

On the spider species *Oecobius amboseli* Shear & Benoit, 1974 (Araneae; Oecobiidae) newly found in Belgium and Rwanda

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Summary

Oecobius amboseli Shear & Benoit, 1974 is reported for the first time from Belgium and from Rwanda. Male and female are briefly described and illustrations of genitalia and habitus are provided. The occurrence of *O. navus* Blackwall, 1859 in Belgium is also discussed.

Résumé

Oecobius amboseli Shear & Benoit, 1974 est rapportée pour la première fois de Belgique et du Rwanda. Une brève description du mâle et de la femelle est présentée et des illustrations des organes génitaux et des habitus sont exposées. La présence de *O. navus* Blackwall, 1859 en Belgique est également discutée.

Samenvatting

Oecobius amboseli Shear & Benoit, 1974 wordt voor de eerste keer gemeld van België en Rwanda. Beide seksen worden kort beschreven en de genitaliën en de habitus worden geïllustreerd. De aanwezigheid van *O. navus* Blackwall, 1859 in België wordt ook besproken.

Introduction

Oecobius spiders, also known as wall spiders, are small spiders usually found among rocks or walls. They are cribellate spiders that live under small, flat, bi-layered star-shaped sheet webs placed over crevices or corners (JOCQUÉ & DIPPENAAR-SCHOEMAN, 2007). These spiders can be found around or in human habitations, especially in colder regions (ROBERTS, 2009). Some species appear to be synanthropic (JOCQUÉ & DIPPENAAR-SCHOEMAN, 2007). The main prey for *Oecobius* species seems to be ants (LE PERU, 2011). The prey is immobilized while the spider circles it swiftly, wrapping it in silk. When disturbed, the spider flees with great speed, straight forward and apparently without producing silk (JOCQUÉ, 1988). The way the spider recovers its prey afterwards is remarkable: it runs around in increasingly large spirals until the prey is reached (JOCQUÉ, 1988).

This short note reports the discovery of an *Oecobius* species newly found in Belgium and Rwanda, *Oecobius amboseli* Shear & Benoit, 1974 and provides an update on the presence of *O. navus* in Belgium.

Oecobius in Belgium

The first record of the family Oecobiidae in Belgium was reported by Rudy Jocqué during the 16th meeting of ARABEL held on March 17, 1984.

He explained that a small population of an *Oecobius* species was found in the building “Palais des Colonies” of the Royal Museum for Central Africa (RMCA) in Tervuren. It was tentatively determined as *Oecobius annulipes* Lucas, 1846.

Whereas the family Oecobiidae is effectively mentioned for Belgium in the catalog of BOSMANS (2009), the species is not specified in the checklist. Nevertheless, in the checklist of the ARABEL official web site (<http://www.arabel.ugent.be/>), one can see that only *Oecobius navus* Blackwall, 1859 appears to be present in the Belgian arachnofauna. Actually, *O. annulipes* is a North African species that only occurs in Algeria (PLATNICK, 2014). It was therefore supposed that the specimens found at Tervuren by Rudy Jocqué were probably *O. navus* which is considered a cosmopolitan species, largely introduced in Europe and other places in the world (ROBERTS, 2009). Indeed, *O. navus* was often misidentified as *Oecobius annulipes*

(ROBERTS, 2009, VOSS *et al.*, 2007), which can easily be observed in the World Spider Catalog (PLATNICK, 2014).

Several *Oecobius* specimens were observed in April 2013 in the cellars of the building “Palais des Colonies” of the RMCA. It was first thought that the species obviously would belong to *Oecobius navus* already known from the same place (JOCQUÉ, 1984, 1988). However, stereomicroscopic observation of a couple of specimens revealed to our surprise that the genitalia didn't fit the description of *O. navus*, neither of any other known European species. In fact, both male and female genitalia are very similar to those illustrated by EL-HENNAWY (2004), but also to those of TOFT & WUNDERLICH (2012) and to the photograph of the epigyne of *O. amboseli* in IJLAND (2013).

