis is short and equals the height of the head in exceptional cases only. In figure 1 a typical representative of *Hilara* is shown.

At present 57 *Hilara* species are known from The Netherlands (table 1). A full description of 43 of these can be found in Collin (1961). *Hilara griseola* and *H. pseudosartrix* were redescribed by Chvála (1997c). *Hilara discalis* and *H. nitidorella* (Chvála 1997a), *H. aartseni* (Chvála 1997b) and *H. gooti*, *H. veltmani* and *H. woodiella* (Chvála 1999) have been described recently. Of six further species (*H. cilipes*, *H. lasiochira*, *H. macquarti*, *H. nigrocincta*, *H. pilipes* and *H. tenella)* a number of additional characteristics are given in this paper. This will permit their separation from their nearest allies. Finally there is at least one further Dutch species that remains to be described.

In this paper 13 species of *Hilara* new to the Dutch fauna are presented. Six species have been described based on specimens from The Netherlands. It is surprising that so many new *Hilara* species were found in such a small, cultivated country like The Netherlands. This implies that a considerable number of *Hilara* species are yet to be discovered when intensive sampling is extended to countries where natural sites are less rare.

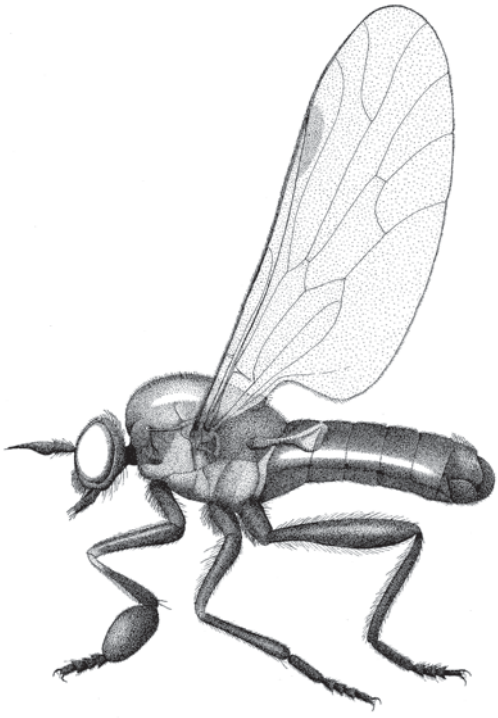


Figure 1
Hilara maura, male. Drawing A. Veltman.
Figuur 1
Hilara maura, mannetje. Tekening A. Veltman.

METHODS

For this survey of the Dutch *Hilara* species we studied the collections of the Zoological Museum Amsterdam (ZMAN), of the National Museum of Natural History at Leiden (RMNH) and the private collections of B. van Aartsen, P.L.Th. Beuk, H. de Jong and W. van Steenis. All literature concerning Dutch Hilara was critically reviewed and extensive field studies were performed. The tasks of the authors were divided as follows. The first author is responsible for the survey of the *Hilara* specimens collected in The Netherlands. He also sorted a large number of these from Malaise trap samples. Problematic specimens were sent or handed over to the third author who visited the Zoological Museum Amsterdam (ZMAN) several times. He solved many puzzling cases and donated an invaluable collection for comparison purposes. He also undertook the description of several species new to science. The second author organised a number of Malaise trap surveys, and performed a lot of field work. In 1997 he fully devoted the months of May to September to collecting and observing *Hilara*. It was an exceptionally good year for entomological field work. Most *Hilara* fly and swarm over brooks and in The Netherlands these are found mainly in the eastern and southern provinces of Limburg, Gelderland and Overijssel. He therefore concentrated his efforts on these areas and in the course of his intensive field work he caught many new and rare species. He also became quite familiar with the features and habits of the different *Hilara* species. Initially it proved to be difficult to catch *Hilara* that were flying just above the water surface without wetting the net (and therefore also the insects). The uneven bottom of the stream, often strewn with boulders, was another hazard. Trying to sweep high flying *Hilara*, the collector cannot always avoid stumbling and may easily land in the water. Collecting *Hilara* proved to be rather harmful to other insect life. They could not easily be separated from other insects in the net, so the contents had to be tipped into a large killing bottle to be sorted out later.

ECOLOGY AND HABITATS

Most *Hilara* species are commonly found in the proximity of water. They can often been seen skimming the water surface, where the males aim to catch a prey. When they succeed the prey is offered to a female, after which they copulate. Characteristic in most males is the swollen fore basitarsus which is provided with glands which produce silk used to wrap up the prey. Not all *Hilara* species remain close to water. Some species, like *H. flavipes*, may be found swarming in forest lanes at a height of about 1.5 m. Some *Hilara* species may congregate and form swarms of several thousands of individuals. A good example of this behaviour is found in *H. maura*, which may be seen everywhere in the country, swarming over running or standing

water. Collin (1961) states that in Great Britain 'at certain times even a tiny puddle left in the road after a passing shower will possess its two or three specimens of *Hilara*'. In one case we found scores of *H. chorica* hovering over such a puddle. On another occasion a number of *H. pilosa* were flying low over the shining black asphalt surface of a road through a patch of woodland.

Hilara flies are clearly attracted by partly shaded woodland streams. Water courses across open grassland proved far less suitable for collecting *Hilara*, although they could be found here swarming in the shade of bridges. While swarming over open water *Hilara* often skim the surface. *Hilara discoidalis* flew in hundreds over a slow stream in the coastal dunes (Amsterdamse Waterleidingduinen). Other species swarm 2 to 3 m above the water in places shaded by overhanging large trees (e.g. *H. angustifrons* over the Rode Beek at Vlodrop and *H. aartseni* over the Hemelbeek at Elsloo).
The streams that appear to attract most *Hilara* are the ones with a sandy or gravelly (and not a muddy) bed. The flies seem to prefer hovering in swarms over sandy or gravelly shoals, and even more so when water levels are low. Excellent results were thus obtained at the streams Dinkel (particularly near Lutterzand) and Slinge near Winterswijk (Woold). In Limburg the most productive sites were the Rode Beek (Vlodrop), the Hemelbeek and the Geul near Houthem. At Ellecom in the province of Gelderland a small brook crossing the Kooibosch wood yielded many species, among these *H. anglodanica*. Often a species occurred in a very restricted area only: for example, in the Dinkel *H. gooti* was collected exclusively over a small sandy shoal.
Standing water seems to attract different species. *Hilara gallica* and *H. nigrocincta* may be taken (mainly in more shady parts) on the banks of pools. Temporary puddles and deep, water-filled cart tracks in woodland should not be neglected either. In the coastal area, which is mainly below sea level, standing water is present about everywhere. In the large lakes in this area the water is often turbulent along north-eastern shores, owing to the prevailing south-western winds. Certain aquatic species that are normally associated with streams, are sometimes found there. This does not seem to apply to *Hilara*, as none of the species associated with brooks have been collected in such spots yet. Nor were any collections made in the turbulent inlets of the draining mills in the polders that pump huge quantities of water. Such habitats should be further investigated.
Still other *Hilara* species are to be found away from water, often at considerable distances. *Hilara albipennis* was collected in the dry forest Vijlener bos, swarming in thousands near *Picea* trees. *Hilara lundbecki* was taken flying low over the sands of a very dry dune flat near the seashore at Ouddorp. *Hilara brevistyla* and *H. nitidula* were recorded from woodland verges in Flevoland and at Wilsum near the IJssel.

Hilara flies are rarely seen to be visiting flowers, but in the Bargerveen (Drenthe) *H. clypeata* was found in considerable numbers on umbels of *Anthriscus*. This all demonstrates that collecting and observing *Hilara* species can be quite fascinating. However, one might erroneously assume that these species show the same patterns of behaviour everywhere. On the contrary, the third author wants to emphasise that patterns of behaviour may be similar at comparable sites but that in central parts of Europe, and more in particular mountain regions, their behaviour may be substantially different.

