

The Belgian entomological index: Where have we been writing about?

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Abstract

We present the Belgian entomological index (www.srbe-kbve.be/speciesIndex), an online database to look up what has been published about a genus or species in the Belgian entomological literature. So far *Atalanta*, *Belgian Journal of Entomology*, *Bulletin S.R.B.E./K.B.V.E.*, *Entomo-Info* and *Phegea* have been included. The current version contains 64119 records. We invite other entomologic journals to join our index. We also look for volunteers that want to help to further include older years of this journal.

Keywords: online database, genus, species

Samenvatting

We stellen de Belgische entomologische index voor (www.srbe-kbve.be/speciesIndex), een online databank waarin je kan opzoeken wat er gepubliceerd is van een genus of soort in de Belgische entomologische literatuur. Momenteel zijn *Atalanta*, *Belgian Journal of Entomology*, *Bulletin S.R.B.E./K.B.V.E.*, *Entomo-Info* en *Phegea* opgenomen. De huidige versie bevat reeds 64119 gegevens. We nodigen andere entomologische tijdschriften uit om zich aan te sluiten bij onze index. We zoeken ook vrijwilligers die willen helpen om de oudere jaren van dit tijdschrift te ontsluiten.

Résumé

Nous présentons l'index entomologique belge (www.srbe-kbve.be/speciesIndex), une base de données en ligne pour rechercher ce qui a été publié sur un genre ou une espèce dans la littérature entomologique belge. Jusqu'à présent, *Atalanta*, le *Belgian Journal of Entomology*, le *Bulletin S.R.B.E./K.B.V.E.*, *Entomo-Info* et *Phegea* sont concernés. La version actuelle contient 64119 données. Nous invitons d'autres revues entomologiques à rejoindre notre index. Nous recherchons également des bénévoles qui souhaiteraient contribuer à compléter les données des années non encore inventoriées des *Bulletin S.R.B.E./K.B.V.E.*.

Introduction

The entomology has a long history in Belgium, like in many European countries. Several entomologic societies go back over a century and have been publishing a large number of articles. These articles come from professionals as well as amateurs and deal with taxonomy, various faunistical topics and observations. Despite some groups are clearly more popular than others, a wide range of taxa and orders have been dealt with.

Due to this large number of papers within several different journals, it is becoming more and more difficult to retrieve data from the Belgian entomological literature. Imagine, that you find a rare

species and you want to know if it is the first time that it has been observed in Belgium. Or if you want to publish a checklist of a certain group or a review of a certain species. How can you be sure that you haven't overlooked an important article about that species if you haven't gone through all the issues of all the relevant journals.

In order to cope with this problem, several journals have started making indexes for their journal in which you can find out which species is mentioned on which page. As far as we know, these kinds of indexes exist for *Phegea*, *Entomo-info*, *Belgian Journal of Entomology* and *Bulletin S.R.B.E./K.B.V.E.* Still these indexes were limited to one journal and to one or a limited number of years.

In order to improve this system, we have been compiling and updating all these lists and made a digital online index, the Belgian entomological index. In this article, we want to give an overview of what has already been included and what not and what you can find within this index and how.

Material & methods

In order to start up this index, we started with the indexes that were already available in a printed or digital form. Only for *Phegea* a complete index already existed in which the name of the genus and species were listed separately. Unfortunately, this index does not provide a link between genus and species, which is not the case for the other indexes. For this article, we used the data of 1973-2011. For *Entomo-info*, an index is available for the first 15 years. All the years of the *Belgian Journal of Entomology* have been indexed and included as well. For the first years (1857-1980) of the *Bulletin S.R.B.E./K.B.V.E.* a partial index exists as this index only includes the species names mentioned in the reports of the meetings. In this period, these reports occupied a large part of the published work and it was the habit to bring and show new collected material which was then mentioned in the report (with label data). Further, presentations on entomologic topics were often given and written out the reports as well. Hence, many faunistical data of species ended up in these reports which could be retrieved by these indexes. Currently, only the second index has been digitized. Furthermore, a complete index was available for the latest years and new years are still added going back in the time. For this article, we used the data of 1976-2016. Finally, we also made an index for the latest years (digital available) of *Atalanta* which include 2004-2014.

As the order name was available in most indexes, we updated this info for all other records in the index. The result of this large database is available online for everybody at www.srbe-kbve.be/speciesIndex/.

Results

The current database includes already 64119 records (Table 1) which refer to at least 7469 unique genus names and 13105 unique species names (but note that synonyms have not been excluded and certain taxa share the same species name and even genus name). When excluding the records of *Phegea* (as they listed genus and species separately), 14203 unique taxa remain within 19281 records so clearly many species have been mentioned only once.

Table 1. Overview of the journals currently included in the Belgian entomological index with the number of years and records included.