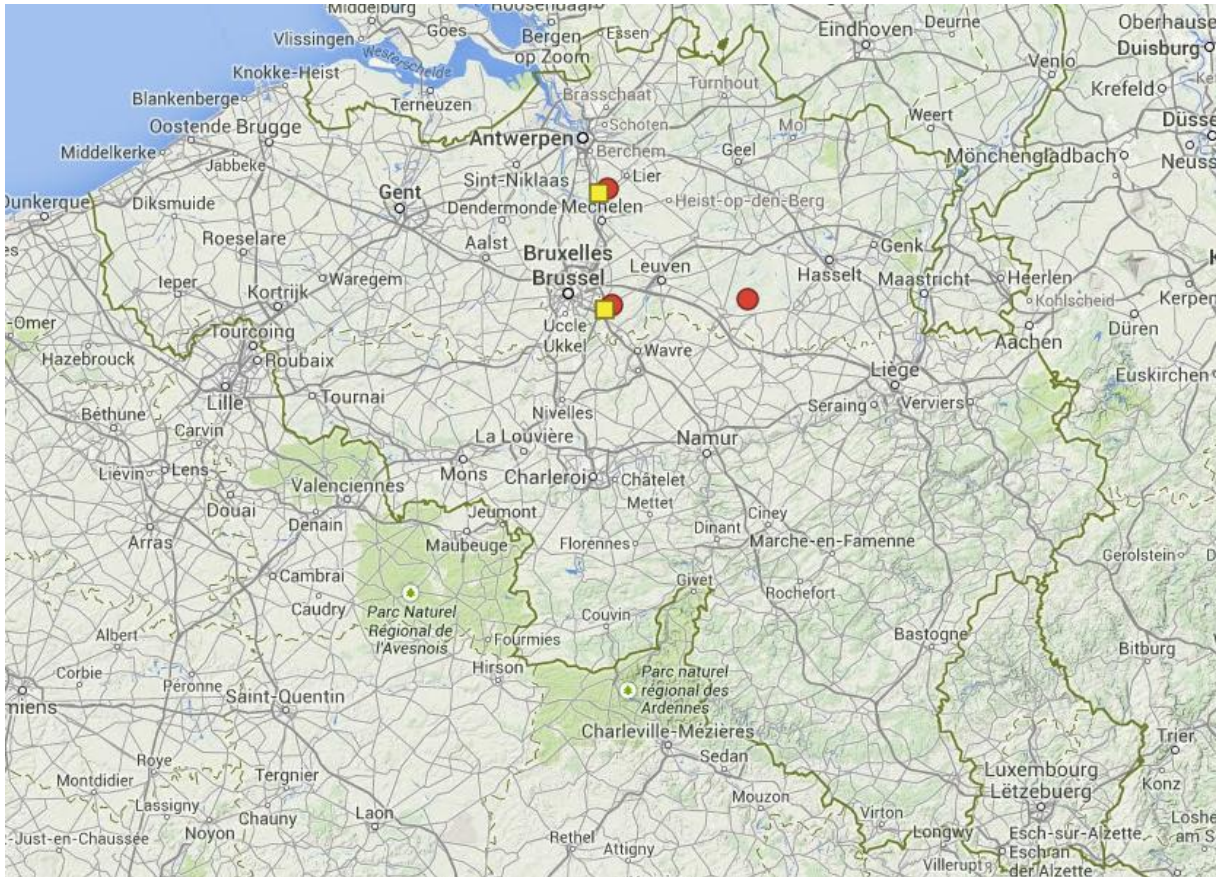


Figure 1. Distribution of *Oecobius* species in Belgium. Yellow square: *O. amboseli*. Red circle: *O. navus*.

Belgium is currently the third European country where this species appears to be introduced after Denmark, where an important population was found in a basement room of the Aarhus University (TOFT & WUNDERLICH, 2012), and in the Netherlands where one female was discovered on the wall in a house in Leiden (IJLAND, 2013). However, no population seems to be established in the Netherlands. The discovery of this species in Tervuren also allowed Johan Van Keer to finally identify a male specimen he collected in Duffel on the 26th of July, 2007, on a wall in a warehouse with aluminum products.

Oecobius navus is known from three localities in Belgium (Figure 1). According to the ARABEL database, *Oecobius navus* is recorded from only two localities, from Neerlinter (5 females collected by Kevin Lambeets in a house, 26/12/2004) and from Duffel (1 female collected by Johan Van Keer on a wall in a warehouse, 21/10/1991). It was also reported from Tervuren by Rudy Jocqué (JOCQUÉ, 1984, 1988) but no material from this location is recorded in the ARABEL database.

