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On *Pelidnoptera* in Belgium, with the first record of *Pelidnoptera leptiformis* (Schiner, 1864) (Diptera: Sciomyzidae)

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Abstract

Revision of *Pelidnoptera* specimens from the collections at RBINS and Gembloux revealed that this genus in Belgium was represented by *Pelidnoptera fuscipennis* (Meigen, 1830) only. In addition recent fieldtrips to Fagnolle (Province Namur) revealed the first records of *Pelidnoptera leptiformis* (Schiner, 1864). For both species, ecology, phenology, habitat preference and distribution in Belgium are discussed.

Keywords: faunistics, new species for Belgium, ecology, *Pelidnoptera.*

Samenvatting

Herziening van *Pelidnoptera* specimens in de collecties van het KBIN en Gembloux toonden aan dat dit genus in België slechts door *Pelidnoptera fuscipennis* (Meigen, 1830) vertegenwoordigd wordt. Ondertussen leverden recente excursies in Fagnolle (Provincie Namen) de eerste waarnemingen van *Pelidnoptera leptiformis* (Schiner, 1864). Voor deze twee soorten worden ecologie, fenologie, habitatvoorkeur en verspreiding in België behandeld.

Résumé

Une étude de spécimens de *Pelidnoptera* dans les collections de l'IRSNB et de Gembloux a révélé que le genre *Pelidnoptera* n'était représenté en Belgique que par *Pelidnoptera fuscipennis* (Meigen, 1830). Mais, des excursions à Fagnolle (Province de Namur) ont révélé la première donnée confirmée de *Pelidnoptera leptiformis* (Schiner, 1864). L'écologie, la phénologie, l'habitat préférentiel et la distribution en Belgique pour ces deux espèces sont donnés et discutés.

Introduction

The genus *Pelidnoptera* Rondani, 1856 has been an issue of taxonomic debate for quite a while, changing from Sciomyzidae to Phaeomyiidae and back again. It was GRIFFITHS (1972) who introduced the name Phaeomyiidae for all species of *Pelidnoptera*, at that point included within Sciomyzidae based on several morphologic features. Together with the strange life history of *Pelidnoptera nigripennis*, whose larvae are known as a parasitoid of millipedes (BAILEY, 1989) most authors supported this new name as the correct family for this genus (VALA *et al.*, 1990; ROZKOŠNÝ 2002, KNUTSON & VALA, 2011) while others kept using Sciomyzidae as family for this genus (eg. SUEYOSHI *et al.*, 2009). Finally, TÓTHOVÁ *et al.* (2012) gave morphologic and genetic evidence to actually include *Pelidnoptera* within the Sciomyzidae, an opinion shared by the authors of this paper.
Pelidnoptera fuscipennis was mentioned for the first time from Belgium by Verbeke in 1948 (VERBEKE, 1948), from a series of old specimens still present in RBINS collection. More then 40 years later, VALA (1989) mentions *P. leptiformis* from Belgium as well – without details unfortunately. Two years later, LECLERCQ (1991) mentions both *P. nigripennis* and *P. fuscipennis* in the Belgian catalogue, two species which said RBINS to have specimens in the collection. Finally, the

internet database www.faunaeur.org lists all three species: *P. fuscipennis, P. nigripennis* and *P. leptiformis* to be present in Belgium an opinion also shared by SPEIGHT & KNUTSON (2012).

Material

All *Pelidoptera* specimens present in the collections of RBINS and Gembloux were reexamined and this revision revealed that only *P. fuscipennis* is present in those collections. All these *Pelidnoptera* records are now digitized and maintained in the Belgian Sciomyzidae Database (J. Mortelmans).

MATERIAL EXAMINED.