LITERATURE ON THE DUTCH *HILARA* FAUNA

In the first Checklist of Dutch Diptera, Van der Wulp & Snellen van Vollenhoven (1853) mentioned only four *Hilara* species. In the second checklist, Van der Wulp (1862) added eight more names to the original four, raising the total to 12. Six (1867) collected *H. chorica* and *H. litorea* and mentioned *H. saltella* from Den Haag (leg. Van der Wulp) and Driebergen (leg. Six). In the De Meijere collection in ZMAN arranged under the label *Ragas unica* Walker were three specimens

H. aartseni Chvála, 1997
H. albipennis von Roser, 1840
H. albitarsis von Roser, 1840
    H. argyrosoma Strobl, 1892
    H. braueri Strobl, 1892 (misident.)
        sensu De Meijere 1904
H. anglodanica Lundbeck, 1913
H. angustifrons Strobl, 1892
H. apta Collin, 1927
    cinereomicans Strobl, 1892 (misident.) [4, 5]
H. beckeri Strobl, 1892
    tetragramma Loew, 1873 (misident.) [4]
H. biseta Collin, 1927
H. brevistyla Collin, 1927
H. brevivittata Macquart, 1827
H. canescens Zetterstedt, 1849
    griseola Zetterstedt, 1838 var. *nigritarsis*
        Zetterstedt, 1838 (misident.) [1, 6, 7]
H. chorica (Fallén, 1816)
H. cilipes Meigen, 1822
H. clypeata Meigen, 1822
H. cornicula Loew, 1873
H. curtisi Collin, 1927
    spinimana Zetterstedt, 1838 var. *spinigera*
        Strobl, 1892 (misident.) [4, 7]
H. discalis Chvála, 1997
H. discoidalis Lundbeck, 1910
    pseudochorica Strobl, 1892
        (misident., partim) [2]
H. flavipes Meigen, 1822
    cingulata Dahlbom, 1850
H. fuscipes (Fabricius, 1794)
    carinthiaca Strobl, 1892
H. gallica (Meigen, 1804)
H. gooti Chvála, 1999
H. griseifrons Collin, 1927
H. griseola Zetterstedt, 1838
H. hirtipes Collin, 1927
H. interstincta (Fallén, 1816)
H. lasiochira Strobl, 1892
H. litorea (Fallén, 1816)
    cinerea Macquart, 1824 (misident.) [1]
    sartor Becker, 1888 (misident., partim) [6]
H. longivittata Zetterstedt, 1842
H. lugubris (Zetterstedt, 1819)
H. lundbecki Frey, 1913
    longirostris Macquart, 1827 (misident.) [1]
    pilipes Zetterstedt, 1838 (misident.) [1,3,4]
H. lurida (Fallén, 1816)
H. macquarti Straka, 1985
    quadrifaria Strobl, 1892 (misident., partim) [7]
H. manicata Meigen, 1822
H. maura (Fabricius, 1776)
H. medeteriformis Collin, 1961
H. media Collin, 1927
H. monedula Collin, 1927
    pinetorum Zetterstedt, 1849
        (misident., at least partim) [1]
    pseudochorica Strobl, 1892
        (misident., partim) [2]
    quadrifaria Strobl, 1892
        (misident., partim) [7]
H. nigrina (Fallén, 1816)
H. nigrocincta De Meijere, 1935
    sartor Becker, 1888 (misident., partim) [4]
H. nitidorella Chvála, 1997
H. nitidula Zetterstedt, 1838
H. obscura Meigen, 1822
H. pilipes Zetterstedt, 1838
H. pilosa Zetterstedt, 1842
H. primula Collin, 1927
    hirta Strobl, 1892 (misident., partim) [4]
H. pseudochorica Strobl, 1892
    woodi Collin, 1927
H. pseudosartrix Strobl, 1892
H. quadrivittata Meigen, 1822
    pubipes Loew, 1873 (misident.) [3, 7]
H. recedens Walker, 1851
    hirta Strobl, 1892 (misident., partim) [4]
H. rejecta Collin, 1927
H. sturmii Wiedemann in Meigen, 1822
    cingulata auct. nec Dahlbom, 1850
H. subpollinosa Collin, 1927
H. tenella (Fallén, 1816)
H. thoracica Macquart, 1827
H. veltmani Chvála, 1999
H. woodiella Chvála, 1999

from Den Haag (no doubt leg. Van der Wulp) labelled as *H. saltella*. Therefore, *Hilara saltella* Van der Wulp (nomen nudum) was in fact *Ragas unica* Walker, 1836. Some years later Six (1869) mentioned a *H. fuscipes* female (correctly identified, new for The Netherlands) from Beek. The third Checklist of Dutch Diptera (Van der Wulp & De Meijere 1898) lists 18 *Hilara* species, thus adding another six names to the 12 of 1862. This makes it clear that up to 1898 none of the older material had been revised.

Between 1898 and 1939 De Meijere (1907, 1916, 1919, 1928, 1935c) recorded *Hilara* species new for The Netherlands and corrected earlier misidentifications. Moreover, De Meijere published records of *Hilara* species collected during summer meetings of the Dutch Entomological Society at Roermond and Houthem (De Meijere 1904) and at Winterswijk (De Meijere 1905). In the same period Giltay (1934) recorded three *Hilara* species from the West-Frisian Island Texel (Muy). Among these was *H. pilipes*, no doubt a misidentification of *H. lundbecki*. The material is probably in the collection of the Royal Belgian Institute of Natural Sciences at Brussels. De Meijere (1935a) explained that some of his earlier records of *H. sartor* referred partly to an undescribed *Hilara* species. De Meijere (1935b), after seeking advice from Collin, described this species as *H. nigrocincta*. Geijskes (1938) published a single record: *H. chorica* from the Kagerplassen.

The fourth and at present last Checklist of Dutch Diptera (De Meijere 1939) contained 28 *Hilara* species, and not 29: indeed his record of *H. minuta* was a lapsus because De Meijere (1907: 157) had previously recorded *Rhagas minuta* (=*Ragas unica*) as new for The Netherlands.

Kabos (1951) collected two *Hilara* species on the West-Frisian Island Texel and Meuffels (1970) recorded three *Hilara* species as new for The Netherlands. Chvála & Wagner (1989) mentioned only ten *Hilara* species from The Netherlands. Beuk (1992) and Beuk (1996) recorded two and five *Hilara* species respectively, as new for the country, but three of these (*H. flavipes*, *H. obscura* and *H. quadrivittata*) had been recorded earlier by other authors.

In the course of our investigations Chvála (1997a, 1997b, 1999) described six new *Hilara* species with Dutch material in their type series (holotype and/or paratypes) and mentioned (Chvála 1997a, 1997b, 1997c) six *Hilara* species new for The Netherlands.

A number of *Hilara* species feature in recent reports of the summer meetings of the Dutch Entomological Society, which are published in Verenigingsnieuws (News from the Society) with Entomologische Berichten, Amsterdam. However, these species do not feature in the index (register) of this journal and the publications themselves are not listed in the contents (inhoud).

Van Aartsen et al. (1991) recorded seven *Hilara* species from Buurse, two of which were new for The Netherlands. Beuk & Zeegers (1992) mentioned six *Hilara* species from Mechelen. Beuk et al. (1993) recorded one *Hilara* species from Ansen. Beuk et al. (1994) collected eight *Hilara* species at Winterswijk, three of which were new for The Netherlands. Beuk (1997) recorded two *Hilara* species from the West-Frisian Island Terschelling. Specimens collected at the summer meetings are preserved in the Dutch *Hilara* collections.

The greater part of the literature records are incorporated in the species treatment below.

Table 1

Checklist of the Dutch *Hilara* species. [1] sensu Van der Wulp & De Meijere 1898, [2] sensu De Meijere 1904, [3] sensu De Meijere 1907, [4] sensu De Meijere 1916, [5] sensu De Meijere 1919, [6] sensu De Meijere 1928, [7] sensu De Meijere 1939.

Tabel 1

Naamlijst van de Nederlandse *Hilara*-soorten. [1] sensu Van der Wulp & De Meijere 1898, [2] sensu De Meijere 1904, [3] sensu De Meijere 1907, [4] sensu De Meijere 1916, [5] sensu De Meijere 1919, [6] sensu De Meijere 1928, [7] sensu De Meijere 1939.

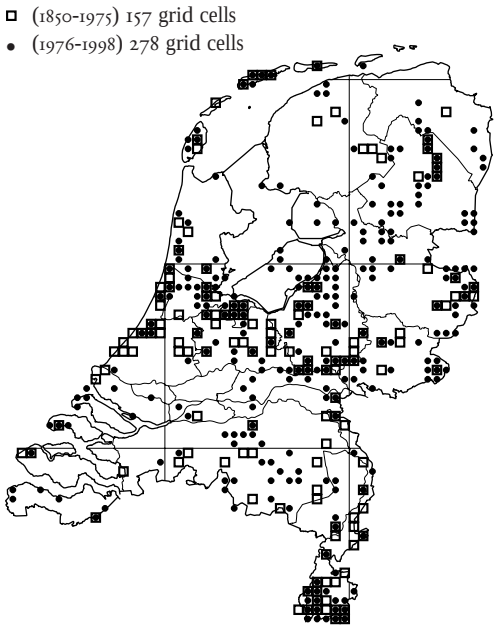


Figure 2
All localities of the *Hilara* species from The Netherlands.
Figuur 2
Alle vindplaatsen van *Hilara*-soorten in Nederland.