***Oecobius* in Rwanda**

During a vacation in Rwanda in August, the first author noted the presence of some *Oecobius* individuals in houses in Kigali and other places (Figure 2). After examination of some collected specimens, it seems that at least two species occur inside habitations in Rwanda. The most abundant one, at least in this time of year, was *Oecobius amboseli* (Figure 4). Examination of identified material in the RMCA collection also confirms its presence and allows us to get a clearer view on its distribution in Rwanda and other countries (Figure 7). The other species, not yet identified, was only observed in two different houses in Kigali (three females collected). It is the first time that *Oecobius*, and thus *O. amboseli*, is reported from Rwanda.

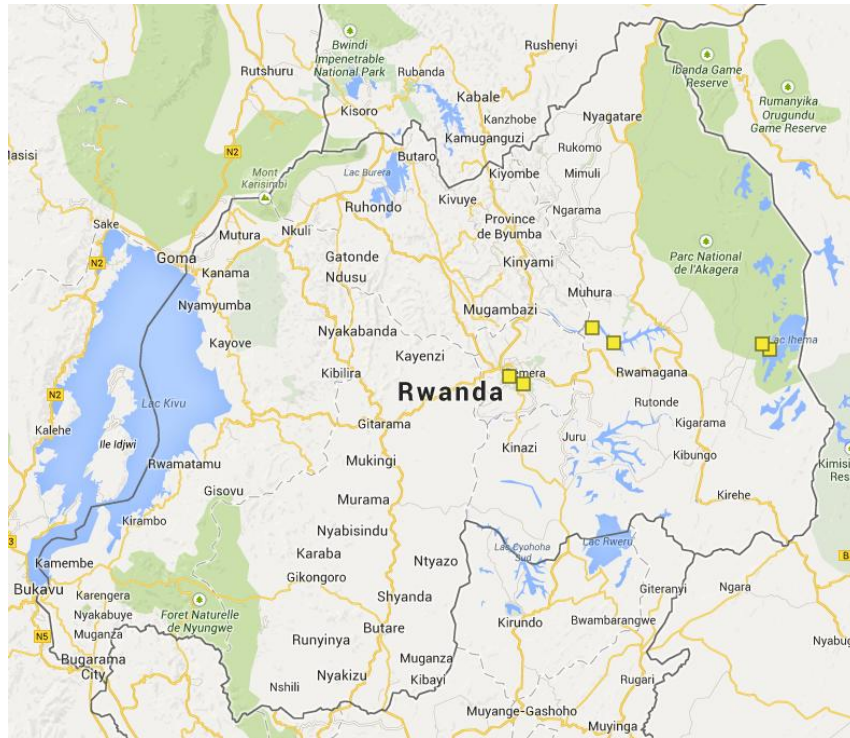


Figure 2. Distribution of *Oecobius amboseli* found in Rwanda.

Material and methods

Specimens were examined with a Zeiss Stemi 2000 stereo microscope. Measurements and photographs of the habitus and details of the detached male palps and female genitalia were taken with a Leica MZ16 using the LAS automontage software (ver. 3.8). The female genitalia were dissected and digested using a tablet of Total Care Enzima product (protein removal system originally for cleaning lenses and containing Subtilisin A - 0,4 mg / tablet) and then deposited in 75% ethanol. Living specimens were photographed with a Canon EOS 5D Mark III with the Canon lens MP-E 65mm f2.8 1-5x macro and the MT-24EX twin flash used with homemade diffusers. All measurements are in millimeters.

A couple was collected from the cellar and deposited in the RMCA collections. Both sexes are briefly described and illustrations of the genitalia and of the habitus are provided.

Material examined:

Oecobius annulipes (= *navus*) – **FRANCE**, 1♂ 1♀. env. Nice, VIII-1966. Collection of P.L.G. Benoit (N°297).

Oecobius navus – **BELGIUM**, 1♀, Duffel, in a warehouse with aluminum products, on a wall, 21-X-1991, Van Keer J. (CJVK 1193).