Pelidnoptera fuscipennis: **Luxemburg**: 12.VII.2012, Bertrix, 14 ex., leg. det. col. Mortelmans, J.; 13.VII.2012, Orgeo, 1 ex., leg. det. col. Mortelmans, J.; 16.V.1937, Buzenol, 1 ex., leg. Becquart, M, det. Mortelmans J., col. RBINS; 18.VI.1962, Durbuy, 1 ex., leg. Becquart, M, det. Mortelmans J., col. RBINS; 31.V.1936, Lamorteau, 1 ex., leg. , det. Mortelmans J., col. RBINS; 31.V.1936, Lamorteau, 1 ex., leg. ?, det. Mortelmans J., col. RBINS; 15.VII.1900, Steinbach, 1 ex., leg. Jacobs, J-C, det. Mortelmans J., col. RBINS; 20.IV.1944, Tellin, 1 ex., leg. Verbeke, J., det. Mortelmans J., col. RBINS; 24.VII.2013, Chiny, 1 ex., leg. Soors, J., det. Mortelmans J.; 23.VI.2012, Mormont , 2 ex., leg. Verhelst, L., det. Mortelmans J.; 10.VI.1946, Mirwart, 2 ex., leg. Becquart, M, det. Mortelmans J., col. RBINS; 27.VI.1936, Eth de Barvaux (Their des Pequets), 2 ex., leg. Collart, A., det. Mortelmans J., col. RBINS; 14.VI.2013, Vallée de la Chevratte, 1 ex., leg. det. col. Mortelmans, J.; **Namur**: 3.V.1949, Falaën, 1 ex., leg. Becquart, M, det. Mortelmans J., col. RBINS; 15.V.1947, Le Mesnil, 2 ex., leg. Collart, A., det. Mortelmans J., col. RBINS; 24.V.1950, Onoz-Spy, 2 ex., leg. Collart, A., det. Mortelmans J., col. RBINS; 23.V.1950, Houx, 1 ex., leg. Cooreman, J., det. Mortelmans J., col. RBINS; 30.IV.1936, Houyet, 1 ex., leg. Collart, A., det. Mortelmans J., col. RBINS; 25.VI.1953, Virelles, 1 ex., leg. Goetgebuer, M., det. Mortelmans J., col. RBINS; 21.VI.1900, Viroin, 4 ex., leg. Jacobs, J-C, det. Mortelmans J., col. RBINS; 16.VI.2013, Meix de Virton, 1 ex., leg. det. col. Mortelmans J.**Vlaams Brabant:** 7.V.1942, Rood klooster, 1 ex., leg. Tollet, R., det. Mortelmans J., col. RBINS; 8.V.1942, Rood klooster , 1 ex., leg. Collart, A., det. Mortelmans J., col. RBINS; 20.V.1961, Rood klooster, 1 ex., leg. ?, det. Mortelmans J., col. RBINS; **Liège:** 13.V.1913, Ben-Ahin (Ravin de Solières), 3 ex., leg. Collart, A., det. Mortelmans J., col. RBINS; 25.VIII.1989, Jupille, 1 ex., leg. Scheepmans L., det. Mortelmans J., col. Gembloux; 17.VI.1934, Malmedy, 1 ex., leg. Collart, A., det. Mortelmans J., col. RBINS; 7.VII.2013, Francorchamps, 1 ex., leg. det. Hendrix, J.; **Oost-Vlaanderen:** 30.IV.1942, Melle, 1 ex., leg. Verbeke, J., det. Mortelmans J., col. RBINS; **Hainaut:** 25.VI.1935, Bois du Calvaire, 2 ex., leg. Collart, A., det. Mortelmans J., col. RBINS; **Brabant Wallon:** 19.VI.1932, Mont st hubert, 1 ex., leg. Goetgebuer, M, det. Mortelmans J., col. RBINS;

Pelidnoptera leptiformis: 1♂, 1♀, 24.IV.2014, Fagnolle (prov. Namur), leg. J. Mortelmans & E. de Bree; det., coll., J. Mortelmans.

On 24.IV.2014 a male and female were observed next to a humid river valley within deciduous forest (rich in *Fagus, Quercus* and flowering plants as *Allium ursinum*). The female was “freshly” emerged from puparium, with its ptilum still bulged out. The male was also recently emerged from puparium however earlier than the female. Both specimens were collected 100 meters from each other in this valley.

Recognition of the species

Pelidnoptera are medium sized snail-killing flies (up to 10 mm; generally around 7 mm). They are characterized by the chaetotaxy on tibia 2 and 3 which both bear bristles in the middle of the tibia, in addition to the normal bristles on the top. In general appearance, species of *Pelidnoptera* are very dark with light-brown infuscated wings and a brown thorax (Fig 1). Four species are currently known, of which one, *Pelidnoptera triangularis* Sueyoshi, Knutson & Ghorpade 2009, is restricted to the far east of the Palearctic region (SUEYOSHI *et al.*, 2009). The three other *Pelidnoptera* species occur in Europe and are easy to recognize on external characters like the size of the eyes, bristles on R1, the bristles on the tibia and the shape of the mid-frontal dust stripe. Proper keys to these species are given in VALA (1989) and ROZKOŠNÝ (1984) which also contain figures of genitalia of *P. fuscipennis, P. leptiformis* and *P. nigripennis*.

Fig 1. *Pelidnoptera fuscipennis* (photo by Dmitry Gavryushin).

Ecology

During the early life stages *P. nigripennis* is a parasitoid of *Ommatoiulus* sp. a millipede (BAILEY, 1989). This parasitism is rather special since all other known Sciomyzidae parasite on Molluscs (except for *Sepedonella nana* Verbeke, 1950 which feeds on oligochaetes). *Pelidnoptera nigripennis* overwinters as a puparium within the exoskeleton of its killed millipede host. Interestingly, the pupa dies at temperatures above 17°C, even when this period is very short (VALA *et al.*, 1990). The early life stages of *P. fuscipennis*, *P. leptiformis* and *P. triangularis* are still unknown, but are probably similar to that of *P. nigripennis*.

In Belgium *P. fuscipennis* is frequently encountered in moist forests, a habitat similar to records in literature. VALA (1989), KASSEBEER (2000), STUKE (2005) and SPEIGHT & KNUTSON (2012) reported the species from moist deciduous forest, often, along streams. The Belgian locality of *P. leptiformis* is a typical *Pelidnoptera* habitat, a moist, forested river valley with a lot of shrubs.

