

## Scale insects of Belgium (Hemiptera: Coccoidea)

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### Abstract

Based on a literature survey and the collection present in the Royal Belgian Institute of Natural Sciences, 37 species of scale insects are listed for the Belgian fauna, however, only 13 species could be confirmed during the present study. With the exception of the exotic *Pulvinaria* species, which cause considerable damage to broad-leaved trees, the Coccoidea have hardly received any attention in Belgium. With some dedicated effort, it should be possible to find at least a hundred different species in Belgium.

**Keywords** : checklist, diversity, Belgian fauna.

### Samenvatting

Gebaseerd op de beschikbare literatuur en de collectie van het Koninklijk Belgisch Instituut voor Natuurwetenschappen werden 37 soorten schildluizen gemeld voor de Belgische fauna. Tijdens deze studie konden echter slechts 13 soorten worden bevestigd. Met uitzondering van de exotische *Pulvinaria* soorten, die ernstige schade kunnen toebrengen aan loofbomen, werden schildluizen bijna niet bestudeerd in België. Door gericht onderzoek moet het echter mogelijk zijn om minstens 100 soorten aan te treffen in België.

### Résumé

Basé sur la littérature et la collection présente à l'Institut royal des Sciences naturelles de Belgique, 37 espèces de coccides sont mentionnées pour la faune belge, dont seulement 13 ont pu être confirmées durant cette étude. A l'exception des cochenilles pulvinaires exotiques, qui causent beaucoup de dégâts aux arbres à feuilles, les Coccoidea n'avaient reçu que très peu d'attention en Belgique. Avec un effort dirigé, il doit être possible de trouver au moins une centaine d'espèces différentes en Belgique.

### Introduction

Coccoidea or scale insects belong to the order of the Hemiptera, however, they can hardly be recognised as being insects. In addition, they are difficult to find because of their cryptic life habits: they are almost motionless, often small and well camouflaged and they often live on roots, in leaf sheets or in bark crevices. Usually, they can only be observed as a scale, which is in most species circular, ovoid or elongated. Due to these characteristics, scale insects have hardly received any attention in Belgium. In the present paper, the literature dealing with Coccoidea in Belgium is reviewed and the specimens from the collection of the Royal Belgian Institute of

Natural Sciences are identified in order to compile a checklist of the Belgian Coccoidea.

### Material and methods

Scale insects were mounted on microscopic slides and identified according to KOSZTARAB & KOZAR (1988). The taxonomy of FAUNA EUROPAEA (2007) has been followed.

### Results

LAMEERE (1895) listed 44 species of scale insects for Belgium, however, a lot of species were synonymised and only 28 species are still valid (Table 1). No material of that period was conserved and only 5 of the mentioned species

could be confirmed for the Belgian fauna during the present study: *Pulvinaria vitis*, *Chionaspis salicis*, *Lepidosaphes ulmi*, *Kermes quercus* and *Orthezia urticae*.

Ghesquière (1933a,b) reported *Carulaspis visci* from juniper in Anhé, however, this turned out to be *C. juniperi*. *Newsteadia collarti*, which is now a synonym of *Newsteadia floccosa*, was described from Brussels by Ghesquière (1933c, 1934a,b). *Pseudochermes fraxini* was reported by Van den Bruel (1939) and Ghesquière (1939), however, the occurrence of this species in Belgium could not be confirmed here. *Kermes quercus* was observed in Gembloux by Van den Bruel (1946). Ghesquière (1946) reported *Ortheziola vej dovskiyi* from Nismes and *N. floccosa* from Brussels. Ghesquière (1947a) reported *Coccus abietis* from Tervuren, which turned out to be *Parthenolecanium pomeranicum*, and also mentioned *Aspidiotus nerii*, which could not be confirmed here. *Arctorthezia cataphracta* and *N. floccosa* were collected in the Hautes Fagnes by Ghesquière (1947b, 1948). Verstraeten & Seutin (1969) reported *Carulaspis visci* from juniper in Enghien, however, also here it probably concerns *C. juniperi*. *Pseudaulacaspis pentagona* was reported from Tervuren by Allaer (1976), however, this species could not be confirmed here. Kosztarab & Kozar (1988) reported three species specifically for Belgium: *Newsteadia floccosa*, *Ortheziola vej dovskiyi* and *Diaspidiotus pyri*, however, the latter species also could not be confirmed for Belgium during the present study.

More recently, the study of scale insects in Belgium was mainly focussed on the occurrence and the possible control of several exotic species of *Pulvinaria* in Belgium, that already caused a lot of damage to broad-leaved trees. *P. hydrangeae* was first observed in Belgium by Merlin *et al.* (1988). Little later, Verstraeten & Merlin (1989) reported three different exotic species of *Pulvinaria* for Belgium: *P. hydrangeae*, *P. regalis* and *P. floccifera*, the latter species was already reported by Lameere (1895). Several studies deal with the biological and chemical control of these pest species (Georis 1990, Merlin *et al.* 1988, 1992, Schiffers *et al.* 1993, Squerens *et al.* 1992, Tondeur *et al.* 1990a,b, 1992).

Table 1. Checklist of the Belgian scale insects. Species that could not be confirmed for the Belgian fauna during the present study are indicated with a question mark.