Oecobius amboseli – **BELGIUM**, 1♂ 1♀, Tervuren, on the floor in the cellar of the building “Palais des Colonies” of the Royal Museum for Central Africa, 07-IV-2013, Henrard A. (MRAC-243293); 1♂, Duffel, in a warehouse with aluminum products, on a wall, 26-VII-2007, Van Keer J. (CJVK 2713). **RWANDA**, 2♀, P.N. Akagera, lac Ihema, pêcheurie, S 01° 55' E 030° 45', 1-XII-1985, inside house, Jocqué, Nsengimana & Michiels

(MRAC 165181); 1♂ 1♀: Kigali, district Nyarugenge, zone Kiyovu, KN 52 Street, S 1° 57' 27.2" E 30° 04' 06.6", 05-VIII-2014, inside house, Henrard A. (MRAC 243311); 1♂, Kigali, district Kicukiro, zone Gasave, KK 490 Street, S 1° 58' 39.3" E 30° 06' 15.1", 05-VIII-2014, inside house, Henrard A. (MRAC 243315); 1♂ 2♀, Kigali, zone Mununi, Dispensaire Centre Tomini Gian - Don du Friul, S 1° 50' 8" E 30° 16' 53", 03-VIII-2014, inside habitations, Henrard A. (MRAC 243312); 1♀, Province de l'Est, District Rwamagana, zone Gikoro/Musha, village Bwita, bord du lac Muhazi, S 1° 52' 25.4" E 30° 20' 09.8", 07-VIII-2014, inside habitation, Henrard A. (MRAC 243314); 3♂ 3♀: P.N. Akagera, Akagera Hotel, S 1° 52' 27.7" E 30° 42' 53.8", 10-VIII-2014, sur murs extérieurs bâtiments, Henrard A. (MRAC 243317) (Figure 3); 1♀, Akagera entrance - info office, S 1° 52' 27.7" E 30° 42' 53.8", 10-VIII-2014, inside habitation, Henrard A. (MRAC 243318)



Figure 3. *Oecobius amboseli*, male and female from Akagera National Park, Rwanda (MRAC-243317)

