

## Eight new species for the Belgian ant fauna and other remarkable recent records (Hymenoptera Formicidae)

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### Summary

Eight ant species are reported as new for the Belgian ant fauna: *Stenamma debile*, *Lasius sabularum*, *Lasius meridionalis*, *Lasius platythorax*, *Lasius psammophilus*, *Lasius jensi*, *Formica lusatica* and *Tapinoma ambiguum*. Almost all ants formerly identified as *Stenamma westwoodi* appear to be *Stenamma debile*, which seems to be a common ant of deciduous and pine forests on sandy soils in Flanders. The presence of *Stenamma westwoodi* in Belgium seems to be overestimated. *Lasius sabularum* was recorded at six inland dunes in Eastern Flanders. As expected the presence of *Lasius platythorax*, *Lasius psammophilus* (two recently described ant species) and *Lasius meridionalis* was observed. *Lasius jensi* already recorded from Germany was found at one locality in Flanders. *Formica lusatica* and *Tapinoma ambiguum* were found in dry heaths. The presence at several localities in Flanders of the rare species *Myrmica microrubra*, *Myrmecina graminicola*, *Lasius mixtus*, *Hypoponera punctatissima*, *Formica transcaucasica*, *Anergates atratulus* and *Strongylognathus testaceus* is reported.

**Keywords :** Hymenoptera, Formicidae, record, faunistic, Belgium

### Introduction

In 1996 SEIFERT published a complete and comprehensive book about the ant fauna of Germany (SEIFERT, 1996) in which the taxonomical and ecological status of many ant species of Germany and its surroundings was cleared out. This work offered us a powerful tool to review and complement the knowledge of the Belgian ant fauna, which was for the last time compiled in VAN BOVEN & MABELIS (1986) and DE BISEAU & COUVREUR (1994). As the most recent state-of-knowledge of the Belgian ant fauna (DE BISEAU & COUVREUR, 1994) did not include some species recently described by SEIFERT (SEIFERT, 1991; 1992), some recently new described and formerly overlooked species could be expected when reviewing the Belgian ant fauna.

### Material and methods

From 1996 to 1999, several projects were devoted to the entomofauna of grey-dunes in Western-Flanders, inland dunes of Eastern Flanders and heathlands of Limburg. From all insect

samples we mention in the present text and made during these projects, only samples of ants and which are of particular interest from an ecological and/or faunistic point of view are discussed. All ants were sampled by using pitfalls except nrs 21, 22, 25 and 26 (see table 1). The samples listed in table 1 were obtained by using from one habitat to another various densities of pitfalls (3 to 9), depending on the area of the habitat. All ants were identified using SEIFERT (1996).

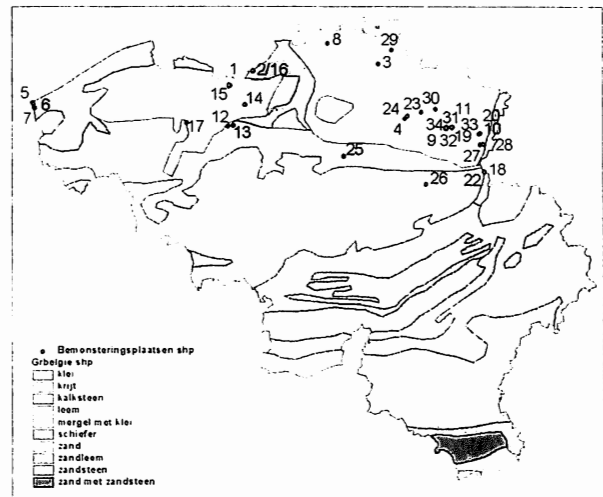


Table 1. Locality, X and Y coordinates, UTM.