Phenology

Based on 52 specimens from 32 observations we present a phenology diagram of *Pelidnoptera fuscipennis* in Figure 2. For *P. fuscipennis*, the earliest record is from April 20th, the last from August 25th. Most specimens were caught in the months June and July.

From other European countries VALA (1989), KASSEBEER (2000) and SPEIGHT & KNUTSON (2012) observed *P. fuscipennis* from May/June to August. The phenology of *P. leptiformis* is poorly known and only SPEIGHT & KNUTSON (2012) give a flight period from May to July. Very recently, Aat Barendregt (in prep.) communicated both *P. fuscipennis* and *P. leptiformis* to be distinct in phenology: *P. leptiformis* flying before *P. fuscipennis*. Our record of *P. leptiformis* seems to confirm this hypothesis, but still a lot of overlap of flight period between both species is present. The third species *P. nigripennis*, is most definitely an early species, with a flight period from February to May (SPEIGHT & KNUTSON, 2012).

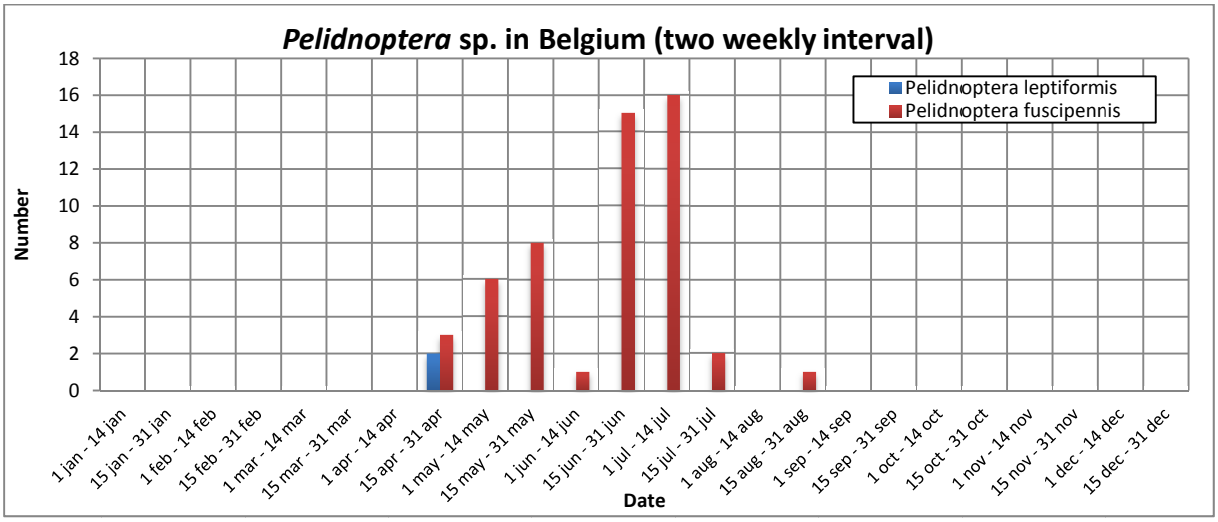

Fig. 2. Phenology of *Pelidnoptera* in Belgium. *Pelidnoptera leptiformis* in blue, *Pelidnoptera fuscipennis* in red.

Distribution and discussion

Although *P. fuscipennis* is currently not known from the provinces West-Flanders, Antwerp and Limburg, the species is most likely also present there. In the Netherlands, Niels-Jan Dek communicated a recent record from Zeeland (ZL), which is very near to the province West-Flanders and suggesting the wide distribution of this species. The majority of Belgian records originate from the Fagne-Famenne and Condroz, but many records from the Ardennes and the Belgian Lotharingen are known too. Remarkably, after 1960, *P. fuscipennis* appears to have only been observed in the east of the country (omitting the 1961 record from Brussels). This is undoubtedly due to an observational bias with few people collecting this group after 1960.

Although *P. nigripennis* is now deleted from the Belgian checklist, it is in fact a species which might be found in the near future. From Central and Southern Europe it is reported rather frequently.

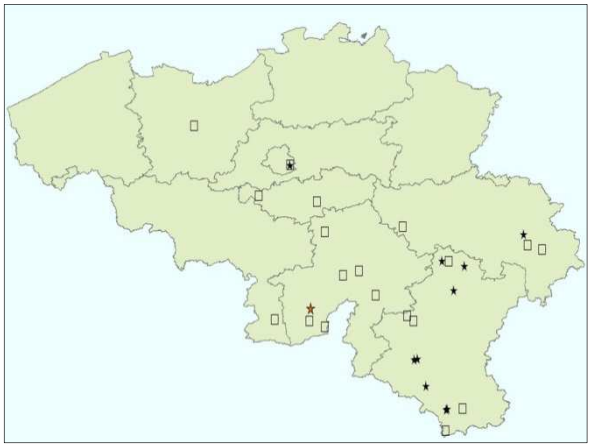

Fig. 3. Black stars represent records of *P. fuscipennis* after 1960, black squares indicate records of *P. fuscipennis* before 1960. The red star indicates the record of *Pelidnoptera leptiformis.*

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