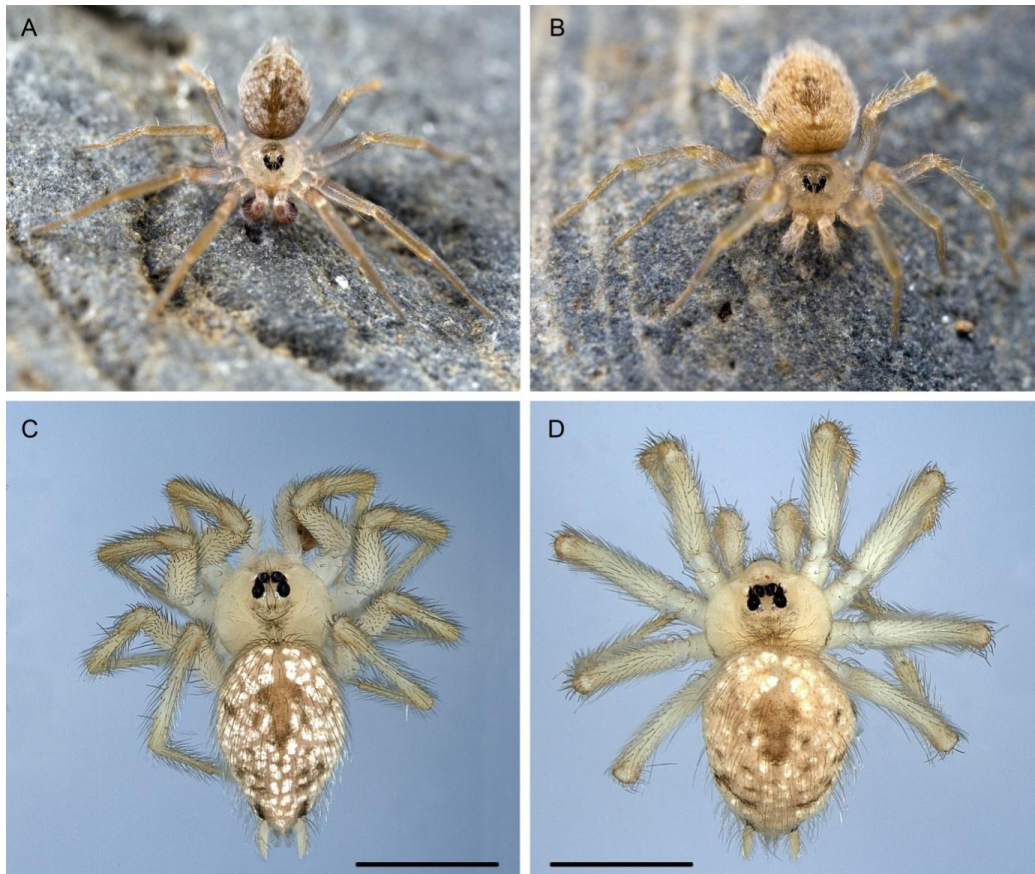


Figure 4 A-D. *Oecobius amboseli* from Tervuren, Belgium (MRAC-243293), Habitus in vivo and under 75% alcohol. A, C. Male. B, D. Female. Scale bar = 1 mm.

***Oecobius amboseli* Shear & Benoit, 1974**

Short description based on collected specimens from Tervuren (MRAC-243293)

Oecobius amboseli can be distinguished from *O. navus* by the wide depression of the epigyne with strongly sclerotized margins and by the slender and vertical radix of the male palp.

MALE (Figures 4A, 4C, 5A-C): Body length: 2.0 mm. Prosoma pale cream, with a darker inverted triangle just behind the slightly procurved posterior eye row; clypeus darkened, paler in the center, margin convex; sternum pale yellow; legs yellow with femora lighter than other segments; abdomen yellowish-brown dorsally with numerous small white spots and a few darker spots, forming a large, darkened arrow-shaped area; palp with first segments yellowish, cymbium and bulbus reddish when alive, brownish orange in alcohol; basally with a square, ridged structure (RS), radix apophysis (RA) slender and straight, translucent sickle-shaped structure (TS) between embolus and RA, embolus (E) short and sinuous, terminal apophysis (TA) with stout base and bent tip; E, TS, TA and RA converging medially.

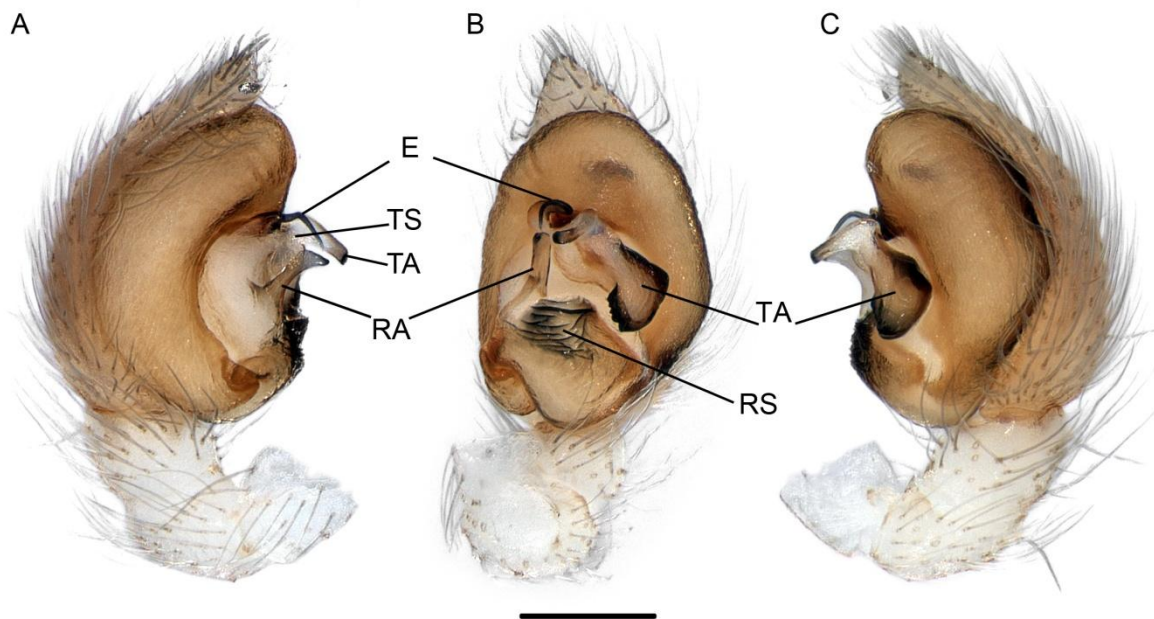


Figure 5. *Oecobius amboseli* (MRAC-243293), male palp. A. Prolateral view. B. Ventral view. C. Retrolateral view. E: embolus, RA: radix apophysis, RS: ridged structure, TA: terminal apophysis, TS: translucent sickle-shaped structure. Scale bar = 0.1 mm.

