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Achrysocharoides species in the Netherlands (Hymenoptera: Eulophidae)

by

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ABSTRACT. — Six species are recorded for the first time from the Netherlands: *Achrysocharoides acerianus* (Askew), *A. carpini* Bryan, *A. cilla* (Walker), *A. latreillii* (Curtis), *A. splendens* (Delucchi) and *A. suprafolius* (Askew). The occurrence of *A. atys* (Walker) is confirmed. Three forms of *A. splendens* were also reared; two of these (from *Ulmus* and from *Lonicera*) are described as new.

Introduction

The world-wide genus *Achrysocharoides* forms part of the *Chrysocharis* complex, within which it is distinguished by the T-shaped frontal fork, densely pubescent eyes and a short postmarginal vein. Taxonomy of the eleven British species has been discussed in an earlier paper (Bryan, 1980a), as has courtship and oviposition behaviour (Bryan, 1980b). *Achrysocharoides* species parasitise leaf-mining larvae, principally of the genus *Phyllonorycter* Hübner (Lep.: Gracillariidae). Unlike the majority of eulophid leaf-miner parasites they are not polyphagous and only attack *Phyllonorycter* hosts on a single tree species, genus or family (Askew & Shaw, 1974); they are also commonly gregarious rather than solitary (Askew & Ruse, 1974; Bryan, 1983).

Over a three year period (1979-1982) *Phyllonorycter* mines were occasionally collected from a handful of localities within the Netherlands. Amongst the relatively small number of parasites reared (from mines tubed separately in small, corked, glass specimen tubes) were nine *Achrysocharoides* species, six of which represent new records for the Netherlands. Further, specimens reared for the first time from *Ulmus* and additional Dutch material from *Lonicera* make possible the description of two more forms of *A. splendens*.

Faunistic records and descriptions

Achrysocharoides acerianus (Askew)

ex *Phyllonorycter geniculella* (Ragonot), *Acer pseudoplatanus* L.: 1 brood, 4 ♀♀, 2 ♂♂, Nederhorst den Berg (N.H.) (7.VII.1981).

New record for the Netherlands.

Achrysocharoides atys (Walker)

ex *Phyllonorycter oxyacanthae* (Frey), *Crataegus monogyna* Jacq.: 7 broods, 25 ♀♀, 3 ♂♂, Nederhorst den Berg (N.H.) (8.VII.1981).

ex *Phyllonorycter cydoniella* (Denis & Schiffermüller), *Pyrus communis* L.: 1 brood, 2 ♀♀, 2 ♂♂, Texel (N.H.) (10.VII.1979).

ex *Phyllonorycter sorbi* (Frey), *Sorbus aucuparia* L.: 1 brood, 2 ♀♀, 1 ♂, Nederhorst den Berg (N.H.) (8.VII.1981).

Gijswijt (1964) was doubtful about his identification of *A. atys*, but the above records confirm its presence in the Netherlands.

Achrysocharoides carpini Bryan

ex *Phyllonorycter quinnata* (Fourcroy), *Carpinus betulus* L.: 12 broods, 27 ♀♀, Nederhorst den Berg (N.H.) (14.X.1980).

This parthenogenetic species has previously been recorded only from England and Switzerland (Bryan, 1980a). It is probably, however, quite widespread and a brood was also reared from the Ardennes, Belgium.

Achrysocharoides cilla (Walker)

ex *Phyllonorycter maestingella* (Müller), *Fagus sylvatica* L.: 6 broods, 12 ♀♀, 1 ♂, Hilversum (N.H.) (14.VII.1981).

New record for the Netherlands.

Achrysocharoides latreillii (Curtis)

ex *Phyllonorycter quercifoliella* (Zeller) &/or *P. harrisella* (Linnaeus), *Quercus robur* L.: 1 brood, 2 ♀♀, Nederhorst den Berg (N.H.) (8.VII.1981); 1 brood, 1 ♂, Hilversum (N.H.) (14.VII.1981).

New record for the Netherlands.

Achrysocharoides niveipes (Thomson)

ex *Phyllonorycter ulmifoliella* (Hübner), *Betula* sp.: 2 broods, 1 ♀, 1 ♂, Ede (Geld.) (14.VII.1982) C. Alders.