INTRODUCTION TO THE SPECIES

Open rectangles in the maps denote localities where a species was recorded in the period 1850-1975, dots represent localities where it was caught during the years 1976-1998. The grid is composed of 5km-squares (grid cells).
Figure 2 shows all localities where *Hilara* have been recorded at any time: 157 grid cells from 1850-1975, 278 grid cells from 1976-1998. These totals can be used as a reference to estimate the relative frequency of each taxon. With the maps the number of grid cells is given, where each taxon was recorded in each period. It will then become apparent that *Hilara sturmii*, for instance, was a common species in the period 1850-1975 (29 grid cells, i.e. 18%), but probably less so recently (1976-1998: 35 grid cells, i.e. 13%). Thus it was possible to avoid the usually vague terms like 'common', 'frequent', etc.

By the term 'record' as used in the legends of the maps we mean the capture of any number of males or females at one particular locality at one particular date.
The first record for The Netherlands of a given *Hilara* species is only mentioned when it was published after the last Checklist of Dutch Diptera (De Meijere 1939). From this list 11 Hilara species names have been eliminated: *H. argyrosoma*, *H. cinereomicans*, *H. cingulata*, *H. griseola* var. *nigritarsis*, *H. hirta*, *H. minuta*, *H. pseudochorica* Strobl (sensu De Meijere), *H. pubipes*, *H. quadrifaria*, *H. spinimana* var. *spinigera* and *H. tetragramma*. The remaining 18 species names remain unchanged.
Among the names that were struck from the list *H. minuta* was a lapsus (see Literature on the Dutch *Hilara* fauna above), *H. argyrosoma* is a synonym of *H. albitarsis* (Chvála & Wagner 1989), *H. cingulata* (authors nec Dahlbom) was replaced by *H. sturmii* (Chvála 1998) and *H. pseudochorica* sensu De Meijere turned out to be a conglomerate of *H. discoidalis* and *H. monedula* (det. Chvála, both specimens recorded by De Meijere 1907). The other species names are dealt with in the species list.
In the old De Man collection (dating back to 1884-1887), preserved in ZMAN, we detected a female *Hilara sturmii* placed under the label *H. grisescens* Van der Wulp. In the De Meijere collection in ZMAN, among the material of *H. sturmii*, five specimens were labelled *H. grisescens*: three from Den Haag, one from Vogelenzang, all no doubt leg. Van der Wulp, and one from Driebergen, leg. Six. So, although Van der Wulp named the species, he never published its description. It now turned out to be *H. sturmii*.
The De Meijere collection in ZMAN has evidently been rearranged in the course of time and the present arrangement of the *Hilara* taxa is not necessarily the original one. We shall therefore only refer to the literature records: Van der Wulp & De Meijere (1898) and De Meijere (1907, 1916, 1919, 1928, 1935c).

THE DUTCH *HILARA* SPECIES

Hilara aartseni (fig. 3)
Dutch holotype and paratypes. Type locality: Elsloo, Hoge Bos (Limburg). Over brooks. Mid June till late August, mainly July.

Hilara albipennis (fig. 4)
Associated with coniferous forests? Not over water. Late April till early July, mainly May. Beuk (1992) recorded this species as new for The Netherlands.

Hilara albitarsis (fig. 5)
Not over water. Late April till mid July, mainly May. Listed by De Meijere (1939) as *H. argyrosoma*. All specimens recorded under this name by De Meijere (1905, 1907, 1919) are in fact *H. albitarsis*. De Meijere (1904) recorded *H. braueri*, but later (De Meijere 1907) attributed the material to *H. argyrosoma*. It was Beuk (1992) who introduced the name *H. albitarsis* to the Dutch list.

Hilara anglodanica (fig. 6)
Known only from the provinces of Gelderland (Ellecom, Winterswijk) and Limburg (Bunde). Over brooks. Late May till mid July. A series of more than 100 specimens collected on June 2. New for The Netherlands.

Hilara angustifrons (fig. 7)
Known only from the provinces of Overijssel (Delden, Lutterzand), Gelderland (Ratum) and Limburg (Rode Beek near Vlodrop). Over brooks. Early June till mid August, mainly June. New for The Netherlands.

Hilara apta (fig. 8)
Over brooks. Late May till late August, mainly July. The specimens recorded by De Meijere (1916, 1919) as *H. cinereomicans* were in fact *H. apta*. This species was recorded as new for The Netherlands by Beuk et al. (1994).

Hilara beckeri (fig. 9)
Over brooks. Mid May till late August, mainly late June, July. The specimen recorded by De Meijere (1916) as *H. tetragramma* belonged to *H. beckeri*. This species was recorded as new for The Netherlands by Beuk et al. (1994).

Hilara biseta (fig. 10)
Over brooks. Mid June till late August. On August 16 a series of nearly 70 specimens. New for The Netherlands.

Hilara brevistyla (fig. 11)
In polder country (standing water) and other wet habitats, not over brooks. Mid April till mid June, mainly May. Recorded as new for The Netherlands by Meuffels (1970).

Hilara brevivittata (fig. 12)
Known only from the province of Limburg (Cadier, Vrakelberg near Colmont). In limestone areas, not over brooks. May 9 and 17. New for The Netherlands.

Hilara canescens (fig. 13)
Over brooks. Early May till early September, only three records from May and one from September. De Meijere (1939) recorded *H. griseola* var. *nigritarsis* but both specimens mentioned earlier by Van der Wulp & De Meijere (1898) and De Meijere (1928) belonged to *H. canescens*.

Hilara chorica (fig. 14)
Over standing water and over brooks all over the country. One record indoors late April, further

early May till late September, mainly June, July, August. There is considerable variation in the length of acrostichals and dorsocentrals. In some specimens these are twice as long as in others.

Hilara cilipes (fig. 15)
Over brooks. Late May till mid August. On August 16 a series of nearly 40 specimens, but mainly June, July. Closely related to *H. clavipes* Harris, 1776 (in Belgium) and *H. curtisi*. The males of *H. clavipes* and *H. curtisi* have long bristles on the second segment of the fore tarsus (none in *H. cilipes*). In both sexes of *H. cilipes* and *H. curtisi* the prothoracic spiracle is yellowish brown (blackish brown in *H. clavipes*) whereas in *H. cilipes* the occiput is greyish black dusted (extensively dull black in *H. curtisi*).

Hilara clypeata (fig. 16)
Not over water. A large number was taken among grass on a small dike in the east of the country. Reared by De Meijere ex pupa from garden soil. Mid April till mid June, mainly May. This species may easily be recognised by viewing the wings in longitudinal direction under an acute angle: the wing membrane then appears whitish with strongly contrasting black veins.

Hilara cornicula (fig. 17)
Also over standing water. Early May till mid July, only one record in July. See also *H. lasiochira* below.

Hilara curtisi (fig. 18)
Known only from the provinces of Gelderland (Wisselsche Veen, 10.VI.1998) and Zeeland (Domburg, 13.VI.1909). De Meijere (1939) recorded *H. spinimana* var. *spinigera* but the specimen recorded (De Meijere 1916), probably identified by Strobl (see *H. lasiochira* below), belonged to *H. curtisi*. New for The Netherlands.

Hilara discalis (fig. 19)
Dutch paratypes. Over brooks. Mid May till late June.

Hilara discoidalis (fig. 20)
Over brooks, but once over standing water. Early May till mid August. Recorded as new for The Netherlands by Chvála (1997a).

Hilara flavipes (fig. 21)
Sometimes over brooks, but mainly in dry places, e.g., *Calluna* heaths. Late May till early November, mainly June, July, August.

Hilara fuscipes (fig. 22)
Over brooks, but once over standing water. Mid May till mid September, mainly June, July. A series of about 25 specimens from August 23. Last century this species was correctly identified (Van der Wulp & De Meijere 1898) but De Meijere (1904, 1907, 1916) then recorded this species as *H. carinthiaca* (= *H. fuscipes*, see Chvála & Wagner 1989). De Meijere (1935c) later reattributed his *carinthiaca*-specimens to *H. fuscipes*.

Hilara gallica (fig. 23)
Not over brooks, mainly on sandy soil. Mid May till late June.

Hilara gooti (fig. 24)
Dutch holotype and paratypes. Type locality: Lutterzand near Dinkelbrug (Overijssel). Known only from the provinces of Overijssel (Losser, Lutterzand), Flevoland (De Klink) and Limburg (Arcen). The triangle on the map is the only Belgian locality. Over brooks and near standing water. Early July till late August.

Hilara griseifrons (fig. 25)
Many specimens in Malaise traps near standing water on calcareous soil. Outside Limburg only found in De Bruuk (Groesbeek, Gelderland). Mid May till late August, mainly June, July. New for The Netherlands.

Hilara griseola (fig. 26)
Mainly over brooks, but also near standing water. Mid May till late June. Recorded as new for The Netherlands by Chvála (1997c).

Hilara hirtipes (fig. 27)
In limestone areas. Late April till mid June. Recorded as new for The Netherlands by Beuk (1992).