Nr	Locality	X coord	Y coord	UTM	Province
1	Heidebos, Moerbeke	117	208	ES6371	Eastern Flanders
2	Stropersbos, Stekene	129	214	ES7477	Eastern Flanders
3	Sevendonck, Turnhout	189	218	FS3582	Antwerp
4	Winterbeekvallei, Tessenderlo	202	193	FS4857	Limburg
5	Westhoek, De Panne	199	227	DS6859	Western Flanders
6	Westhoek, De Panne	233	198	DS6959	Western Flanders
7	Westhoek, De Panne	238	196	DS6957	Western Flanders
8	Groot schietveld, Brecht-Wuustwezel	165	228	FS1091	Antwerp
9	Teut, Zonhoven	222	188	FS6853	Limburg
10	Mechelse heide, Maasmechelen	238	186	FS8451	Limburg
11	Tenhaagdoornheide, Houthalen	225	189	FS7154	Limburg
12	Den Blakken, Wetteren	117	188	ES6351	Eastern Flanders
13	Old river dune, Uitbergen	120	188	ES6651	Eastern Flanders
14	Molsbergen, Lokeren	125	199	ES7161	Eastern Flanders
15	Heidebos, Moerbeke	117	207	ES6370	Eastern Flanders
16	Stropersbos, Stekene	129	214	ES7477	Eastern Flanders
17	Golf court, St-Martens-Latem	97	190	ES4352	Eastern Flanders
18	St-Pietersberg, Kanne	241	168	FS8732	Limburg
19	Tenhaagdoornheide, Houthalen	225	189	FS7153	Limburg
20	Mechelse heide, Maasmechelen	239	186	FS8551	Limburg
21	Oudsberg, Meeuwen-Gruitrode	236	195	FS8260	Limburg
22	Kanne-Riemst	241	167	FS8732	Limburg
23	Mine terriil, Beringen	210	196	FS5660	Limburg
24	Winterbeekvallei, Tessenderlo	203	194	FS4958	Limburg
25	Leuven, centre of the city	173	174	FS1938	Brabant
26	Overbroek (Gelinderen) natuurgebied	213	161	FS5925	Limburg
27	Zutendaal	239	181	FS8545	Limburg
28	Rekem	240	181	FS8746	Limburg
29	Oud-Turnhout	196	225	FS4189	Antwerp
30	Koersel	217	198	FS6362	Limburg
31	Teut, Zonhoven	222	188	FS6853	Limburg
32	Teut, Zonhoven	223	189	FS6953	Limburg
33	Teut, Zonhoven	225	189	FS7153	Limburg
34	Teut, Zonhoven	223	188	FS6953	Limburg

## Results and discussion

In agreement with the findings of BOER (1999) for the Netherlands, some ant species new to the Belgian fauna were found. Their occurrence in Belgium is discussed hereafter. They should be added to the Belgian ant fauna. Some other records of interesting and rare species in Flanders were made. All localities mentioned in the text (nrs. 1-34) are listed in Table 1 and mapped in Figure 1. Table 2 gives a description of all habitats where records were made.

### 1. New species for the Belgian ant fauna

#### 1.1. *Lasius platythorax* SEIFERT 1991 (nrs. 1, 2, 3 and 4)

SEIFERT (1991) described *L. platythorax*. It appeared to be a widespread sibling species of *Lasius niger* in Germany (SEIFERT 1996) and the Netherlands (BOER 1999). It is characteristic for different kinds of wet woodland, bogs and fens; it avoids urban habitats. *L. platythorax* can be easily discerned from *L. niger* which prefers moderately xerothermic, synantropic habitats. BOER

