

**Long gone or long overlooked? *Chamaesyrrhus lusitanicus*,
Cheilosia frontalis, *Eristalis alpina* and *Rhingia rostrata*
(Diptera: Syrphidae) rediscovered in Belgium**

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Summary

During 2009, four Syrphidae species that were not seen for more than 30 years and therefore were deemed extinct in Belgium have been rediscovered: *Chamaesyrrhus lusitanicus* MIK, 1898, *Cheilosia frontalis* LOEW, 1857, *Eristalis alpina* (PANZER, 1798) and *Rhingia rostrata* (LINNAEUS, 1758). The first species is a heathland syrphid that was found near Genk, the latter three species were all found in the Hautes Fagnes/Eifel following increased efforts to locate rare Syrphidae species in this area. An overview of the history and status of all four species in Belgium is provided and their chances for persisting here are discussed.

Keywords: Belgian faunistics, threatened species, Hautes Fagnes, Syrphidae.

Introduction

All organisms are subject to both local and regional changes in abundances and occurrences over time, naturally as well as resulting from changes in the landscape by human activities. For example, it has become widely accepted now that rapid ongoing changes in climatic conditions may induce and accelerate changes in latitudinal and vertical species distributions. Syrphidae are no exception to this rule. Changes in the distributions of Syrphidae often remain highly anecdotal (e.g. VAN DE MEUTTER 2006) and poorly documented, however, REEMER ET AL. (2009) clearly demonstrated multiple cases of changes in the distribution of Dutch Syrphidae over the last century. The available data in other West-European countries suggest that some of these trends may actually act at a much larger, Western European or even European scale. In this paper we report the rediscovery of four species that have declined over large areas in Western Europe and were considered extinct in Belgium at 01.01.2009 according to the provisional checklist of Syrphidae of Belgium (VAN DE MEUTTER in prep.a).

Material and methods

During 2009, multiple visits in search of Syrphidae were performed by the first author to the region of the Hautes Fagnes, prov. Liège, in the east of Belgium. The specific aim was to verify the current status of some rare Belgian Syrphidae in the framework of the forthcoming new Belgian checklist. All visits focused on the most elevated and isolated parts of the Belgian Eifel i.e. the valleys of the Jansbach and the Holzwarche in the area east of Elsenborn and Rocherath (province of Liège). Both valleys represent unique and fairly pristine habitats and are known for their high floral and insect diversity (e.g. butterflies). Their location in the Schneifel (named such because it exhibits the longest yearly period of snow cover in the whole Eifel) renders these areas a unique, cold climate for Western European standards. The second author made a visit at the end of August 2009 to a dry heathland relict near Genk that is famous for its exceptional fauna. The third author made a prolonged field trip during end May 2009 to the area close to Hockai (prov. Liège) located at the western slope of the Hautes Fagnes area. All

Table 1: Chronological overview of all observations of *Chamaesyphus lusitanicus* in Belgium.

Nr male	Nr female	Date	Locality	Legit	Collection
	1	12.VI.1892	Puurs		RBINS
	1	12.IX.1893	Izel		RBINS
1	1	20.VIII.1918	Hoogstraten		RBINS
3		22.VIII.1918	Hoogstraten		RBINS
	1	25.VIII.1919	Retie		RBINS
	1	12.VIII.1941	Geel	J. Verbeke	RBINS
1		17.VIII.2009	Waterschei-Zwartberg	J. Mortelmans	J. Mortelmans
1		6.IX.2009	Waterschei-Zwartberg	J. Bertrands & T. Ghyselinck	T. Ghyselinck

authors sampled Syrphidae by net catches of individuals detected on sight. More detailed habitat descriptions are provided together with the account of the observations in the results part below. Specific identifications were made by the authors and checked against current identification literature (VAN STEENIS 1998, VAN VEEN 2004, HAARTO & KERPPOLA 2007). The specimens described here are preserved in the collections of the respective observers. The nomenclature follows REEMER *et al.* (2009) but commonly used synonyms are provided at first mentioning.

Results

Chamaesyphus lusitanicus (*Pelecocera lusitanica*)

C. lusitanicus is a small and slender syrphid from dry heathland and dune systems often in the vicinity of Pine forest (SPEIGHT 2008). It can be found from southern Scandinavia to the Mediterranean, but the status of southern populations is unclear as they may represent some unrecognized species.

