

## The merits of a European checklist of spiders (Arachnida: Araneae)

## Преимущества европейского чек-листа пауков (Arachnida: Araneae)

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**ABSTRACT:** The Fauna Europaea Project is outlined. Original publications were used, but so too where the available national or regional checklists. For the nomenclature and latest taxonomic updates the internet version of the World Spider Catalogue by Norman Platnick was used. The difficulties encountered when compiling a checklist of the spiders of Europe and their distributions are described. Next to conflicting views on taxonomy, numerous *nomina dubia*, old names, forgotten distribution records, and unlikely records were found; examples are presented. Names of localities are sometimes cryptic, new country records are hidden in texts about different subjects. The database will need constant up-dating for taxonomy and distributions because of the dynamic character of this type of research. A proposal is made to remove the *nomina dubia* from the list.

**РЕЗЮМЕ:** Описан проект Fauna Europaea. Были использованы оригинальные публикации, но также имеющиеся в наличии национальные и региональные чек-листы. Номенклатура и последние таксономические изменения были использованы согласно интернетной версии Мирового каталога пауков Нормана Платника. Описаны трудности, с которыми столкнулся автор во время составления чек-листа пауков Европы. Главными трудностями были противоречивые взгляды на таксономию, многочисленные *nomina dubia*, старые названия, забытые точки распространения и сомнительные указания. Приведены примеры. Иногда названия локалитетов слегка криптичны, новые находки для графств скрыты в текстах, посвященных другим проблемам. База данных нуждается в постоянном усовершенствовании данных по таксономии и распространению из-за динамичного развития этого типа исследований. Сделано предложение удалить из чек-листа *nomina dubia*.

**KEY WORDS:** checklist, distribution, *Eresus*, Fauna Europaea, forgotten names, lost names, *nomen dubium*, spiders.

**КЛЮЧЕВЫЕ СЛОВА:** чек-лист, распространение, *Eresus*, Fauna Europaea, забытые имена, утерянные имена, *nomen dubium*, пауки.

### Introduction

On earlier occasions I have already demonstrated the preparatorial activities for the production of a European checklist on spiders. For the Stara Lesna Colloquium I had made a preliminary survey of the literature sources for

species lists and distribution data for European countries. Thanks to the many suggestions received I was able to ‘complete’ this overview [Helsdingen van, 2000]. The reason for compiling this list of sources was the conviction that species protection and nature conservation activities in Europe would soon need more de-

tailed information and that we should be the scientific body to supply arachnological data.

At the Szombathély Colloquium I informed you about the European project Fauna Europaea, which had been started in the meantime. I briefly outlined the aims and limits of the project [Helsdingen van, 2004]. The European Union wants to have a database with all European animals, their scientific names and relevant synonyms, their presence or absence in all European countries or parts thereof, and an indication of relevant gaps in our knowledge.

In this third contribution I want to inform you of the results obtained to date in this European project. It is mostly a survey of the difficulties encountered, the points of conflict, and the inconsistencies. Then I demonstrate the achievements, the merits of the list and what we can learn from it. Finally, I explain what still needs to be done.

### The vicissitudes

Science, including taxonomy, is a free activity. It should be realized that it is highly subjective. Anybody may collect spiders, anybody may identify spiders, anybody may work on spider taxonomy and decide on the status of a species. New species may be described, synonymies established, recognized species split up in separate taxonomic units, both by the layman and the professional. There does not exist any official certificate or license to guarantee quality. Professional training may help, but personal faculties like an eye for details and great accuracy are just as important. Together they must lead to qualitatively trustworthy results. The qualitative standard has to be set very high, because the product — from identification label to publication — will have nearly eternal life. This is not too serious a problem if we remember that in science there is the prerequisite that any conclusion can be falsified. The true and only check is the outside world of critical experts, who will test hypotheses and conclusions.

This is one of the main thoughts which surfaces when one tries to summarize what 250 years of spider taxonomy has led to. It is a highly subjective occupation. It is work of humankind!

### Sources and basic support

For the collation of the requested taxonomic and distributional data, publications such as books, articles in journals and internet sites were used. A second source, collections and unpublished data, were not used. They may contain many new distribution records of interest, but this type of research falls outside the scope of the present project.

From early on there have been efforts to present the 'State of the Art' in spider nomenclature and distributions of species by making summaries of what has been published. Bonnet compiled a catalogue of all the spider species ever described [Bonnet, 1945–1961]. It was supposed to be a complete survey of the spiders described up to 1939, with all the references for all species. From a small project it developed into his lifework. It certainly has a very high coverage but is limited by his end date (1939). It includes all references to all spider literature he could find about all subjects (anatomy, embryology, systematics, behaviour, zoogeography, etc.), which makes it sometimes difficult to extract the more important papers.