Table 2. Description of habitats and list of collected species

Nr	Description habitat	Species
1	Deciduous forest (birch, ferns)	<i>Lasius platythorax</i>
2	Recently cut wet birch wood	<i>Lasius platythorax</i> ; <i>Myrmica microrubra</i> , 1q
3	Wet deciduous forest	<i>Lasius platythorax</i>
4	Wet deciduous forest with bogs	<i>Lasius platythorax</i>
5	<i>Corynephorus</i> -grasslands	<i>Lasius psammophilus</i>
6	<i>Corynephorus</i> -grasslands	<i>Lasius psammophilus</i>
7	<i>Corynephorus</i> -grasslands	<i>Lasius psammophilus</i>
8	<i>Corynephorus</i> -grasslands	<i>Lasius psammophilus</i> ; <i>Lasius meridionalis</i> ; <i>Formica transkaukasica</i>
9	<i>Corynephorus</i> -grasslands	<i>Lasius psammophilus</i> ; <i>Lasius meridionalis</i>
10	<i>Corynephorus</i> -grasslands	<i>Lasius psammophilus</i> ; <i>Lasius meridionalis</i> ; <i>Formica lusatica</i>
11	<i>Corynephorus</i> -grasslands	<i>Lasius psammophilus</i> ; <i>Lasius meridionalis</i>
12	Recently cut birch and pine wood, with young <i>Calluna</i> -shrubs	<i>Lasius sabularum</i> , 4q
13	Moss dunes, with open sandy soils	<i>Lasius sabularum</i> , 1q
14	Moss dunes with <i>Luzula</i> and <i>Veronica officinalis</i> vegetation	<i>Lasius sabularum</i> , 1q
15	Open forest with <i>Calluna</i> vegetation and open sand pits	<i>Lasius sabularum</i> , 4q; <i>Myrmica microrubra</i> 6q; <i>microgyne Myrmica ruginodis</i> , 1q; <i>Lasius mixtus</i> , 2q
16	Dry <i>Agrostis</i> grass land on sandy soil	<i>Lasius sabularum</i> , 2q; <i>Myrmgram</i> , 1q; <i>Lasius mixtus</i> , 3q
17	<i>Calluna</i> vegetation with <i>Molinia</i> and <i>Agrostis</i> vegetation on sandy soil	<i>Lasius sabularum</i> , 2q
18	Chalk grassland	<i>Lasius jensi</i> 1q
19	<i>Calluna</i> -shrubs and <i>Molinia</i> combined with <i>Genista anglica</i> and <i>Erica tetralix</i>	<i>Tapinoma ambiguum</i>
20	Current heath which was mowed in 1995	<i>Tapinoma ambiguum</i>
21	The edge of leafed woodland	<i>Myrmica microrubra</i> , 1q (direct sampling)
22	The edge of a canal	<i>Myrmecina graminicola</i> (1 nest, direct sampling)
23	Old mine terril	<i>Myrmecina graminicola</i> (12 q)
24	Poor dry grassland on sandy soil	<i>Lasius mixtus</i> , 1q
25	City centre	<i>Hypoponera punctatissima</i> (direct sampling)
26	Huge hope of mowed grass	<i>Hypoponera punctatissima</i> (direct sampling)
27	Bogs and fens	<i>Formica transkaukasica</i>
28	Bogs and fens	<i>Formica transkaukasica</i>
29	Bogs and fens	<i>Formica transkaukasica</i>
30	Bogs and fens	<i>Formica transkaukasica</i>
31	Closed heath-vegetation which was bruised in 1975	<i>Anergates atratulus</i> , <i>Strongylognathus testaceus</i>
32	Old, closed heath-vegetation with open areas and <i>Deschampsia flexuosa</i>	<i>Strongylognathus testaceus</i>
33	One nest on a S-exposed pine-woodland edge	<i>Strongylognathus testaceus</i>
34	Bogs and fens	<i>Formica transkaukasica</i>

(1999) suggests that *L. platythorax* is a common ant species of forests all over the Netherlands. A screening of more woodland habitats in Belgium will probably confirm this.

1.2. *Lasius psammophilus* SEIFERT 1992 (nrs. 5, 6, 7, 8 and 9)

SEIFERT (1992) separated *L. psammophilus* and *L. paralienus* from *L. alienus*. According to SEIFERT (1996) *L. psammophilus* is found in dry grasslands, heathlands and other open habitats on sandy soils. Its presence is associated with *Corynephorus*-tufts where it out-competes its sibling species *L. alienus* and *L. paralienus*. The distribution of *L. psammophilus* in Germany and the Netherlands suggests that *L. psammophilus* is more abundant than *L. alienus* (which prefers chalky soils) and this is probably also the case in Belgium. *L. psammophilus* was found on different localities in the Belgian coastal dunes and some heathlands in Flanders, where it was found together with its temporary parasitic ant species *L. meridionalis*.

1.3. *Lasius meridionalis* (BONDROIT 1919) (nrs 8, 9, 10 and 11)

Due to their specific lifecycles (temporal social parasitic ants of other *Lasius*-species) and characteristic nest localities (nests in soil or litter) *Chthonolasius*-ants as *L. meridionalis*, *L. sabularum*, *L. jensi*, *L. mixtus* and *L. umbratus* are not commonly found. According to SEIFERT (1996) *L. meridionalis* is a widespread thermophilic species in sand heaths and dry grasslands. As *L. meridionalis* is a temporary parasitic species of *L. psammophilus*, its distribution is correlated with its host ant. Sometimes *L. niger* can be used as a host. Possibly *L. meridionalis* was earlier identified as *L. rabaudi*. VAN BOVEN & MABELIS (1986) consider *L. meridionalis* as a synonym for the latter. They found *L. rabaudi* at four localities in the Netherlands but not in Belgium. SEIFERT (1988) states that *L. meridionalis* is not a synonym for *L. rabaudi*, which he only found in the Iberian Isles. Earlier WILSON (1955) also mentioned *L. rabaudi* (according to Seifert in fact *L. meridionalis*) to be a common ant species in dry sand and heath habitats. BOER (1999) found *L. meridionalis* to be a widespread ant in the dunes of northern Holland. DE BISEAU & COUVREUR (1994) state that *L. rabaudi* has not been found in Belgium, but can be expected in

habitats comparable as those where the ant species was recorded in the Netherlands.