The logging of forests has ever increased since the Roman time leading to extended flatlands and grazed heathlands by the end of the 19th century. Heathland syrphids had spread over large areas by that time, whereas typical forest species retracted to forest remains. Changing land use now has reversed this trend, causing forests to develop and become mature and heathlands to decrease. In the Netherlands it was shown that syrphids closely follow these trends: forest species have clearly increased their distribution over the last decades, whereas heathland species such as *P. lusitanicus* have declined and retracted to the remaining large heathland areas. According to VERLINDEN & DECLEER (1987) and the Belgian database, *C. lusitanicus* has always been rare in Belgium. In

the database we find six records that come from four localities (see Table 1). *C. lusitanicus* was last observed in 1941 in Belgium (12.VIII.1941 Geel, prov. Antwerp). We have studied all Belgian *Chamaesyphus* material in the RBINS collection in Brussels and we may add a record from Izel that was mislabelled as *C. scaevoides* and considered as such in VERLINDEN & DECLEER (1987) and VERLINDEN (1991, 1994). There are no other Belgian specimens of *C. scaevoides* in the RBINS collection. Only one published record of *C. scaevoides* now remains (Châtillon, 1980). *C. lusitanicus* has a number of populations on dry heathlands and coastal dune systems in the Netherlands (REEMER ET AL. 2009).

A male *C. lusitanicus* was caught on 17.VIII.2009 in a dry heathland relict called the Opglabbekerzavel, north of Genk (Det., Leg. & Coll. Mortelmans J.). The specimen flew slowly through the vegetation, where it was foraging on the lower flowers of *Calluna vulgaris*. The Opglabbekerzavel is an open sandy area, with sparse cover of *Calluna* and some scattered *Pinus sylvestris*. At one side, a lot of *Cytisus scoparius* is present. Two weeks later, on 6.IX.2009, Bertrands J. and Ghyselinck T. visited the same locality paying special attention to *C. lusitanicus*. They succeeded in finding another specimen by sweeping their net through the vegetation (Det. & Leg. J. Bertrands & T. Ghyselinck, Coll. Ghyselinck T.). This seems to confirm the presence of a local population. Given the many large heathland areas in the surroundings of Genk and more eastwards, it is possible that *C. lusitanicus* still occurs more widespread, although searches so far have been unsuccessful. The Opglabbekerzavel is famed for its exceptional relict fauna of dry heathland. For example, the rare *Ephippiger ephippiger* (Orthoptera) (KLEUKERS 2007) is present in large numbers and last year *Scotopteryx moeniata*, a

strongly threatened moth species (Lepidoptera) was discovered (JAKOBS 2009).

Cheilisia frontalis

C. frontalis is a typical northern species that also occurs in mountainous areas at lower latitudes in Europe. SPEIGHT (2008) describes the habitat as “the vicinity of streams, flushes and areas of poorly drained ground in unimproved montane grassland (including relatively small areas within forest) from the *Picea* zone upwards to 2000m”. The populations in the Belgian Ardennes are at the western limit of its European distribution. Larvae of *Cheilisia* mostly live as miners of herbs and probably also *C. frontalis* does so, but the larval food plant of *C. frontalis* is not yet known. Only two Belgian records exist for *C. frontalis* from the same locality near Recht. The database mentions another record from Stavelot (1930) but the date as late as September is unlikely for *C. frontalis* which is a typical spring species and we further ignore it. Previously, also VERLINDEN (1991, 1994) has disregarded this record. For more than 30 years, *C. frontalis* has not been observed in Belgium. More recent observations of this species are known from the German Eifel (MALEC & MANZFELD 2007, and references therein).

A female *C. frontalis* was caught on 7.V.2009 at Rocherath in the valley of the Jansbach (Det., Leg. & Coll. F. Van de Meutter). This date falls close to that of the two other Belgian observations (7.V.1972, 11.V.1975, Leg. & Det. J.A.W. Lucas, Recht). The Jansbach river valley at this point is a relatively small (100-200m diameter), and deep valley bordered by steep *Picea* forested flanks. The lower valley is a mosaic of marshy zones with upwelling water and lush vegetation and more elevated areas that exhibit characters of the herb-rich *Meum athmaticum* grasslands that are typical for the Eifel area. *C. frontalis* was observed foraging on *Taraxacum* flowers that grew some 20 meters from the Jansbach river along a path.