Roewer also produced a catalogue, but was more focussed on taxonomy and restricted his references to descriptive and diagnostic publications [Roewer, 1942–1954], which makes it more useful taxonomic research. He included all the literature up to 1940. Brignoli [1983] continued Roewer's work, but could only finish one part before he died. This covered the period of 1940–1981. The challenge was picked up by Platnick, who delivered three printed issues of his "Advances in spider taxonomy" [Platnick, 1989, 1993, 1997] and after that continued with internet versions. Without Platnick's Catalog it would be very difficult to find one's way through the enormous amount of taxonomic literature with descriptions of new species, recognition of synonyms and new views on classification.

Platnick follows what is published and tries to insert the new data in his database. He often has to take decisions on nomenclatorial issues because data are conflicting or not presented in a convincing way. It is clear that he has not seen, or not accepted, every publication. It is also

obvious that in consequence of his way of working Platnick cannot always present the full distribution of a species. Purely faunistic papers are not included by him. His support is therefore largely limited to species names and synonymies and can be used for distribution purposes only in a restricted and superficial way.

A very useful source are the national checklists, printed or on the internet. Many countries have already brought together the relevant data for their country. The advantage of an internet list is the updating facility, which, however, is not always used. Often the placing of a national checklist on the internet is the end of a project and one forgets to organize the continuation.

## Results

### General results

The project Fauna Europaea is described as "A project to assemble a database of the scientific names and distributions of all living multicellular European land and fresh-water animals". I am involved with the database for spiders. One of the directives of the project is the exclusive use of published data. New but still undescribed species have to wait until their publication. Unpublished distribution records have to be neglected and *nomina dubia* should not be included.

It is estimated that the final checklist of the living European land fauna will comprise 100 000 species. There is now a first version of a database with 4 300 species of spiders in Europe and their distribution over the countries.

When compiling this list I became very much aware of the impossibility of ever finishing such a project properly. Not only is this part of science highly dynamic, with new publications appearing all the time, but also because of the subjective character of taxonomy. One comes across many conflicting data and has to decide how to include them in the database. Of course one makes notes of such confusing situations and reports them to the commissioner of the project. To the organizers of the project it is clear that building the database is not a taxonomic research project but only an administrative occupation. It does not solve taxonomic problems, only pinpoints them.

### Indigenous species

The European Checklist should comprise the names of indigenous species and indicate the distribution over the countries of Europe. First we have to define 'Indigenous species'. Since a fauna, national or European, is an assemblage of species and species are living and dynamic organisms which try to spread and enlarge their ranges, we regularly see new arrivals in a country. As long as they have not established natural breeding populations in a certain country they will be considered an exotic element there. When a breeding population has established they are indigenous. But how are we to know when exactly this situation has occurred? *Pholcus phalangioides* (Fuesslin, 1775) spread northwards in the early twentieth century as an intruder, but it is now recognized as indigenous in most countries. Is *Uloborus plumipes* Lucas, 1846 still an exotic faunal element in northern European countries, while it reproduces quite easily wherever it occurs, be it preferably in hothouses? Is there a difference between the spreading by interference of man and spreading by natural processes?

The disappearance of species is the phenomenon reversed and the question then is how long a species should stay on the list of indigenous species after it has not been observed during a number of years. Each country knows its single, unique records of a European species. Does or did that species have a local breeding population? The answer, if it could be given, would have consequences for the national checklist, and possibly also for the European checklist.

### Subspecies

Subspecies in spiders are not frequently used. Of course there is the general confusion about how the term subspecies has been used in the past, ranging from colour form to a geographically isolated population. Many subspecific names have not survived revisions when the forms were found to fall within the range of variation for the species. I have simply followed Platnick in his different catalogues, in printed form and on the internet.

### Nomina dubia

Within the context of the Fauna Europaea project *nomina dubia* have to be neglected. I do

not agree with this. In whatever way one looks at such a doubtful name, we must realize that it is the name of a species. What we do not know is which species. Many of these species in their present stage are endemics. The names are available according to the rules of nomenclature. The description is insufficient and the type-specimen(s) is lost or presumably lost. In my opinion this category of names has to disappear. They are an ever-present burden which pollutes checklists and catalogues. If we are optimistic, *nomina dubia* are a legacy of the past and new *nomina dubia* are not created any more. Thus the list of these doubtful names can only get shorter, and it will get shorter every time we find what such a name stands for. In many if not most cases it must be possible to decide on the identity of the species concerned.

### Specific problems

The following examples are presented here to give an idea of the problems one meets when trying to compile a European list of spiders. They form not a summary of the most serious special cases encountered, but are examples of the many comparable cases found. It is a plea for improvement in the future rather than a reprimand.

National checklists can be good, but may also be full of mistakes. The Italian checklist is an example of the latter. It was first published in printed form [Pesarini, 1994] in the general "Checklist delle specie della fauna italiana" edited by Prof. Minelli and later was put on the internet. To my regret the mistakes had not been corrected and the omissions had not been filled in. Luckily the majority of the other lists is very useful.

Some checklists are more user-friendly than others. In a checklist an alphabetical order of families and genera and species within the families and genera, respectively, make such a list most easily accessible. Great Britain has always registered well which species occur within its boundaries, but their checklist apparently tries to unite two different subjects in a one-dimensional printed form, viz., a list of British species (which is one-dimensional), and supposed rela-

tionships between families and between genera within families (which are more-dimensional). This makes it very difficult to quickly scan its contents and check for the presence of a name.