We found *L. meridionalis* in *Corynephorus*-grasslands where *L. psammophilus* is probably the most common ant. We may expect the species in Belgium to be almost as widespread as its most usual host ant *L. psammophilus*.

1.4. *Lasius sabularum* (BONDROIT 1918) (nrs. 12, 13, 14, 15, 16 and 17)

The *Chthonolasius*-ant *L. sabularum* is probably a common ant species in Germany but is only expected 10% times as frequent as *L. umbratus* (SEIFERT, 1996). SEIFERT always recorded the species in the neighbourhood of parks, gardens, where its nests were situated nearby shrubs or under stones and walls. *L. sabularum* is a temporal social parasitic ant species of *L. niger*. Identification and differentiation of the species from *L. umbratus* and *L. mixtus* is not always evident. Because of the presence of queens of *L. sabularum* and queens of those other two species at the same localities over six inland dunes of Eastern Flanders, clear and well-founded identification of *L. sabularum* was possible. The length of the scape and the pilosity of the tibia and the first abdominal segment of the queens, were always situated between the other two *Chthonolasius*-queens. As until now only six inland dunes were sampled for their ant fauna and in each of them *L. sabularum* was recorded, the species is expected to be more widespread in Belgium than suspected by SEIFERT (1996) for Germany. This author mentions nests in walls and under stones. As only queens looking for nest possibilities were found during our samplings, no detailed description of nest localities or habitats preferences can be made. However, stones and walls were not present. Sandy soil and or litter accumulations seem therefore more likely as nesting sites.

1.5. *Lasius jensi* SEIFERT 1982 (nr 18)

*L. jensi* is a thermophilic *Chthonolasius*-ant species that prefers dry grasslands on chalky soils. It is less found on sandy soils. It is a temporary social parasitic species of *L. alienus*. As *L. alienus* is the most common ant species on chalky soils, the presence of *L. jensi* is dependent of chalky soils and its host species. In the Netherlands *L. jensi* is not yet found.

### 1.6. *Stenamma debile* (FÖRSTER 1850)

Normally *Stenamma*-ants are only rarely found because their concealed habit. They are only discovered through patient extraction from rotten wood. Therefore, the presence of these ants is mostly underestimated. SEIFERT (1996) and BOER (1999) state that *S. debile* is a widely distributed ant species on sandy soils in deciduous and pine woodlands and in heathlands with a well developed litter and shrub layer. Almost all *Stenamma*-ants formerly identified as *S. westwoodi* in Belgium and the Netherlands appear to be *S. debile* (BOER, 1999). In Germany and the Netherlands only *S. debile* was recorded so far. DUBOIS's (1997) statement of Belgium being the only country until now were both *S. debile* and *S. westwoodi* coexist, can be confirmed as in the collection of the KBIN-IRSNB specimens of both species collected in Belgium, are present. As both species do coexist in Belgium we presently perform a profound study on ecological preferences and nesting localities, which are suspected to be quite similar between both species (DUBOIS, 1997).

### 1.7. *Formica lusatica* SEIFERT 1997 (nr 10)

*F. lusatica* the sympatric sibling species of *F. cunicularia* and *F. rufibarbis* was recently described as a morphometrically and chorologically new species. It also seems to differ ecologically from its sister species. It prefers more xero-thermophilic habitats, such as open, sandy heathlands of a military training area in Nieder-Sachsen (SEIFERT, 1997). One worker of *F. lusatica* was found in August 1999. The heath fragments at the location were burned in 1990. Now a well-developed *Calluna*-heath with patches of *Molinia* is present.