FEMALE (Figures 4B, 4D, 6A-D): Habitus and colour as in male: Epigyne area slightly sclerotized with wide depression, anterior part with keyhole structure provided anteriorly with two lateral protrusions, median part with lateral and anterior margin strongly sclerotized, anterior margin with two sinuous ridges, indented medially, posterior part ridged, with curved posterior margin and medially with small sclerotized vertical trait; vulva with central perforated membranous plate (PP), laterally on each side with one small, ovoid spermatheca (S) dorsally of the sclerotized lateral margins; each spermatheca connected anteriorly to a large membranous reniform bladder (MB) and posteriorly to a Y-shaped, slightly sclerotized structure (Y) associated with small membranous pouches.

Discussion

During the 16th meeting of ARABEL (17/04/1984) Rudy Jocqué stated that living specimens of *Oecobius annulipes* (= *O. navus* ?) were found in a building of the RMCA in Tervuren. It was also mentioned that samples of the same species collected at the same place (15 years before) were deposited in the collection of P.L.G. Benoit. Unfortunately it was impossible to trace these specimens (both from Jocqué and Benoit). In the identified samples from the collection of Benoit (which was available), there is only a couple identified as *O. annulipes* (= *O. navus*, checked!) from Nice in France (see material examined). As no other specimens of this species were found since, it was thus not possible to (re-)confirm with certainty the

identification and thus the presence of *O. navus* (or even the real *O. annulipes*, who knows?) from Tervuren.

However, the new discovery of a small population of *O. amboseli* in the cellars of the same building “Palais des Colonies” at the RMCA may not necessarily contradict the previous identification of JOCQUÉ (1984) and thus the presence of *O. navus* in Tervuren.

Indeed, in Belgium, the two species have been found at the same place: although the date of capture differs (see above), Johan Van Keer found them both in a warehouse in Duffel. This also means that *O. amboseli* is therefore known from two different localities in Belgium, which is probably (and surprisingly) the consequence of two independent introductions.