A. niveipes has previously been recorded from the Netherlands as a parasite of *Stigmella betulicola* (Stainton) (Lep.: Nepticulidae) (Gijswijt, 1964). This record is unlikely since no *Achrysocharoides* were reared during an extensive four year study of nepticulid parasites and is probably due to the inadvertant inclusion of a *Phyllonorycter* mine in the rearing container. It has also erroneously been recorded as a parasite of *Phyllonorycter corylifoliella* (Hübner) (Van Frankenhuyzen, 1975) due to misidentification (see remarks under *A. suprafolius*). However, in the Dr. J. T. Oudemans collection of chalcids in the Zoological Museum, Amsterdam, are four female *Achrysocharoides*, collected in Lochem, 10.VII.1896 by Oudemans and identified by Schmiedeknecht in 1897 as *niveipes*. These specimens were reared from pupae that are de-

scribed as laying inside a curled leaf of *Betula* and this leaf-fold, also in the collection, is similar in appearance to those made by *Parornix* (Lep.: Gracillariidae). Their identification as *niveipes* appears to be correct, although the specimens are in rather poor condition, and one has dark scapes. The male and female recorded above are also somewhat atypical in that the hind coxae are metallic only at the base rather than predominantly.

Achrysocharoides splendens (Delucchi)

ex *Phyllonorycter nicellii* (Stainton), *Corylus avellana* L.: 7 broods, 4 ♀♀, 10 ♂♂, Winterswijk (Geld.) (24.VII.1981).

New record for the Netherlands.

Numbers of *Achrysocharoides* males and females have been reared that do not appear to fit neatly into either *A. splendens* or *A. cilla*, but very closely resemble one or both species. These were previously considered as *Achrysocharoides* forms near *splendens/cilla* (Bryan, 1980a). For convenience, however, the forms recorded and described here are considered simply as forms of *A. splendens*. Their specific status must remain in doubt awaiting further morphological and biological data.

A. splendens Form B

ex *Phyllonorycter lautella* (Zeller), *Quercus robur* L.: 6 broods, 6 ♂♂, Winterswijk (Geld.) (16.X.1980); 10 broods, 15 ♀♀, 5 ♂♂, Hilversum (N.H.) (28.X.1980, 14.VII.1981).

The Dutch material agrees with the description based on British specimens (Bryan, 1980a), with similar variation in coxal colour and propodeal sculpture. In Britain at least, *P. heegeriella* (Zeller) is an alternative host for this form, but few mines of this species were collected.

A. splendens Form D nov. form

ex *Phyllonorycter schreberella* (Fabricius), *Ulmus* sp.: 16 broods, 25 ♀♀, 10 ♂♂, Nederhorst den Berg (N.H.) (25.IX.1980).

Description. ♀. Thoracic dorsum generally strongly sculptured. Scutellar pits clearly visible in most specimens. Hind coxae predominantly metallic or completely white. Scape white; pedicel white or occasionally pale brown. Antenna with distinct constriction between the claval segments and not tapering strongly apically. Propodeum smooth and shining medially.

♂. Thoracic dorsum strongly sculptured and scutellar pits present. Hind coxae predominantly metallic or completely white. Head about as wide as thorax; vertex greenish. Propodeum weakly sculptured medially.

Other material examined. FRANCE: Dordogne, Ste. Foy, Monestier, 1 ♀, ex *P. schreberella*, 28.VIII.1979 (R. R. Askew). SWITZERLAND: Reinacherheide, 2 ♂♂, ex *P. schreberella*, 24.IX.1977 (S. E. Whitebread).

Form D is difficult to distinguish morphologically from Form B. It is described here as a separate form since as *Achrysocharoides* species are relatively host-specific it is probably biologically distinct. It does resemble Form B in having a small proportion of broods of mixed sex (3 from a total of 16). It is unusual in that most of the broods (14 out of 16) killed the host in the pupal stage. This behaviour has been recorded only once before, in a brood of Form B; *Achrysocharoides* larvae normally leave the host in the fourth or fifth instar or in the prepupal stage (Bryan, 1983).

A. splendens Form E nov. form

ex *Phyllonorycter emberizaepenella* (Bouché), *Lonicera periclymenum* L.: 2 broods, 2 ♀♀, 1 ♂, Winterswijk (Geld.) 24.VII.1981).

Description. ♀. Thoracic dorsum strongly sculptured. Scutellar pits present. Hind coxae predominantly metallic or completely white. Scape and pedicel white or pale brown. Third funicle segment tapering strongly apically. Propodeum smooth and shining.

♂. Thoracic dorsum strongly sculptured, green with fiery reflections. Scutellar pits distinct.

Hind coxae almost completely white (slightly infuscate proximally). Pedicel white; first funicle distinctly longer than pedicel. Head wider than thorax; vertex fiery. Propodeum smooth and shining.

Other material examined. ENGLAND: Wiltshire, Savernake Forest, 1 ♀, ex *Phyllonorycter trifasciella* (Haworth), *Lonicera periclymenum*, 11.VIII.1976 (K. P. Bland).

The single English specimen was previously considered under *A. splendens* sensu strictu although it was thought to possibly represent a new species (Bryan, 1980a). The male described above is more typical of *A. cilla*, while the females appear to be intermediate between *A. cilla* and *A. splendens*.