Eristalis alpina

E. alpina typically occurs along margins of streams and rivers, usually in forested situations (SPEIGHT 2008). In the Netherlands, this species was last observed in 1969 (REEMER ET AL. 2009) and in Belgium in 1951 (Eupen, prov. Liège, Belgian Syrphidae database, see Table 2 for an overview of all known Belgian records). This



Fig. 1: Habitus and detail of the hind femur of the male *Eristalis alpina* collected at 13.VI.2009 at the Jansbach valley in Rocherath (leg. & coll. F. Van de Meutter). Note the swollen and long-haired hind femur.

species has probably always been rare here, but may have additionally suffered from habitat degradation. The nearest extant populations are found in the Harz-area in Lower-Saxony, Germany (BARKEMEIJER 1994), but a single male was caught recently in Luxemburg (VAN STEENIS

Table 2: Chronological overview of all Belgian records of *Eristalis alpina*. Collection acronyms: FSAGx=Faculté de Sciences Agronomiques de Gembloux; RBINS= Royal Belgian Institute of Natural Sciences.

Nr male	Nr female	Nr unknown	Date	Locality	Legit	Collection
		1		Beverce		
		1		Yvoir, Mauche		
		1	9.VIII.1890	La Gleize		
		1	24.VI.1903	Pepinster, Hoegne		
1		1	04.VI.1910	Zonhoven		FSAGx
	1	1	13.VI.1912	Diepenbeek		RBINS
		1	28.IX.1917	Turnhout		
		1	17.VII.1918	Turnhout		
		1	15.VIII.1922	Mol, Postel		RBINS
	1	1	01.VIII.1943	Oud-Turnhout		
		1	20.VI.1951	Eupen, Hertogenwald		RBINS
1			13.VI.2009	Rocherath, Jansbach	F. Van de Meutter	F. Van de Meutter

2006) indicating *E. alpina* may still have overlooked populations in the Eifel area.

A male *E. alpina* was found on 13.VI.2009 at exactly the same locality near the Jansbach river where *C. frontalis* was caught (Det., Leg. & Coll. F. Van de Meutter; see higher for a habitat description of this area). It was foraging on *Meum athmaticum* flowers close to the river Jansbach. At the time the *E. alpina* was seen, high numbers of many other *Eristalis* were present including *E. arbustorum*, *E. horticola*, *E. jugorum*, *E. nemorum*, *E. pertinax*, *E. picea*, *E. rupium*, *E. tenax* and *E. similis* making it challenging to discover the *E. alpina*. A picture of the collected specimen is shown in Fig. 1). Specific searches for more individuals of *E. alpina* during successive visits to this area at the end of June and in August 2009 were vain.

Rhingia rostrata

A prime example of a species that has undergone a large scale decrease in Europe is *R. rostrata*. *R. rostrata* once was a relatively widespread species in Europe occurring in many countries, but now is considered extinct in many of them. It has not been observed in the Netherlands since the 19th century, and was considered extinct in Belgium since 1945 (Chiny, prov. Luxembourg). In the countries where it still occurs, it has strongly retracted its range to mountainous areas and its European distribution is now mainly confined to the Alps and the Pyrenees. A notable exception comes from Britain, where the species still thrives over a relatively large area in Wales and southern

England (Hoverfly Recording Scheme 2009). Larvae of *Rhingia* species are believed to feed on micro-organisms in dung. The restricted European distribution of *Rhingia* species other than *R. campestris* suggests they may be critical toward certain properties of the dung, whereas *R. campestris* is known to be rather easy in accepting different types and qualities (e.g. regarding moisture) of dung as a larval habitat. For example, their distribution and demography may be associated with that of a particular mammal species. For *R. rostrata*, suggested important dung hosts are badgers (STUBBS & FALK 2002), sheep, and horses (SPEIGHT 2008), but neither of them can fully explain the observed decline in *R. rostrata* nor its current restricted distribution.