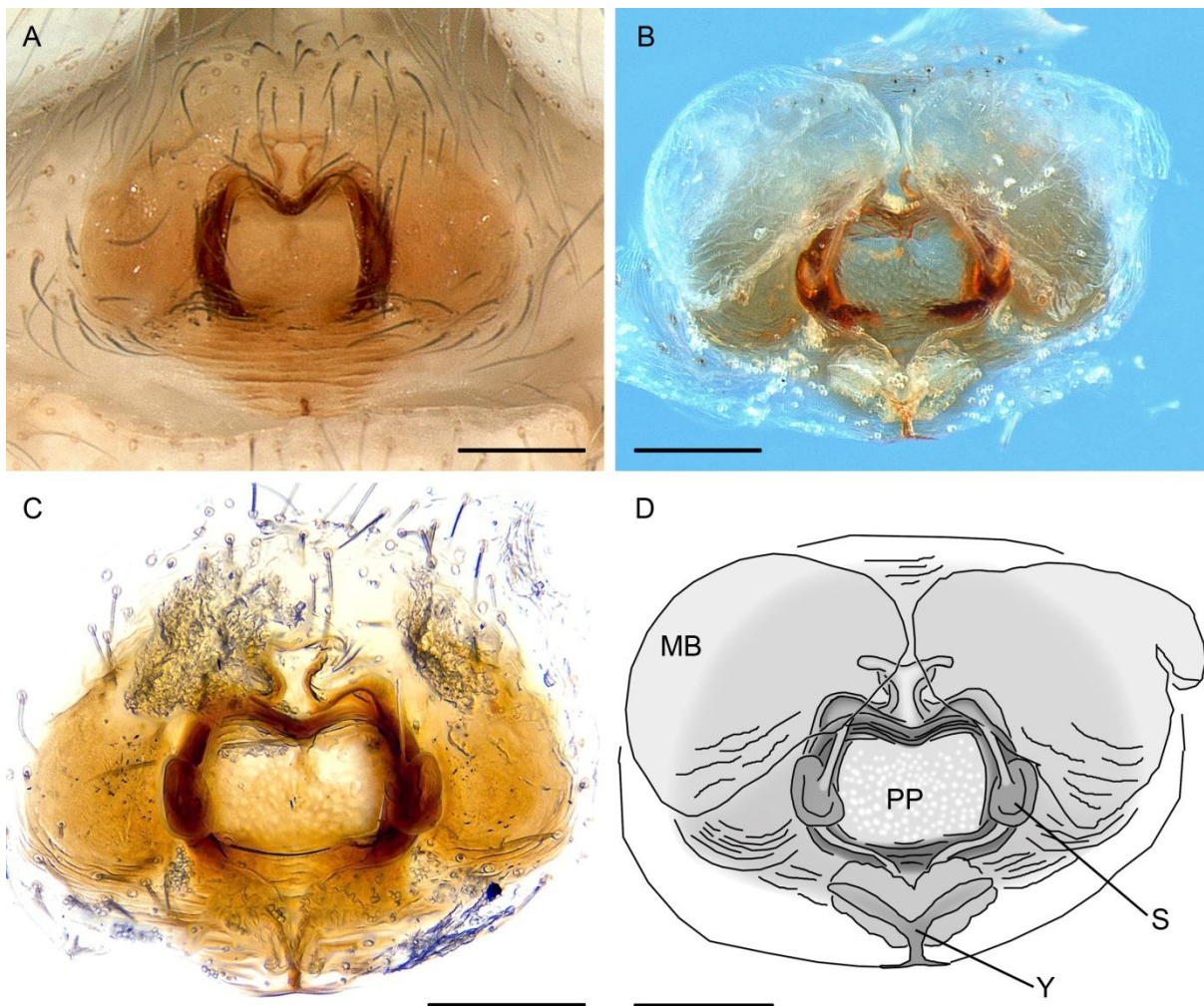


Figure 6 A-D. *Oecobius amboseli* (MRAC-243293), Female genitalia. A. Epigyne, ventral view. B. vulva, dorsal view, reflected light. C. Same, transmitted light. D. Same, schematic drawing. PP: perforated plate, MB: Membranous bladder, S: spermatheca, Y: Y-shaped structure. Scale bar: 0.1 mm.

The room in the cellars where the living specimens were found mainly serves as vivarium for diplopods and spiders from Africa. It was therefore not totally surprising that this species, which is new to Belgium, is in fact an introduced species occurring in Egypt, Ethiopia, Kenya and Uganda (PLATNICK, 2014). DEMİR *et al.* (2009) even treat it as a Mediterranean species although its presence in Egypt may also be due to an introduction (TOFT & WUNDERLICH, 2012). Since a lot of RMCA missions were carried out in these countries, the origin of the Belgian introduced population of *O. amboseli* is difficult (impossible?) to trace. Since several living individuals of this species were observed (latest observation May 2014) running on the floor of the cellars of the building “Palais des Colonies” from the RMCA, it can be assumed that a small

population is well established in Tervuren. It could also be the case in Duffel, although only one male was found there.

The occurrence of this species in Rwanda is actually not surprising, even expected, giving its distribution in East Africa (Figure 7). The examination of material of this species from the collection of the RMCA provides a new insight into its distribution in Africa. And the fact that *O. amboseli* is widely distributed and common in buildings may easily explain its introduction in Europe by human transport. This short note is obviously not the result of an exhaustive search. However, it is the first time that a member of Oecobiidae is mentioned for Rwanda and these findings highlight the need of a revision of *Oecobius* in Africa, as there are still plenty of unidentified samples, at least in the RMCA collection.