### 1.8. *Tapinoma ambiguum* EMERY 1925 (nrs 19 and 20)

*T. ambiguum* is a common ant in heaths and dry grasslands on sandy soils in N-Germany. It is a thermophilic species and according to SEIFERT (1996) it is restricted to sandy soils, while *T. erraticum* is the common *Tapinoma*-species on chalk and other soils. *T. ambiguum* was collected at several data during summer of 1999 at a heath which was bruised in 1979 and mowed in 1993 (nr 19). The current heath consists of old *Calluna*-shrubs and *Molinia*-polls combined with *Ge-*

*nista anglica* and *Erica tetralix* fragments. The other locality (Maasmechelen, nr 20) where the species was found, is a current heath which was mowed in 1995. The current vegetation is a compact, lowland heath combined with open sandy areas covered with *Cladonia*- and *Deschampsia flexuosa*-fragments.

### 1.9. Other possible new species for Belgium?

According to the description of their habitat preferences and distribution in Germany, *Myrmica lonae*, *Leptothorax tuberinterruptus*, *Camponotus vagus* and *Myrmica gallieni* are expected in Belgium.

## 2. Records of rare ant species

### 2.1. *Myrmica microrubra* SEIFERT 1993 (nrs 2, 15 and 21)

The ecology and distribution of *M. microrubra* is still not well known, as this species was just recently separated from *Myrmica rubra* (SEIFERT, 1993). The ant species formerly identified as the microgyne of *M. rubra* can be considered as a social parasitic ant species of *M. rubra*. BOER (1999) mentioned the species as new for the Netherlands since it was formerly identified as *M. rubra*. DE BISEAU & COUVREUR (1994) do not assume *M. microrubra* to belong to the Belgian ant fauna. Six and one winged females were found with pitfalls (nrs 2 and 15) during the end of September and the beginning of October. Another female was obtained by direct sampling in July (nr 21). The three habitats can be considered as the edge of deciduous woodland that contains commonly *M. rubra* nests. No workers or males were found. The species is assumed to be more abundant than presently detected.

### 2.2. The microgyne of *Myrmica ruginodis* (nr 16)

*M. ruginodis* can be found as macrogyne or microgyne: queenpolymorphism. After mating the microgynes try to settle them in the older nest so most of the microgyne nests are polygeneous colonies. Dispersion occurs through separation of a part of the polygyn microgyneous nest, which contains several queens and workers. One can find mixed nests with both micro- and macrogynes. Swarming and mating of micro- and macro-

gynes occurs simultaneous and hybridisation between both is possible. It is not yet confirmed if there are ecological differences between the two forms (SEIFERT, 1996).

The microgyne of *M. ruginodis* was found in a wet birch-oak forest. It was collected during a mating flight of *M. ruginodis* at the end of August by which several females and males of the macrogyne form were recorded. Other mating flights of *M. ruginodis* were observed at other locations in the Stropersbos during the same period (end of August).

### 2.3. *Myrmecina graminicola* (LATREILLE 1802) (16, 22 and 23)

Due to its hidden lifecycle, seldom observed behaviour and little colonies, *M. graminicola* is often overlooked. Most colonies are monogyn and situated in soils, under rocks or in litter. In Belgium *M. graminicola* is a frequently found ant species in the valley of the Meuse (VAN BOVEN & MABELIS, 1986; DE BISEAU & COUVREUR, 1994). In Flanders the species was only known from Diest. DE BISEAU and COUVREUR (1994) state that the distribution of *M. graminicola* in Belgium is insufficiently known and unsure.

Collection with pitfalls seems to be a very efficient way to detect species with hidden lifecycles and little colonies, such as *M. graminicola*, and *Stenamma debile*. The discovery of the species in this part of Flanders suggests that *M. graminicola* could be more abundant than suspected so far.

### 2.4. *Myrmica specioides* BONDROIT 1918

*Myrmica specioides* is an extremely thermophilic ant species from dry grassland and other dry habitats. It is a very aggressive ant species which is very abundant all over Germany (SEIFERT, 1996). According to VAN BOVEN & MABELIS (1986) and DE BISEAU & COUVREUR (1994) the distribution of this rare species in Belgium and the Netherlands is insufficiently known. In 1999 BOER found *M. specioides* at one locality in the coast dunes of the Netherlands.

At almost all studied inland dunes in Eastern Flanders and heathlands in Limburg *M. specioides* was found. We conclude *M. specioides* to be a common ant species in extreme thermophilic sand habitats in Flanders.

### 2.5. *Lasius mixtus* (NYLANDER 1846) (nrs 15, 16 and 24)

This temporal social parasitic ant species of *L. niger*, is obviously less abundant than *L. umbratus* and is known as the less thermophilic *Chthonolasius*-species. Due to their capability to be more active at lower temperature than other ant species, queens of *L. mixtus* are almost only found in March and April. The queens profit of this less possible activity of workers of other ant species which at that moment can not avoid the *L. mixtus* queens to penetrate the nest.