Hilara interstincta (fig. 28)
Mainly over standing water on sandy soil. Early May till late July.

Hilara lasiochira (fig. 29)
Mainly near standing water. Mid May till mid July. The species (3 mm) looks at first sight like *H. cornicula*: male fore basitarsus of about the same length and width, male genitalia equally with keel, wing also darkened, acrostichals and dorsocentrals equally long. The acrostichals in *H. lasiochira*, however, are biserial, in *H. cornicula* quadriserial. In *H. lasiochira* the acrostichals and dorsocentrals are much longer than in the species of the *H. chorica*-group with biserial acrostichals. De Meijere (1907) already recorded *H. lasiochira* Strobl as new for The Netherlands and the identification was correct. From his correspondence with Strobl it appeared that Strobl saw *Hilara* specimens from The Netherlands and identified these. De Meijere wrote to Strobl on February 20, 1902 about a parcel destined for Admont: 'Es enthält grössentheils Empiden, namentlich auch *Hilara*. Darunter sind wohl auch gemeine Arten, aber ich möchte davon gerne durch Ihre Determination sicher gestellte Exemplare bekommen'.

Hilara litorea (fig. 30)
Mainly on dry sites. Mid and late May (only two records) till late August, mainly July, August. *H. litorea* was already recorded as early as 1853 by Van der Wulp and Snellen van Vollenhoven. Van der Wulp & De Meijere (1898) recorded also a specimen of *H. cinerea* from Beek (leg. Van Vollenhoven), but De Meijere (1928) thought this was probably a misidentification of *H. litorea*. De Meijere was right as this specimen belonged to this species and it is still present in the RMNH collection. De Meijere (1928) recorded a specimen from Loosduinen as *H. sartor* Becker. This specimen (still in the ZMAN collection), belongs to *H. litorea*. See also *H. nigrocincta* below.

Hilara longivittata (fig. 31)
Only known from the provinces of Limburg (St. Pietersberg) and Overijssel (Delden). Mid May till late June. From June only one record. New for The Netherlands.

Hilara lugubris (fig. 32)
Over shadowed brooks. Mid May till mid July. New for The Netherlands.

Hilara lundbecki (fig. 33)
Generally near standing water. Late April (one record) till late July, mainly May, June. A large population was found on a small island in the large Grevelingen lake (salt water) as shown by Malaise trap samples from 1999 (about 1000 specimens). In 1971 (when this sea arm was transformed into a salt water lake) this island was only a barren sandbank. So the species reached the island recently and flourished. The occurrence here agrees with the statement of Collin (1961) that *H. lundbecki* is essentially a coast-frequenting (salt-marsh) species. Nevertheless smaller popula-

tions occur all through The Netherlands. Van der Wulp & De Meijere (1898) recorded *H. longirostris* and *H. pilipes* from The Netherlands. The specimens of *H. longirostris* are still preserved in the ZMAN collection, but belong to *H. lundbecki*. De Meijere (1907) deleted *H. longirostris* in favour of *H. pilipes* and recorded several specimens of this species (De Meijere 1907, 1916). Some years later, however, De Meijere (1919) deleted *H. pilipes* from the list as a misidentification of *H. lundbecki*.

Hilara lurida (fig. 34)

Over brooks, once one specimen over standing water. Early May till mid August, rarely in May.

Hilara macquarti (fig. 35)

One specimen caught in May 1899 near Zwammerdam (Zuid-Holland). New for The Netherlands. This species is very closely related to *H. woodiella*, with male genitalia very similar in general structure (especially the shape of the lateral lamellae) and female hind tibiae equally dilated. It differs from *H. woodiella* mainly by the widely spaced and very diverging quadriserial acrostichals, the shorter antennal style, the much clearer wings, and especially the more bristled legs, with the characteristic long black spine-like bristles anteriorly on the hind basitarsus in both sexes (Chvála 1999).

Hilara manicata (fig. 36)

Over brooks. Early June till late August, mainly July. Recorded as new for The Netherlands by Beuk (1996).

Hilara maura (fig. 37)

Over running and standing water, all over the country. Reared by De Meijere ex larva from garden soil. Early April till late August, mainly May. In July-August probably occasional specimens of a partial second generation.

Hilara medeteriformis (fig. 38)

Mainly on sandy soil near standing water. Late May (one record) till late August, mainly July. New for The Netherlands.

Hilara media (fig. 39)

Only one female, from a Malaise trap at the St. Pietersberg (Limburg) between May 30 and June 3, 1992. Recorded as new for The Netherlands by Chvála (1997a).

Hilara monedula (fig. 40)

Mainly over standing water. Early May till late August, mainly May, June. Intersexual specimens (tip of abdomen apparently female, one fore leg male, the other female) are rather frequent in The Netherlands. A series of specimens with reddish fore legs was collected at the Rode Beek near Vlodrop.
De Meijere (1939) recorded *H. quadrifaria*, but of four specimens arranged under that label in the collection De Meijere in the ZMAN collection three belonged to *H. monedula*, the fourth specimen turned out to be *H. macquarti*. Earlier, Van der Wulp & De Meijere (1898) recorded specimens of *H. pinetorum* collected by De Man. In his collection, now at ZMAN, these were placed under that name but they are in fact male and female *H. monedula*. Van der Wulp & De Meijere (1898) also mentioned *H. pinetorum* from Nuth (leg. Maurissen, specimen probably in the collection of the Royal Belgian Institute of Natural Sciences at Brussels), but De Meijere (1916) considered that specimen to be his *H. sartor* (see also *H. nigrocincta* below). Recorded as new for The Netherlands by Beuk et al. (1994).

Hilara nigrina (fig. 41)

Mainly over brooks. Early June till late September, mainly late June, July.

Hilara nigrocincta (fig. 42)

Mainly near standing water. Mid May till mid August, few in May. De Meijere (1916) recorded *H. sartor* from The Netherlands, but according to De Meijere (1935a) these specimens belonged to *H. nigrocincta*. As to *H. sartor* sensu De Meijere also see *H. litorea* above. *H. nigrocincta* is a greyish species, like *H. litorea* the occiput is also greyish, its legs are completely black, the halteres are blackish, the hind-marginal abdominal bristles are black, the acrostichals are quadriserial, body length is 3-3.5 mm. In the female the hind tibia is slender at the base, but the apical two-thirds is strongly dilated (very much as in the female of *H. nigrina*). In the male dark bands can be seen on the anterior margins of the abdominal tergites when viewed from behind.

Hilara nitidorella (fig. 43)

Dutch paratypes. Nearly all records from Hoge Bos (Elsloo, Limburg), a very wet deciduous forest. Mid May till early July, and August 1. The third author notes that this species is common in August in Central Europe.

Hilara nitidula (fig. 44)

As frequent near brooks as near standing water. Late April till late June, mainly May. It is quite puzzling that this species was not collected in The Netherlands until 1988. It can now be found in considerable numbers in the eastern and central parts of the country. It is also frequent in the polders of Flevoland that were reclaimed since the 1950's. Recorded as new for The Netherlands by Van Aartsen et al. (1991).

Hilara obscura (fig. 45)

Over brooks. Late May till mid September, mainly July and early August. Recorded as new for The Netherlands by Van Aartsen et al. (1991).

Hilara pilipes (fig. 46)

Only one female, from a Malaise trap at the St. Pietersberg (Limburg), between May 15 and 18, 1993. New for The Netherlands. Male *H. pilipes* have indistinct stripes on the thoracic disk, whereas in the female these stripes are about as distinct as in *H. lundbecki*. In both sexes of *H. pilipes* the labrum is short as usual in *Hilara* and the halteres are yellow. In *H. lundbecki* both sexes have yellow halteres and vaguely defined but obvious stripes on the thoracic disk, the labrum is as long as the head is high, and the humeri are characteristically bristled or spined, not having a single humeral bristle as usual.

Hilara pilosa (fig. 47)

Mainly over standing water. Mid April till late June, mainly May. The second author saw a swarm of males and females several hundreds of metres away from water. De Meijere knew this species because he possessed some German specimens. This species is abundant in the central and eastern parts of the country, but nevertheless the first Dutch specimen was collected only in 1975. Recorded as new for The Netherlands by Beuk (1996).

Hilara primula (fig. 48)

Late April till late May. De Meijere (1916) recorded *H. hirta* but the specimens arranged under that label in the collection De Meijere (ZMAN) were identified by Chvála as *H. primula* and *H. recedens* Walker. New for The Netherlands.

Hilara pseudochorica (fig. 49)

Rather rare over brooks, in large numbers on the banks of large rivers. Late May till late July, mainly June, July. Recorded as new for The Netherlands by Chvála (1997b).

Hilara pseudosartrix (fig. 50)
Three records from Hoge Bos (Elsloo, Limburg), a very wet deciduous forest in the southeast of the country. Mid May till early June. Recorded as new for The Netherlands by Chvála (1997c).