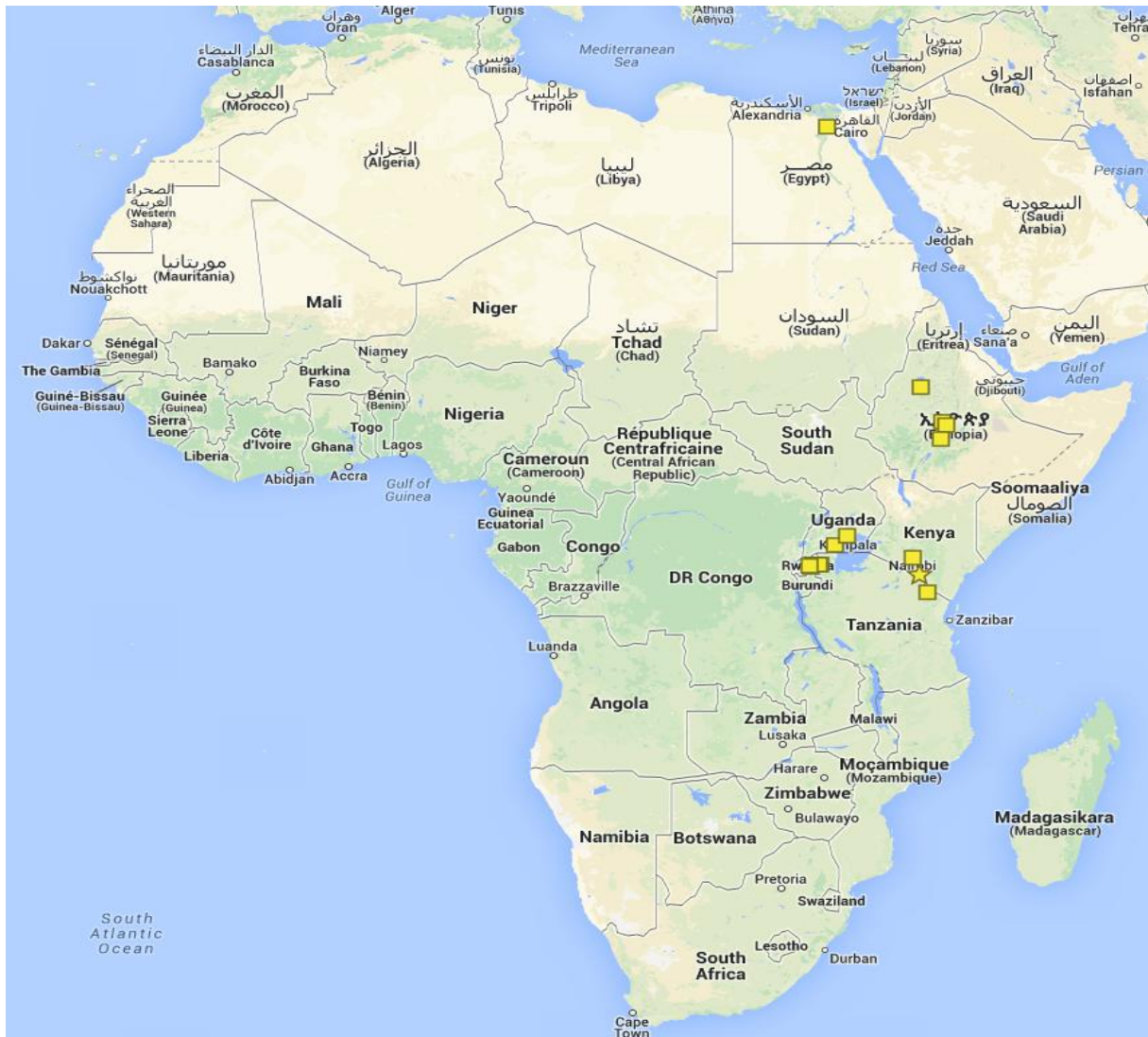


Figure 7. Distribution of *Oecobius amboseli* in Africa. Data from determined samples of the RMCA collection and from literature. Star: Holotype, square: other data.

Acknowledgements

The authors are indebted to Pierre Oger for his help in obtaining pictures of the vulva with transmitted light. All the images can be seen on his website “Les araignées de France et de Belgique” (<http://arachno.piwigo.com/>). Many thanks to Jörg Wunderlich for having sent the paper on *Oecobius amboseli* in Denmark (TOFT & WUNDERLICH, 2012). This paper is publication BRC 315 of the Biodiversity Research Center (Université Catholique de Louvain).

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