Achrysocharoides suprafolius (Askew)

ex *Phyllonorycter corylifoliella* (Hübner), *Betula* sp.: 2 broods, 6 ♀♀, 2 ♂♂, Castricum (N.H.) (17.VII.1979); 1 brood, 1 ♀, 1♂, Hilversum (N.H.) (16.X.1979); 3 broods, 3 ♀♀, 4 ♂♂, Hulshorst (Geld.) (4.X.1979).

ex *P. corylifoliella*, *Pyrus* sp.: 1 brood, 4 ♀♀, 1 ♂, Cadier en Keer (Limb.) (11.VI.1981).

ex *P. corylifoliella*, *Sorbus intermedia* Ehrh.: 5 broods, 9 ♀♀, 5 ♂♂, Weesp (N.H.) (2.X.1979, 17.VII.1980).

Van Frankenhuyzen (1975) listed *A. niveipes* as an abundant parasite of *P. corylifoliella*. The specimens were, however, identified before *A. suprafolius* was described and on later examination proved to belong to this species (M. J. Gijswijt, pers. comm.).

Achrysocharoides zwoelferi (Delucchi)

ex *Phyllonorycter salicicolella* (Sircom), *Salix atrocinerea* L.: 1 brood, 5 ♂♂, Texel (N.H.) (10.VII.1979).

ex *P. ?salicicolella*, *Salix viminalis* L.: 1 brood, 1 ♂, Nederhorst den Berg (N.H.) (17.VII.1980).

A. zwoelferi var. *quinqueguttellae* (Erdös)

ex *Phyllonorycter quinqueguttella*, *Salix repens* L.: 2 broods, 2 ♀♀, Texel (N.H.) (10.VII.1979); 2 broods, 4. ♀♀, Meijendel (Z.H.) (12.VII.1979). Gijswijt (1964) recorded *A. zwoelferi* from *P. quinqueguttella*. The specimens I have reared agree with the description of the variety *quinqueguttellae* (Erdös, 1961), differing most noticeably in the darker tarsal segments from the typical form in which the legs are completely white. It is interesting to note that this difference is obvious in specimens reared from *P. salicicolella* and *P. quinqueguttella* from the same locality on Texel.

Discussion

A possible record of *A. altilis* (Delucchi) from the Netherlands (Gijswijt, 1964) could not be confirmed. It is known to be a parasite of *Phyllonorycter populifoliella* (Treitschke) on *Populus* in Yugoslavia and Hungary (Bouček & Askew, 1968), but no *Phyllonorycter* mines were found on poplar during this study. Of the two British species not recorded in the Netherlands, *A. butus* (Walker) probably occurs and rearing of *Phyllonorycter* mines from *Quercus petraea* (Mattuschka) should produce specimens; *A. insignitellae* (Erdös) is less likely to be found, since its host species, *P. insignitella* (Zeller) on *Trifolium pratense* L. is not recorded in the Netherlands (Lempke, 1976).

All the species, although recorded from a single or at most a few localities, are probably widespread and common. Only specimens of *A. niveipes* proved relatively difficult to obtain. *A. splendens* Form E is apparently rare: a total of ninety mines producing only two *Achrysocharoides* broods, whilst Forms B and D may be common, at least locally, in the Netherlands.

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FERNÁNDEZ-RUBIO, F., 1982. GENITALIAS (ANDROPIGIOS Y GINOPIGIOS) DE LAS ZYGAENAS DE ALAVA Y SU ENTORNO IBÉRICO: (1-9), pl. 1-26, 1B-26B.

Agrupacion estudia y proteccion naturaleza de Alava, Vitoria, España.

Na de publikatie van de vier deeltjes met grote foto's van de ♂ genitaliën der Spaanse dagvlinders verscheen nog een vijfde van de eveneens overdag vliegende Spaanse *Zygaena*'s, nu ook met foto's van de genitaliën der vrouwtjes. Hieraan is te zien dat ook deze organen voortreffelijke kenmerken bezitten aan bursa en ductus bursae om de soorten te determineren. Men ziet er zelden afbeeldingen van in artikelen over *Zygaena's* omdat beide zeer dunvliezig zijn, daardoor in opgekookte toestand niet of nauwelijks te zien zijn en moeilijk onbeschadigd uitgeprepareerd kunnen worden.

De auteur heeft nu een methode ontwikkeld om ook van de ♀ genitaliën goede preparaten te kunnen maken. Daarbij wordt geen gebruik gemaakt van KOH, maar van verschillende enzymen die een oplossende werking hebben. Bovendien worden methoden besproken om de dunvliezige genitaliën te kleuren met methyleenblauw, gentiaanviolet en mercurochroom. De foto's laten duidelijk de goede resultaten zien. In de tekst wordt alleen een samenvatting van de methode in een paar regels Engelse, Duitse en Franse tekst gegeven, maar de uitvoerige beschrijving is uitsluitend in het Spaans. — B. J. Lempke.