Hilara quadrivittata (fig. 51)
Mainly near standing water, also in polder country. Late April till mid June, mainly May. In the nineteenth century this species was identified as *H. quadrivittata* by Van der Wulp & De Meijere 1898. Later De Meijere (1907, 1939) listed all specimens as *H. pubipes*. Meuffels (1970) again recorded *H. quadrivittata* as new for The Netherlands.

Hilara recedens (fig. 52)
Known only from the province of Gelderland (Oude Rijnstrang (Zevenaar), Dieren). Late May till mid June. See also *H. primula* above. New for The Netherlands.

Hilara rejecta (fig. 53)
Over brooks. Early June till early September, mainly late June, July. Recorded as new for The Netherlands by Meuffels (1970).

Hilara sturmii (fig. 54)
Over brooks and near standing water. Early May till mid September, mainly mid June, July.
F. Groenen collected several thousands of *H. sturmii* (more than 90% females) in a light trap in his garden at Luyksgestel (1.VI.1999), together with some specimens of *H. canescens*.

Hilara subpollinosa (fig. 55)
In large numbers in marshes with standing mesotrophic water, also in polder country. Mid May till early September, mainly June, July. New for The Netherlands.

Hilara tenella (fig. 56)
Known only from the province of Utrecht (Amersfoort). The single known date is July 31. Probably extinct in The Netherlands. The species is small (body length 2.5 mm), reddish and comparable only to the larger (4-4.5 mm) reddish *H. thoracica*. Acrostichals quadriserial, biserial in *H. thoracica*.

Hilara thoracica (fig. 57)
In limestone areas. Mid May till late July, mainly June.

Hilara veltmani (fig. 58)
Dutch holotype and paratypes. Type locality: Lutterzand near Dinkelbrug (Overijssel). As frequent over standing water as over running water. Late June till mid August, mainly mid July till mid August.

Hilara woodiella (fig. 59)
Dutch holotype and paratypes. Type locality: Oude Rijnstrang near Zevenaar (Gelderland). Numerous in a boggy site near an obsolete meander of the river Rhine (1992). Mid May till early August. The triangle on the map is the only Belgian locality.

Figuur/Figure 3. *Hilara aartseni*

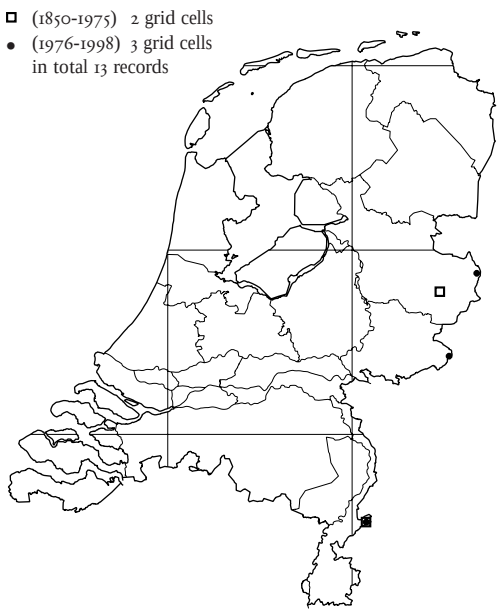
Figuur/Figure 4. *Hilara albipennis*

Figuur/Figure 5. *Hilara albitarsis*

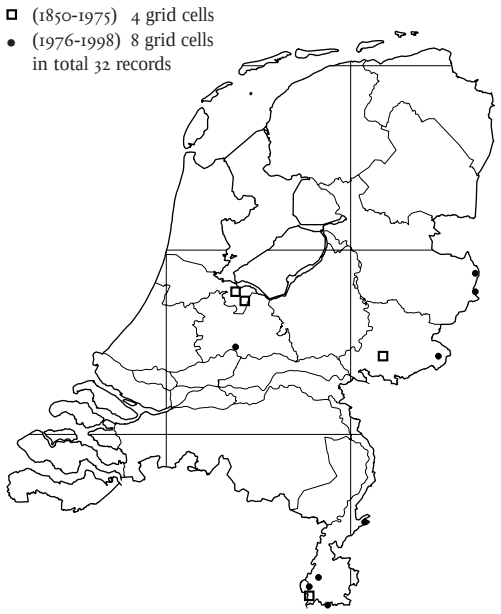
Figuur/Figure 6. *Hilara anglodanica*

Figure 3-59
Localities of individual *Hilara* species in The Netherlands.

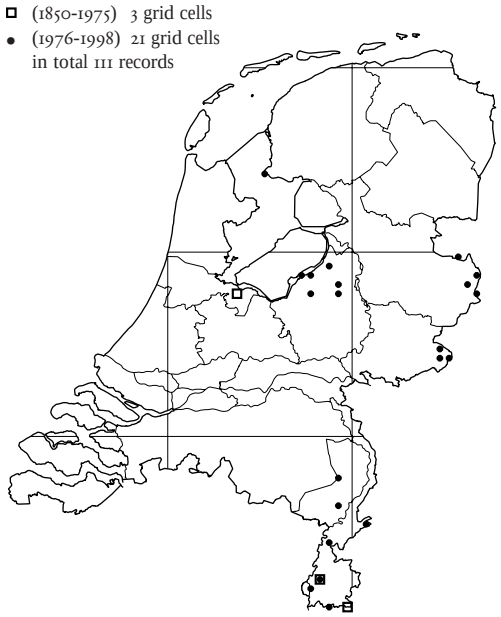
Figuur 3-59
Vindplaatsen van afzonderlijke *Hilara*-soorten in Nederland.