Journal	Years included	Missing data	Number of records
<i>Atalanta</i>	11 (2004-2014)	1973-2003, 2015-2016	4171
<i>Belgian Journal of Entomology</i>	18 (1999-2016)	-	805
<i>Bulletin S.R.B.E./K.B.V.E.</i>	31 (1945-1975)	Reports only, 1857-1944	3309
<i>Bulletin S.R.B.E./K.B.V.E.</i>	41 (1976-2016)	-	8479
<i>Entomo-info</i>	15 (1990-2004)	2005-2016	2520
<i>Phegea</i>	39 (1973-2011)	2012-2016	18130 (genus)/ 27505 (species)
Total	155		64119

Table 2. Overview of the number of records included in the Belgian entomological index for each class and order.

Class/Order	Number of records
Arachnida	1841
Entognatha	58
Diplopoda	36
Gastropoda	27
Malacostraca	27
Chilopoda	24
Clitellata	11
Merostomata, Maxillopoda	<10
Insecta	
Lepidoptera	38391
Coleoptera	8666
Diptera	3480
Hymenoptera	3277
Hemiptera	1232
Odonata	576
Psocoptera	186
Orthoptera	162
Homoptera	139
Strepsiptera	94
Plecoptera	67
Trichoptera	65
Ephemeroptera	21
Mecoptera	21
Neuroptera	16
Thysanoptera	15
Blattodea	12
Dermaptera	12
Archaeognatha, Blattoptera, Embioptera, Mantodea, Megaloptera, Meganisoptera, Microcoryphia, Palaeodictyoptera, Phasmatodea, Raphidioptera, Siphonaptera, Thysanura, Zygentoma	<10

Table 2 gives an overview of the orders and classes that can be found in the current index. Besides the insects, the arachnids are well reported (3% of the records) while other classes have been strongly restricted in the entomological journals. Within the insects, the butterflies are clearly the most dominant group (60%). This is partly explained by the journal *Phegea* which is mainly dedicated to this order and which index was very complete. Furthermore, genus and species are indexed separately which results in a double amount of records. Nevertheless, the beetles (14%), flies and social insects (both 5%) follow at a wide distance. The true bugs and dragonflies close the ranks of groups with more than 500 records. Smaller number of records are mentioned for 25 other insect orders. Also the 20 most cited genera mainly contain butterflies, with *Polyommatus* and *Colias* as most mentioned. This list, furthermore, contains 5 beetles (*Carabus* and *Atheta* as most mentioned) and 1 parasitic wasp (*Dendrocerus*).

Only 8 genera are mentioned in all 5 journals, One ant (*Lasius*), one bee (*Andrena*) and one hoverfly (*Episyrphus*) and 5 beetles including 4 rove beetles. In general, there is a low similarity between the genera mentioned in any combination of two journals, meaning that they all have their own separate niche. The highest similarity is found between *Entomo-info*, *Atalanta* and *Phegea* with a similarity of 15 to 16% (so 15% of the genera mentioned in any of the two journals are mentioned in both). The similarity of these three journals with the *Bulletin S.R.B.E./K.B.V.E.* is a bit lower (13-14%). *Belgian Journal of Entomology* has the lowest similarity with other journals ranging from 1,0 to 1,7%, explained by the focus on describing new species often of non-European genera.

How to use the Belgian entomological index online?

Go to www.srbe-kbve.be/speciesIndex. You can specify either the genus or species and eventually the journal. Notice that the taxa are indexed as they have been published (only for *Phegea* the names have been updated using Fauna Europea, fauna-eu.org). So if you want to look up a species, also look up all the synonyms the species has been given in the past. It can help to look up the genus or species separately in order to find out records in *Phegea* or type errors in one of both names. You can also look up a part of the genus or species name which can be helpful for genera that share a part of their name. The current online version includes nearly 17000 records while the new version with more than 64000 records (as described here) will become available very soon.

Discussion

We believe that this index is very helpful for anybody who wants to write an article about the first record of a certain species in Belgium or for who wants to produce an overview of a certain species or group (e.g. checklist, atlas, determination key). Also if you are just interested in looking up info of a certain species or needs a certain article but can't remember when and where you have been reading it. Since the index became available online, it has been used to review articles submitted to the *Bulletin S.R.B.E./K.B.V.E.* This has already resulted in improving a 'first Belgian record of a species' to a second record and has provided additional information and records for many other submitted papers. Therefore, we can only advice all people that are writing about the Belgian entomologic fauna to certainly check this index.

However, one must realize that the current index only contains a smaller part of the published entomologic literature. Many years and several important journals are still missing. Therefore, we would like to encourage other entomologic societies and publishers of relevant journals to make a similar index and to include it in our joined index. If people are interested in these, we are certainly interested to help them to get started up. Also for the journals which are already included, it will take many more hours to fully include all years of that journal. For this reason, we are looking for volunteers that want to adopt a year of the *Bulletin S.R.B.E./K.B.V.E.* and digitise al the species that are mentioned and there reference (page, issue). We will provide you with the pdf's and a methodology. If you are interested for this please contact Isabelle Sauvage.

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