

**Observations of the ladybird *Platynaspis luteorubra* (Goeze)  
on motorway verges along the ring-road of Brussels,  
with comments on its habitat and host preference  
(Coleoptera Coccinellidae Chilocorinae)**

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**Abstract**

The ladybird *Platynaspis luteorubra* (GOEZE) was found at three locations on the motorway verges (9 sites) along the ring-road of Brussels. In Diegem-Zaventem, Groot-Bijgaarden and Machelen adults were collected with white pitfall traps. *P. luteorubra* preferred short grassland vegetation mowed twice a year and its occurrence and abundance correlated significantly with the presence and nest-density of the ant *Lasius niger* which is known as one of its preferred hosts. This myrmecophilic ladybird, classified as a rare coccinellid in Belgium, is probably more common than assumed until now and should be searched for in similar habitats along other motorways.

**Keywords:** Coccinellidae, Chilocorinae, *Platynaspis luteorubra*, habitat preference, host preference, myrmecophilic ladybird.

**Introduction**

From the end of April till the end of May 2004, a sampling campaign was conducted in order to make an inventory of different entomofauna-groups on the motorway verges of the ring-road of Brussels. On 26 sampling sites with different grassland management, three pitfall traps were installed to sample spiders, ground beetles, ants, woodlice, butterflies and some fly families (DESENDER *et al.*, 2004a; b). Details of the sampling campaign, localisation of the sites and involved management-types can be found in DESENDER *et al.* (2004a; b). During this study quite a lot of Coccinellidae were collected, sorted out and identified.

**Results**

In total 311 coccinellids were identified belonging to six species: *Platynaspis luteorubra* (GOEZE), *Coccinella 7-punctata* L., *Hippodamia variegata* (GOEZE), *Propylea 14-punctata* (L.), *Scymnus haemorrhoidalis* (HERBST, 1797) and

*Tytthaspis 16-punctata* (L.). The most abundantly caught species was *T. 16-punctata* (n= 281). From the "rare" species *P. luteorubra* 23 adults were found in nine sampling sites at three different locations. In Diegem-Zaventem the species was collected at five sites, in Machelen at three sites and in Groot-Bijgaarden one specimen was found.

Eight of the nine sites were grasslands with the same management, being mowed twice a year in June and September. This type of management creates uniform, short grassland vegetations which seem to be the species favoured habitat. Indeed according to PONTIN (1960) the species prefers low growing vegetations in grasslands and meadows. Also in our study area the species seems to avoid grassland habitats with higher vegetation, typical for sites with no mowing management or a management with mowing only once in three years. *P. luteorubra* showed no preference for any kind of the studied soil types (either sand or loam), topographical orientation or area size of the sampling sites.

Table 1. Locations, number of individuals collected and management types at the nine sampling sites with *Platynaspis luteorubra* along the ring-road around Brussels.

Location	Number of specimens	Management
Diegem-Zaventem (4 sites)	16	Mown in June and September
Diegem-Zaventem (1 site)	2	Mown once in 3 years
Groot-Bijgaarden (1 site)	1	Mown in June and September
Machelen (3 sites)	4	Mown in June and September

As *P. luteorubra* is known as a myrmecophilic ladybird (VOLKL, 1995), we assessed the relation between its abundance and the occurrence of ants. We found a very poor ant-fauna consisting of only common species along the studied motorway verges (see DESENDER *et al.*, 2004a; b). In total 10 ant-species were found and none

of these is considered endangered in Flanders (DEKONINCK *et al.*, 2003).

To investigate if a particular ant community or species co-occurred preferentially with *P. luteorubra* in the short grassland sites where we found it, a non-parametric Spearman-rank correlation test was performed (see table 2).

Table 2. Spearman-rank correlations between abundances of the ladybird and the respective ant species, with R= - of + value, p = 0.05, N.S. = not significant and with ant species presented by a 8 letter code (LASIFLAV= *Lasius flavus*, LASINIGE= *Lasius niger*, MYMIRUBR= *Myrmica rubra*, MYMIRUGU= *Myrmica rugulosa*, MYMISABU= *Myrmica sabuleti*, MYMISCAB= *Myrmica scabrinodis* and TETRIMPU= *Tetramorium impurum*).