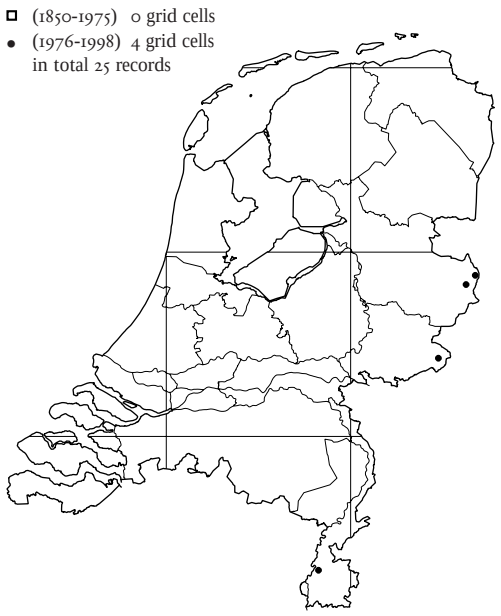
Figuur/Figure 7. *Hilara angustifrons*



Figuur/Figure 8. *Hilara apta*



Figuur/Figure 9. *Hilara beckeri*



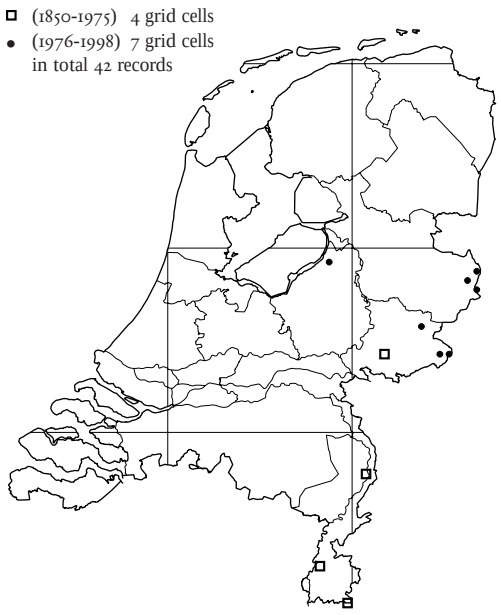
Figuur/Figure 10. *Hilara biseta*

Figuur/Figure 11. *Hilara brevistyla*

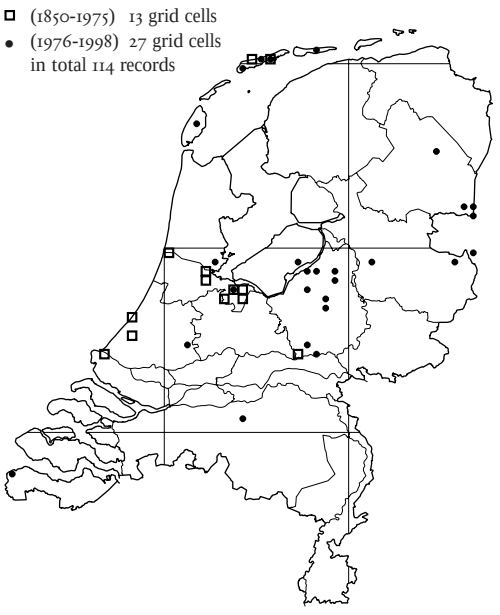
Figuur/Figure 12. *Hilara brevivittata*

Figuur/Figure 13. *Hilara canescens*

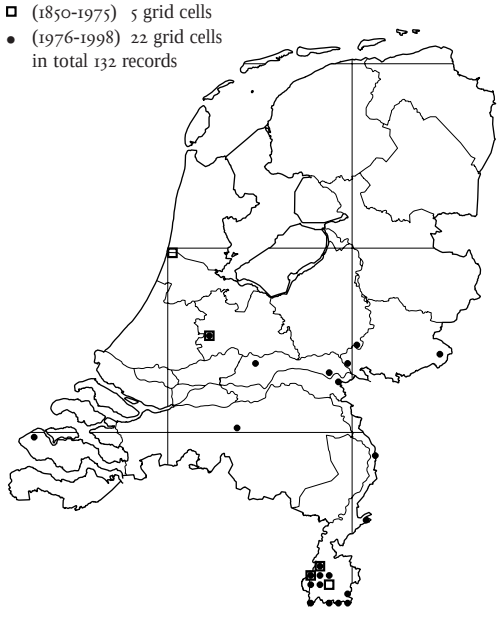
Figuur/Figure 14. *Hilara chorica*



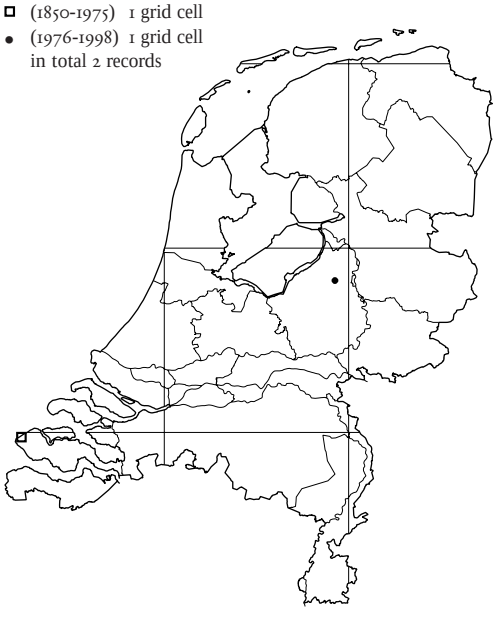
Figuur/Figure 15. *Hilara cilipes*



Figuur/Figure 16. *Hilara clypeata*



Figuur/Figure 17. *Hilara cornicula*



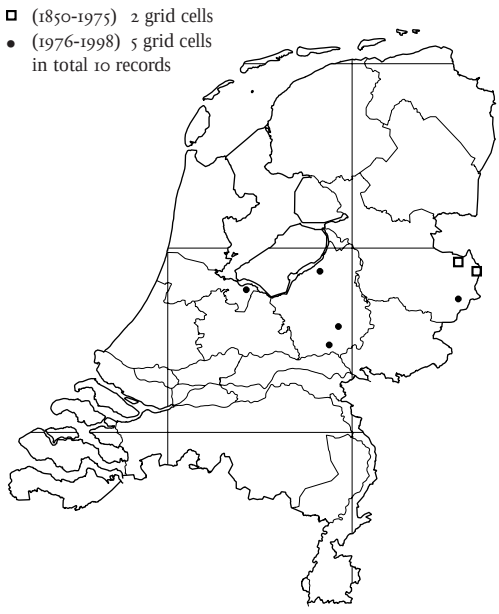
Figuur/Figure 18. *Hilara curtisi*

Figuur/Figure 19. *Hilara discalis*

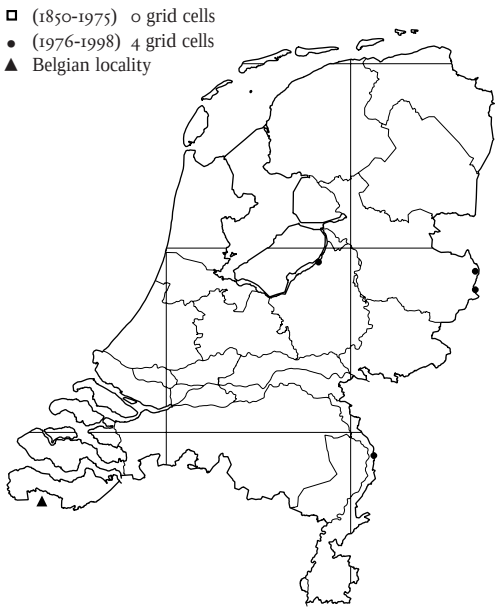
Figuur/Figure 20. *Hilara discoidalis*

Figuur/Figure 21. *Hilara flavipes*

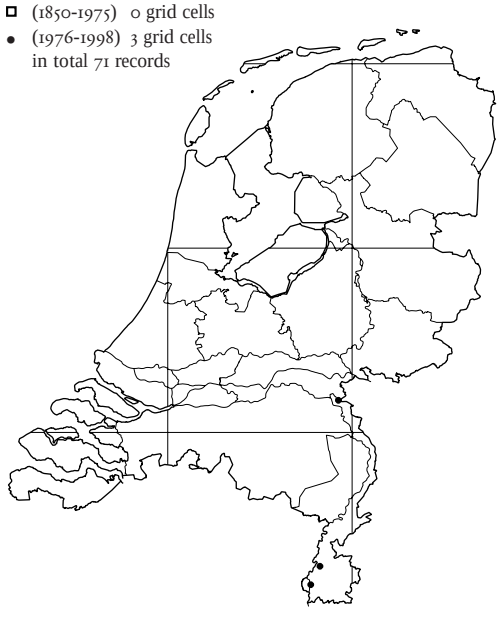
Figuur/Figure 22. *Hilara fuscipes*



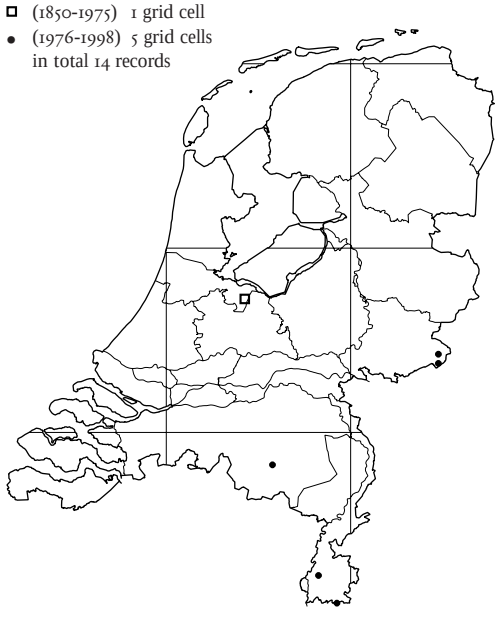
Figuur/Figure 23. *Hilara gallica*



Figuur/Figure 24. *Hilara gooti*



in total 18 records
Figuur/Figure 25. *Hilara griseifrons*



Figuur/Figure 26. *Hilara griseola*

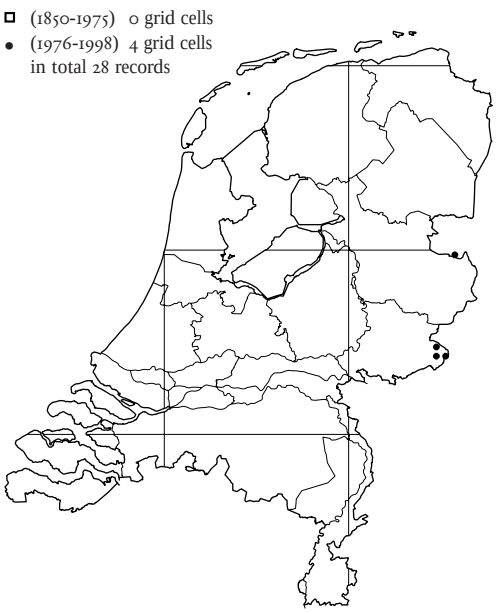
Figuur/Figure 27. *Hilara hirtipes*

Figuur/Figure 28. *Hilara interstincta*

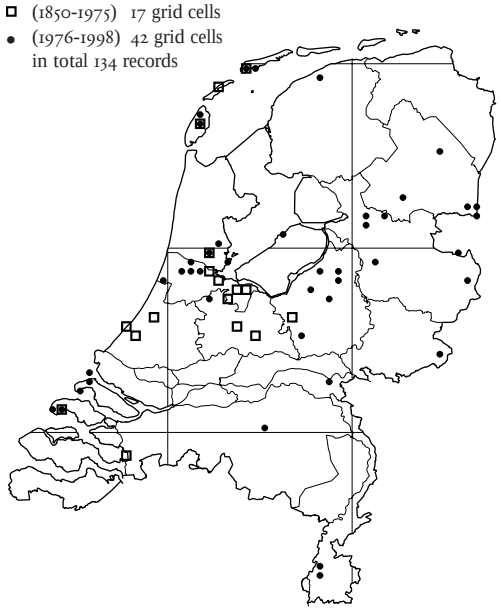
Figuur/Figure 29. *Hilara lasiochira*

Figuur/Figure 30. *Hilara litorea*

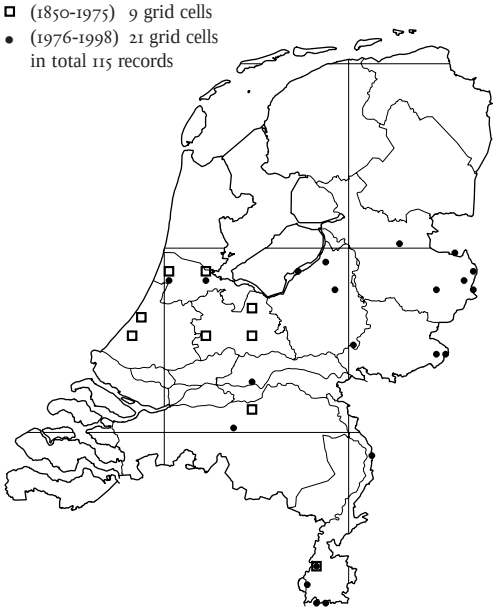
Figuur/Figure 31. *Hilara longivittata*



Figuur/Figure 32. *Hilara lugubris*



Figuur/Figure 33. *Hilara lundbecki*



Figuur/Figure 34. *Hilara lurida*