A male *R. rostrata* was collected on 23.V.2009 in the valley of the river Hoegne near Hockai (leg., det. & coll. M. Reemer). The specimen was observed flying low through herbaceous vegetation, along a small stream parallel to a path through mixed forest. On 31.VIII.2009, another male of *R. rostrata* was found near the Jansbach river valley, Rocherath (leg., det. & coll. F. Van de Meutter). This location was repeatedly visited that year, and was also shown to house a population of *R. borealis* (several individuals observed at each of three visits during end May-end June). *R. rostrata* was caught here while feeding on a *Cirsium palustre* along a path through oldgrown *Picea* forest. Lastly, again a male *R. rostrata* was photographed in a garden in Spa on 06.IX.2009 (det. & phot. Ch. Devillers) feeding on *Origanum vulgare*. This location is less than 1

km from the forest between the village of Spa and the Fagne de Malchamps. All observations have been done in the province of Liège, in or at the edge of the Hautes Fagnes/Eifel national park. A more extensive paper dealing with the status and distribution of *Rhingia borealis* and *R. rostrata* in Belgium is in preparation (VAN DE MEUTTER, in prep.b).

Discussion

During one year, we were able to relocate populations of four species that were considered extinct in Belgium, i.e. they were not seen for at least 30 years. This subjective threshold of 30 years may seem long, however, given that Belgian Syrphidae observations have relatively low density (in terms of coverage of the Belgian territory) and frequency, rare species may not be detected for prolonged periods of time. The most surprising find reported here is that of *R. rostrata* at three locations that are relatively widely distributed (10 to 35 km apart) over the Hautes Fagnes/Eifel national park. This species is thought to be truly endangered on a European scale (SPEIGHT 2008) and it was not observed near to Belgium for many decades (except for England, but colonization from there is unlikely). In recent years, *R. rostrata* has undergone a notable range expansion in southern parts of Britain (MORRIS 2007a, b, PALMER 2004; also see www.hoverfly.org.uk). In other Northwest-European countries no such ongoing expansion has been observed, yet, the series of Belgian observations in 2009 hopefully indicates a continental revival of the species. It is notable that among the eight records in the Belgian Syrphidae database, there is one from the Hoegne valley at Hockai (26.IV.1913), probably almost at the same place where it was sighted now.

A bright future?

Cheilisia frontalis and *Eristalis alpina* sometimes are considered relict species from a long-gone colder climate that now occur here at the limits of their climatic niche. If climatic factors indeed are critical for their persistence, their continuing presence in Belgium may be compromised by further global warming, and ongoing efforts to restore their habitats may be vain. This logic applies to a wide range of species that are unique at the Belgian scale and

occur solely in the Hautes Fagnes and Eifel. On the other hand, if it are local habitat conditions that prevail in shaping their population dynamics, the large efforts that are now invested in restoring these unique habitats - often funded by European projects - should warrant a bright future. Habitat quantity and possibly quality will increase and will offer the possibility for these species to build up larger populations that may be more resilient to future threats. It would be worthwhile monitoring future population dynamics of these species to see how these isolated relict populations may fare.

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**Découverte et suivi d'une petite population de coccinelles des bruyères,
Chilocorus bipustulatus (LINNAEUS, 1758) (Coleoptera Coccinellidae
Chilocorinae), en périphérie directe du Moeraske
(Région de Bruxelles-Capitale, Belgique)**

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Résumé

Une petite population de coccinelles des bruyères (*Chilocorus bipustulatus*) a été découverte en 2009 dans le jardin biologique de la CEBE à Evere (Région de Bruxelles-Capitale, Belgique). Ce jardin potager est géré par cette association en suivant des principes de culture respectueux de l'environnement et est contigu au site semi-naturel du Moeraske. L'observation de larves et d'individus adultes de *C. bipustulatus* s'est faite sur un genévrier commun (*Juniperus communis*). Les observations se sont échelonnées du mois de mai 2009 au mois d'août 2010.

Mots-clés : *Chilocorus bipustulatus*, Coccinellidae, Coccinelle des bruyères, Bruxelles, Belgique

Samenvatting

Een kleine populatie van Heidelieveheersbeestjes (*Chilocorus bipustulatus*) werd in de biologische moestuin van de MOB te Evere (Brussels Hoofdstedelijk Gewest, België) ontdekt. Deze vereniging beheert deze moestuin met milieuvriendelijke principes. Het terrein ligt belendend het natuurgebied van het Moeraske. Larven en volwassen exemplaren van het Heidelieveheersbeestje werden waargenomen op een Jeneverbes (*Juniperus communis*) tussen mei 2009 en augustus 2010.