The distribution of this species is insufficiently known due to its hidden life cycle. As *L. mixtus* colonies live underground, workers are even more rarely found. DE BISEAU & COUVREUR (1994) assume *L. mixtus* to be common and frequently observed ant species of pine wood, chalky grassland and heaths, but probably other *Chthonolasius*-queens are identified as *L. mixtus* giving the former an overrated distribution. Records of queens by using pitfalls, can tell us more about the distribution of this and other *Chthonolasius*-species.

### 2.6. *Hypoponera punctatissima* (ROGER 1859) (nrs 25 and 26)

*H. punctatissima* is an extreme thermophilic species, which is normally exclusively found in tropical conditions as nursery gardens, veranda's and heated buildings. Sometimes the species can survive soft winters in mowed grass. In Belgium *H. punctatissima* is known from several of such locations (DESSART & CAMMAERTS, 1995). In 1997 we found a free-living queen of this species in a city centre (Leuven nr 25). Twenty nine workers, 33 queens and 3 males were found in 1998 at Overbroek, Gelinden (nr 26) after the extraction of a large amount of mowed grass. This microhabitat seems important for the surviving of this species in Flanders.

### 2.7. *Formica transkaukasica* NASSONOV 1889 (nrs 8, 27, 28, 29, 30 and 34)

*F. transkaukasica* is a species of wet bogs and fens. In Belgium the distribution of *F. transkaukasica* was restricted to the Haute Fagnes and three locations in the province of Limburg by Vanbrabant, in 1967. Recently this species was found at six other places in the provinces Antwerp and Limburg. All habitats where the spe-

cies was found recently were wet bogs and fens in Nature reserves. Probably the species is more abundant in Flanders than earlier suspected. The survey of wet bogs en fens with *Sphagnum*-fragments at similar sites in Limburg and elsewhere in Flanders, may reveal new locations of *F. transcaucasica*.

#### 2.8. *Anergates atratulus* (SCHENCK 1852) (nr31)

Vanbrabant first discovered *A. atratulus* in Belgium in 1958 at Niel-bij-As. Later this species was found in Rotselaar and Huy. This obligate parasitic species of *Tetramorium caespitum* is a very rare species in Germany, and the Netherlands (VAN BOVEN & MABELIS, 1986; SEIFERT, 1996). Due to its specific life cycle in the nest of its host it is only rarely found. At 12 July 1999 one queen of *Anergates atratulus* was collected with pitfall-sampling.

#### 2.9. *Strongylognathus testaceus* (SCHENCK 1852) (nrs. 11, 31, 32 and 33)

This obligate parasitic species of *Tetramorium caespitum* seems to be less rare than *Anergates atratulus*. Due to its specific life cycle *S. testaceus* is never an abundant species of dry heath and is surely a rare species in Flanders. Workers do exist, but are seldom found and are not active.

### Conclusions

The conclusions of our work are:

From the former enumeration, conclusions about the knowledge of the distribution and completeness of the Belgian ant fauna can be made.

1. Using SEIFERT (1996) as standard determination work, puts the completeness about the Belgian ant fauna in a totally different daylight. Several species, from which almost nothing is known on their distribution and ecological preferences, were discovered at unexpected locations. Even species thought to be well known for the myrmecologists, can give some interesting surprise. For instance, the presence of some rarely species can be dependent on some coincidental facts of the so far unknown microhabitat and microclimate they prefer.
2. To gather records on nest-localities and ecological preferences of this rare and other interesting ant species, more adequate and intensive collection-methods will be needed. Next

to laborious nest-collection also collection with pitfalls and coloured waterfalls can give us important information. Using pitfalls during a complete year cycle, can tell us more about the period of mating flights, activity and exact ecological preferences of several ant species.

3. A lot of ant species are still discussible whether they are really different species or ecotypes of the same species (*Lasius alienus* complex, *Myrmica lonae*). Also a lot of taxonomically issues on names are disputable (*Lasius meridionalis* versus *Lasius rabaudi*). A standard work as SEIFERT (1996) can avoid these problems.
4. Some other new species for the Belgian ant fauna can be expected (*Myrmica lonae*, some *Leptothorax*-species, ...).

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