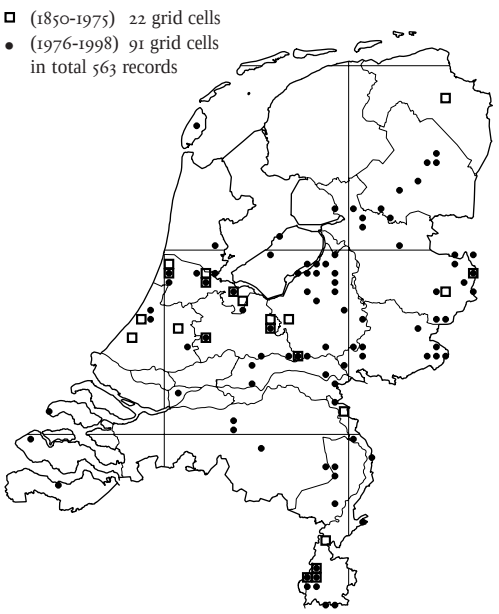
Figuur/Figure 35. *Hilara macquarti*

Figuur/Figure 36. *Hilara manicata*

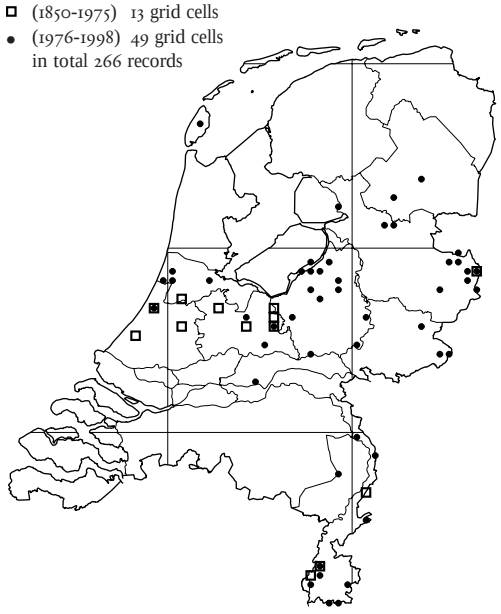
Figuur/Figure 37. *Hilara maura*

Figuur/Figure 38. *Hilara medeteriformis*

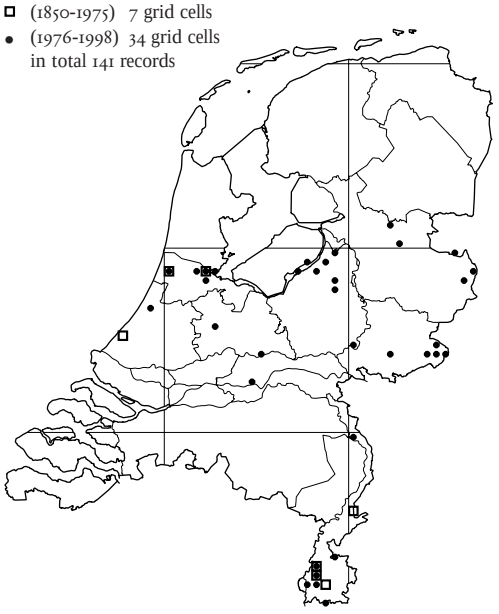
Figuur/Figure 39. *Hilara media*



Figuur/Figure 40. *Hilara monedula*



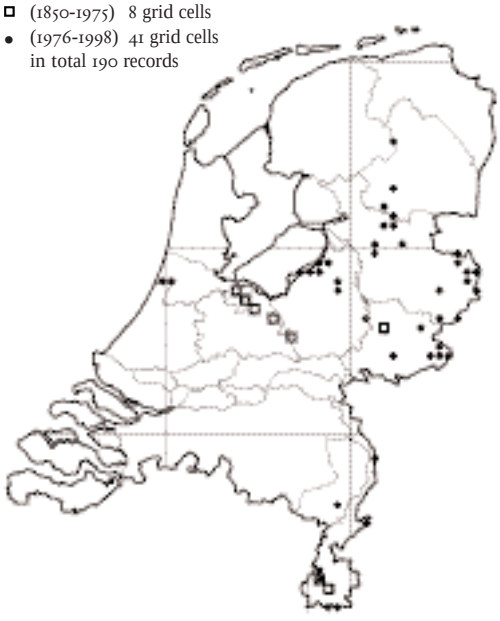
Figuur/Figure 41. *Hilara nigrina*



Figuur/Figure 42. *Hilara nigrocincta*

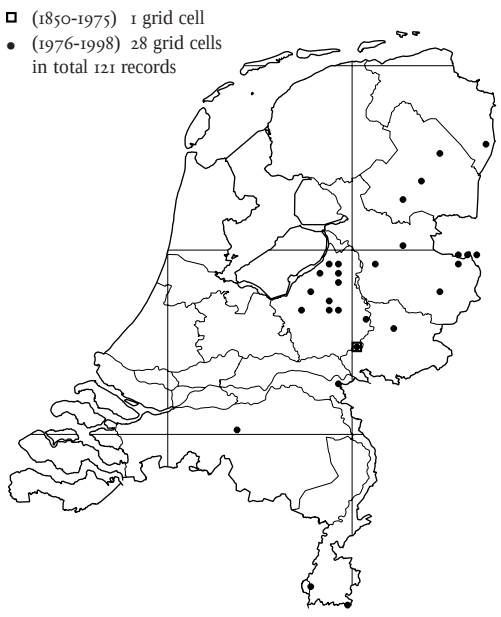
Figuur/Figure 43. *Hilara nitidorella*

Figuur/Figure 44. *Hilara nitidula*

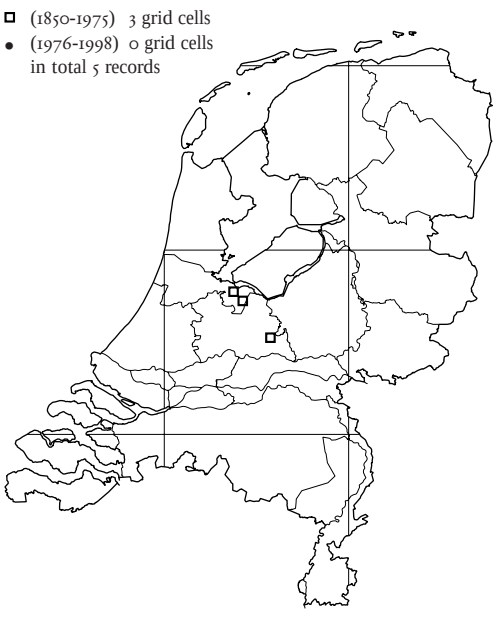


Figuur/Figure 45. *Hilara obscura*

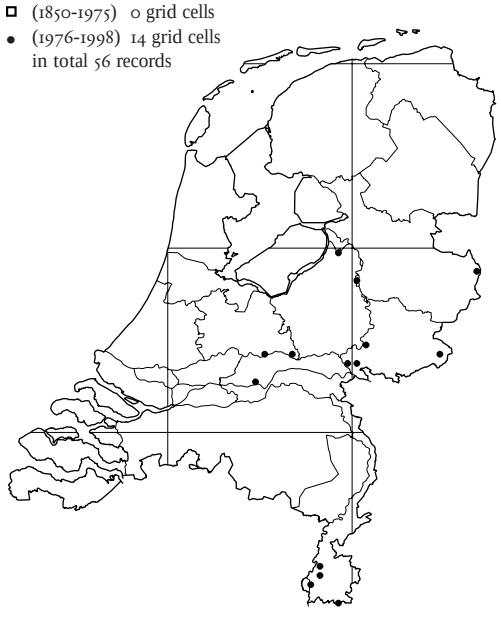
Figuur/Figure 46. *Hilara pilipes*



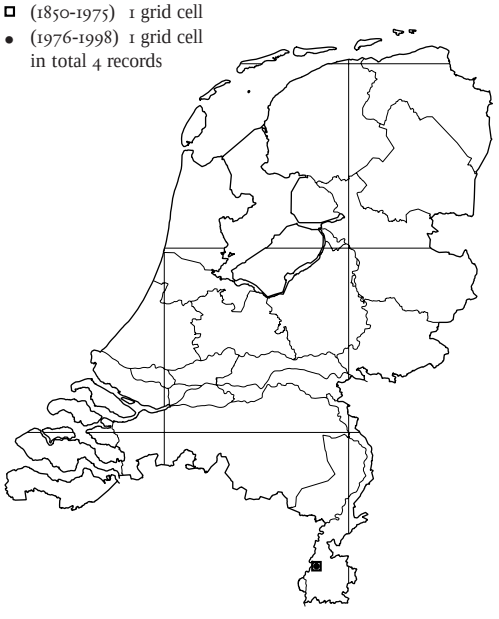
Figuur/Figure 47. *Hilara pilosa*



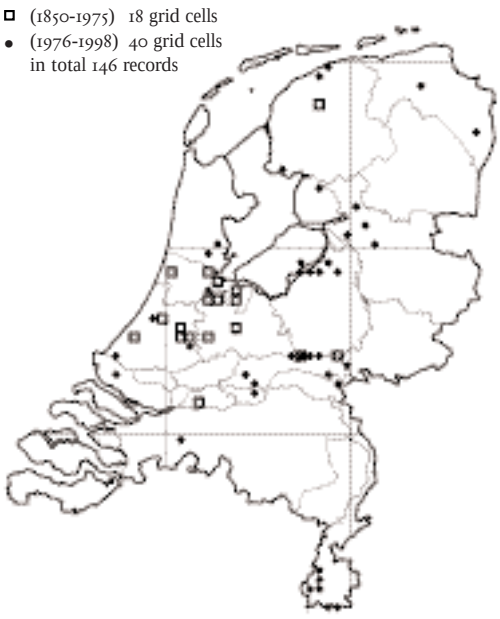
Figuur/Figure 48. *Hilara primula*



Figuur/Figure 49. *Hilara pseudochorica*



Figuur/Figure 50. *Hilara pseudosartrix*

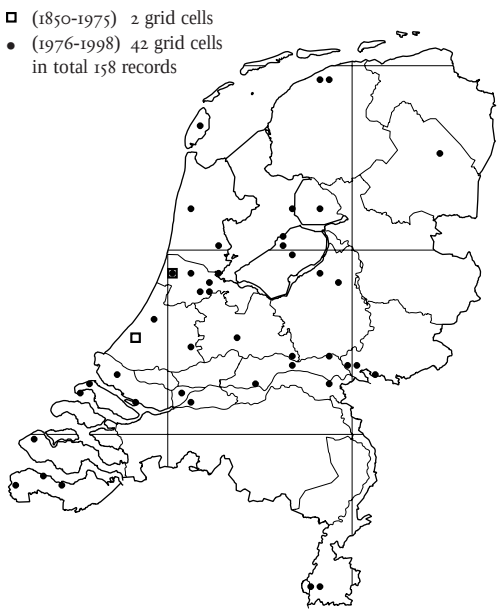


Figuur/Figure 51. *Hilara quadrivittata*

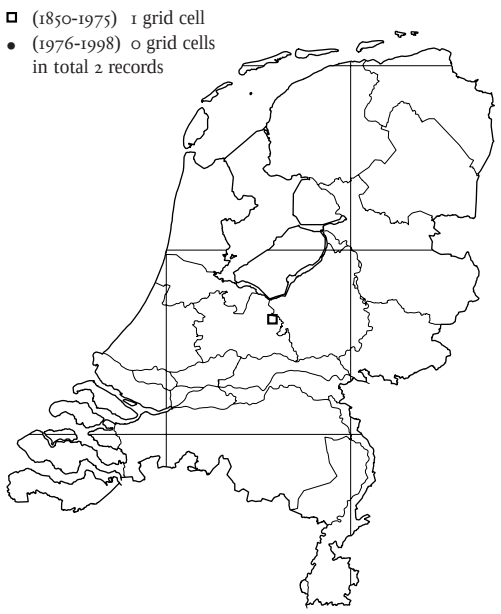
Figuur/Figure 52. *Hilara recedens*

Figuur/Figure 53. *Hilara rejecta*

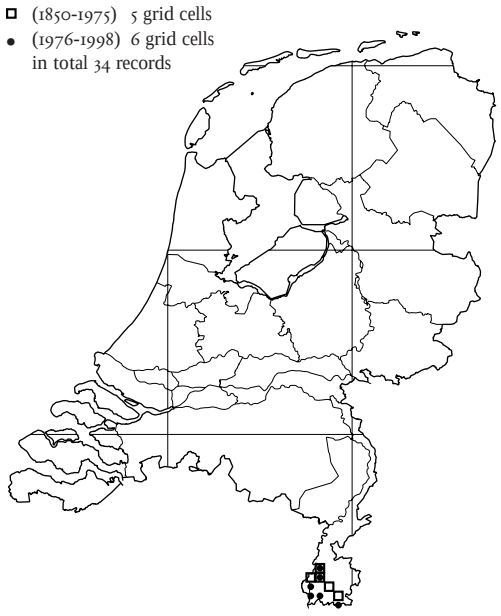
Figuur/Figure 54. *Hilara sturmii*



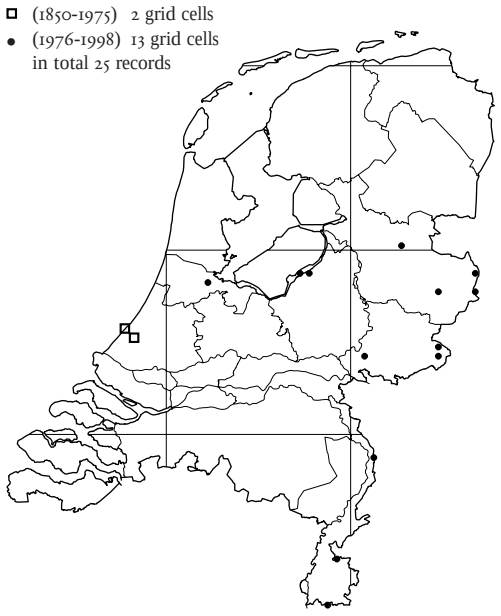
Figuur/Figure 55. *Hilara subpollinosa*



Figuur/Figure 56. *Hilara tenella*



Figuur/Figure 57. *Hilara thoracica*



Figuur/Figure 58. *Hilara veltmani*

Figuur/Figure 59. *Hilara woodiella*