One type of conflicting registration is when a certain name is marked as *nomen dubium* by one author but recognized by another. *Pellenes campylophorus* (Thorell, 1875) (Salticidae), for instance, is placed as *nomen dubium* from Ukraine by Platnick [2003] and Prószyński [2003], but the species is also present on the checklist of Hungary. *Cyrtachenius siculus* Latreille, 1831 (Cyrtacheniiidae) according to Platnick [2003] is a *nomen dubium* but nevertheless is on the list of Sicily [Messina *et al.*, 1996]. There are many examples of this type.

Sometimes species have never been mentioned again after their description and seem to have disappeared or been forgotten. Apparently there is a description, but no-one has re-examined the original type material. In some cases time has made such a species a *nomen oblitum*, if one wants. If it appears to be a good species, the name can be maintained.

Of course one comes across taxonomically problematic cases such as *Eresus cinnaberinus-sandaliatus*: *Eresus niger* (Petagna, 1787) had to be replaced by *Eresus cinnaberinus* (Olivier, 1789), because the former name was preoccupied. Despite that *Eresus niger* is still used in publications. Ratschker & Bellmann [1995] have suggested the existence of two species in western and central Europe and revived the younger synonym *Eresus sandaliatus* for the second species. Some countries have not yet decided which species they harbor and the distributions of the two are not clear yet<sup>1</sup>. I am convinced that future revisions of notoriously difficult taxa like *Philodromus* will lead to different zoogeographic patterns.

It often proves to be difficult to locate the geographic names on easily accessible atlases, such as the Times Atlas. It is strongly recommended to refer to the names of islands, prov-

<sup>1</sup> The red setae on the third pair of legs form a useful diagnostic character for *E. cinnaberinus*, but the period of activity of the males is confusing: I have seen males walking around in the Dobrugea at the end of May. [There appears to be a third species in that region, M. Řezáč (pers. comm.)]

inces, towns and villages used in the Times Atlas instead of using local or national names, even when the latter are much better. How can one find Epiros in Greece if it is mentioned and indexed as Ipiros in the Times Atlas? One wants to help the reader to trace the locality or region a species was found, but makes it difficult by using a deviant spelling!

New distribution records mentioned somewhere in an article on a completely different subject are easily overlooked. In the very nice publication on the mating behaviour of *Theridion varians* and related species by Barbara Knoflach [Knoflach, 1998] the provenance of specimens is only briefly indicated: “*Theridion melanostictum* was collected in Cyprus (first record for Cyprus)”.

### Evaluation

Two different types of evaluation are needed. Firstly, it should be checked if all published species names and all published country records have been entered correctly. Have some publications been overlooked? This is an administrative check. Secondly, the data should be critically scrutinized on their scientific merits. This is a scientific check and it is in fact what we are doing all the time. I hope that this scientific check is stimulated by the database of the Fauna Europaea, which presents an overview of the assembled data and thus makes it accessible.

For the administrative faults I may be blamed. For the scientific errors the authors of the publications are to be blamed: the taxonomists and the faunists. I remind you of what I have said above about the subjectivity of our work. We may find wrong identifications, conflicting opinions about the identity of species, conflicting opinions about the taxonomic status of a taxonomic unit. Are we dealing with a species or a subspecies? Do we have one species or two closely resembling (sibling, closely related) species?

Official evaluation will be carried out by one of the Fauna Europaea Secretariats before the database is released on the internet site of the organization.

### Future

It is hoped by the organizers of the Fauna Europaea Project that the database will stimulate further investigation into local faunas and the production of regional or national checklists, which will help to improve the European checklist and distributional dataset. The list of spiders can be found on the Fauna Europaea website (<http://www.faunaeur.org>).

Once we have the list complete and accepted, we may expect new developments. We can use the list as a basis for curatorial work and add type-depositories. Lists of endemic species, which are an issue in nature conservation, are another possibility. We may add ecological data or references to relevant sources. It may stimulate the production of more precise distribution maps. There is, in fact, a whole range of possible data collation which can be linked to such a list.

Most important is that the organizers not only try to finish the complete list of all European animals, but also think about a system of permanent up-dating. The project has to be continued.

### Proposal

#### *Nomina dubia*

Most of us will have the feeling that *nomina dubia* are synonyms of other recognized species. We are often dealing with a well-investigated geographic area. We know the distributions of the species in that area. For a specialist of the group concerned it should not be too difficult to recognize which species the author had in front of him and synonymize it with the most likely recognized species. In fact one has only to make the decision and publish it!

I propose that a survey is made of the *nomina dubia* in each country. A responsible person is selected in each country to deal with the study of these doubtful names. A strategy should be developed on how to proceed and a solution for each *nomen dubium* should be found. The possible solutions could be: (1) find the original material and identify the species, (2) state the original material to be lost and identify the

species at the hand of the description, (3) make the species a junior synonym or suppress it as a *nomen oblitum*. The action will clarify the list and make it more orderly.

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