	LASIFLAV	LASINIGE	MYMIRUBR	MYMIRUGU	MYMISABU	MYMISCAB	TETRIMPU
<i>Platynaspis luteorubra</i>	N.S.	0.72	N.S.	0.42	-0.46	-0.42	N.S.

*P. luteorubra* seems to avoid two ant-species: *Myrmica scabrinodis* and *Myrmica sabuleti*, but its presence and abundance is positively and highly significantly correlated with *L. niger* and to a lesser degree with *Myrmica rugulosa* (which shows habitat preferences similar to *L. niger* along the motorway verges (DESENDER *et al.*, 2004a; b)). The locations where we found *P. luteorubra* indeed showed very high nest-densities of *L. niger*. In Wallonia *P. luteorubra* is also known to live in vicinity of *L. niger*. Larvae of this coccinellid have been observed in presence of the ant respectively on *Cirsium arvense* (4 occurrences) and *Cytisus scoparius* (2 occurrences) in dry fallowed sand quarries (BAUGNÉE *et al.*, 2001; GODEAU, 2000).

### Discussion and conclusions

Recent and old observations of this myrmecophilic coccinellid in our country are scarce and the species is listed rare in Belgium (MAES & BRANQUART, 2003; ADRIAENS & MAES, 2004). Until now, *P. luteorubra* was known from open, dry, summer-hot habitats such as heathlands, dry nutrient poor grasslands, motorway verges and railway areas. ADRIAENS & MAES (2004) suggest the species could be more widespread on warm and sandy areas in

Flanders. Here, it was found in a short term sampling on many sites also on loamy soils. Perhaps the sun exposed condition, short vegetation and the presence of many *Lasius*-nests are sufficient to explain the presence of the species.

LOPEZ & POTTER (2003) suggested that *Lasius* ants are well adapted to intensively managed golf course habitats. The sampled uniform road verges resemble such a habitat, so they were expected to provide a favorable environment for host ants. We suggest that an adequate search for this species in this typical habitat along motorways verges can give a totally different

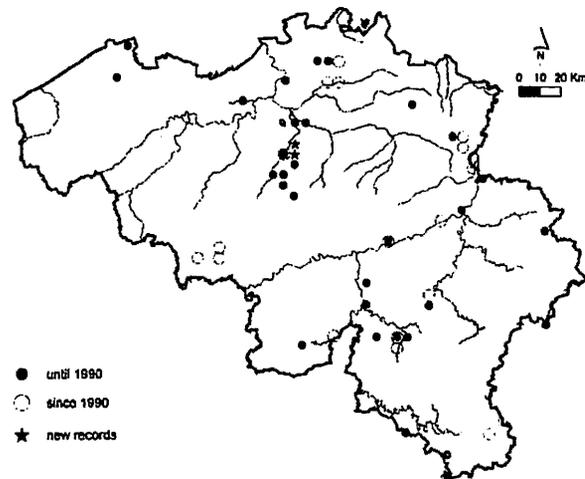


Fig. 1. Distribution of *Platynaspis luteorubra* in Belgium.

view of its current distribution in Belgium and could lead to many new records of the species.

According to MAJERUS (1994) this myrmecophilic ladybird is not an endangered species in Britain where it has a reasonably wide distribution. Nevertheless the author suggests this highly specialized beetle requires active conservation measures because of loss of its typical habitat through conversion to other land use, gravel extraction and coastal development and also because the beetle has become highly specialized during its evolution. Such highly specialized beetle species are recognized as being more vulnerable to extinction as compared to generalists because they are less adaptable to changing conditions (DAVIES *et al.*, 2004). Our results suggest that an intensive mowing management to maintain short grasslands with high nest-densities of its host *L. niger*, are to the benefit of this coccinellid.

However, an adequate further search for the species and more information on the mutualistic association of *P. luteorubra* and its host ant in those habitats are necessary in order to maintain this interesting and highly specialized species association as part of a habitat, which seems rather banal at first sight. We can conclude that even sites with no particularly rich or endangered ant fauna can be of nature conservation value, because such sites can provide suitable habitat for specialized myrmecophilic species.

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