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The studies of Dr Milan Chvála have been partly financed by the Dutch Uyttenboogaart-Eliasen Stichting and by the grants Nos 206/97/1276 and 206/00/0621 from the Czech Grant Agency. We are very grateful for receiving particulars about Dutch *Hilara* species from the private collections of Paul L.Th. Beuk, Herman de Jong and Wouter van Steenis. We got access to the correspondence between De Meijere and G. Strobl by courtesy of Herman de Jong. Ton Veltman and Virgilius Lefeber kindly enabled us to use their Malaise trap samples. Luc Verlinden kindly revised the English text.

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SAMENVATTING

De Nederlandse soorten van het dansvliegengeslacht *Hilara* (Diptera: Empididae)
In deze studie wordt alle beschikbare informatie over het dansvliegengeslacht *Hilara* samengevat. Door kritisch literatuur-, collectie- en veldonderzoek werden 57 soorten voor de Nederlandse fauna vastgesteld, waarvan er hier maar liefst 13 voor de eerste maal gemeld worden. Zes van de 57 soorten zijn beschreven op basis van Nederlandse collectiemateriaal. Er zullen weinig insectengenera zijn waarvan meer dan 10% van de Nederlandse soorten uit Nederland beschreven zijn.
Van elke soort wordt een verspreidingskaart gepresenteerd en, indien beschikbaar, informatie over vliegtijden en ecologie. Opvallend is dat *Hilara*-soorten vaak gevangen worden vlak boven het oppervlak van stromend water, maar er zijn ook soorten die gebonden zijn aan stilstaand water of landbiotopen.

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