Order Hemiptera
Superfamily Coccoidea
Family Asterolecaniidae
1. <i>Asterodiaspis variolosa</i> (RATZEBURG 1870) ?
Family Coccidae
2. <i>Coccus hesperidum</i> LINNAEUS 1758 ?
3. <i>Eulecanium tiliae</i> (LINNAEUS 1758) ?
4. <i>Parthenolecanium corni corni</i> (BOUCHÉ 1844) ?
5. <i>Parthenolecanium persicae</i> (FABRICIUS 1776) ?
6. <i>Parthenolecanium pomeranicum</i> (KAWECKI 1954)
7. <i>Physokermes hemicyphus</i> (DALMAN 1826) ?
8. <i>Pulvinaria floccifera</i> (WESTWOOD 1870)
9. <i>Pulvinaria hydrangeae</i> STEINWEDEN 1946
10. <i>Pulvinaria regalis</i> CANARD 1968
11. <i>Pulvinaria vitis</i> (LINNAEUS 1758)
12. <i>Sphaerolecanium prunastri</i> (BOYER DE FONSCOLOMBE 1834) ?
Family Diaspididae
13. <i>Aonidia lauri</i> (BOUCHÉ 1833) ?
14. <i>Aspidiotus nerii</i> BOUCHÉ 1833 ?
15. <i>Aulacaspis rosae</i> (BOUCHÉ 1833) ?
16. <i>Carulaspis juniperi</i> (BOUCHÉ 1851)
17. <i>Chionaspis salicis</i> (LINNAEUS 1758)
18. <i>Diaspidiotus ostreaeformis</i> (CURTIS 1843) ?
19. <i>Diaspidiotus pyri</i> (LICHTENSTEIN 1881) ?
20. <i>Diaspidiotus zonatus</i> (FAUENFELD 1868) ?
21. <i>Diaspis boisduvalii</i> SIGNORET 1869 ?
22. <i>Dynaspidiotus abietis</i> (SCHRANK 1776) ?
23. <i>Epidiaspis leperii</i> (SIGNORET 1869) ?
24. <i>Hemiberlesia rapax</i> (COMSTOCK 1881) ?
25. <i>Lepidosaphes ulmi</i> (LINNAEUS 1758)
26. <i>Leucaspis pini</i> (HARTIG 1839) ?
27. <i>Pseudaulacaspis pentagona</i> (TARGIONI TOZZETTI 1886) ?
Family Eriococcidae
28. <i>Cryptococcus fagisuga</i> LINDINGER 1936 ?
29. <i>Gossyparia spuria</i> (MODEER 1778) ?
30. <i>Pseudochermes fraxini</i> (KALTENBACH 1860) ?
Family Kermesidae
31. <i>Kermes quercus</i> (LINNAEUS 1758)
Family Ortheziidae
32. <i>Arctorthezia cataphracta</i> (SHAW 1794)
33. <i>Newsteadia floccosa</i> (DE GEER 1778)
34. <i>Orthezia urticae</i> (LINNAEUS 1758)
35. <i>Ortheziola vej dovskiyi</i> ŠULC 1895
Family Pseudococcidae
36. <i>Phenacoccus aceris</i> (SIGNORET 1875) ?
37. <i>Pseudococcus longispinus</i> (TARGIONI TOZZETTI 1867) ?

Based on KOSZTARAB & KOZAR (1988) combined with unpublished data of the Netherlands Plant Protection Service, Maurice Janssen indicates that 27 species have been recorded in Belgium: 19 in the wild and 8 in greenhouses (PEETERS *et al.* 2003).

### Discussion

JANSEN (1999) reported 66 species of scale insects from the Netherlands, however, based on the number of species occurring in the United Kingdom and Germany, it was noted that the fauna is likely to be much richer and that this number could probably be doubled. Based on figures and tendencies in the Netherlands, the United Kingdom and Central Europe, Maurice Janssen expects for Belgium a total species number of 100 to 125 in the field, complemented with approximately 50 species in greenhouses (PEETERS *et al.* 2003).

### Conclusions

Of the 37 species of scale insects that have been reported for the Belgian fauna, only 13 could be confirmed during the present study, however, more than 100 species are expected. It can therefore be concluded that still a lot of new species can be discovered for Belgium.

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## A list of ant species collected in the surrounding area of Rocher Frédéricq (Hockai) with the first record of *Leptothorax gredleri* MAYR, 1855 for Belgium

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### Abstract

During a field trip in the surrounding area of Rocher Frédéricq in Hockai, Belgium (23/VI/2007), we found several workers of the so far unrecorded but expected ant *Leptothorax gredleri* MAYR, 1855. On this big rock (known as Rocher Frédéricq) and its surroundings we also recorded workers of *Leptothorax acervorum* (FABRICIUS, 1793), *Leptothorax muscorum* (NYLANDER, 1846) and several *Temnothorax* and *Myrmica* species which were foraging between the cracks and mosses on the rock. We give comments on expected places where other populations of this species may be found and we discuss its status in Belgium.

**Keywords:** new species, Faunistics, *Leptothorax gredleri*

### Résumé

Lors d'une excursion dans les environs du Rocher Frédéricq à Hockai (23/VI/07), nous avons trouvé plusieurs ouvrières de *Leptothorax gredleri*, espèce jusqu'ici non repérioriée mais attendue dans notre