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First outdoor record of *Crematogaster scutellaris* (Olivier, 1792) in Belgium (Hymenoptera: Formicidae)

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Abstract

We report the first observation of an outdoor nest of the ant species *Crematogaster scutellaris* (Olivier, 1792) in Belgium. In spring 2022, a nest of this species was discovered at Rood Klooster in Auderghem, Brussels Capital Region. Large and very active trails of workers were detected in a hedge and along the walls of a small building. The nest is probably already present several years and situated in the wooden construction of the building. Interactions with other ant species indicate that this new arrival will not immediately become an invasive problem for the local native ant fauna. We expect that more records of this species might be discovered in the near future in the neighborhood but also elsewhere in Belgium.

Keywords: *Crematogaster scutellaris*, introduction, new Belgian record, settlement

Samenvatting

We melden de eerste buitenshuis waarneming van een nest van de mierensoort *Crematogaster scutellaris* (Olivier, 1792) in België. In de lente van 2022 werd een nest van deze soort ontdekt in het Rood Klooster te Oudergem in het Brussels Hoofdstedelijk Gewest. Grote en zeer actieve routes van werkers werden vastgesteld in een haag en langs de muren van een klein gebouw. Het nest is hoogstwaarschijnlijk al meerdere jaren aanwezig in de houten constructie van het gebouw. Interacties met andere mierensoorten geven aan dat deze nieuwe aanwinst niet onmiddellijk invasief zal worden en geen probleem lijkt voor de plaatselijke inheemse mierenfauna. We verwachten meer waarnemingen van deze soort in de nabije toekomst daar in de buurt maar ook elders in België.

Résumé

Nous rapportons la première observation dans la nature de la fourmi *Crematogaster scutellaris* (Olivier, 1792) en Belgique. Au printemps 2022, un nid de cette espèce a été découvert au Rouge Cloître à Auderghem (Région de Bruxelles-Capitale). De longues colonnes d'ouvrières très actives ont été observées dans une haie et le long des murs d'un petit bâtiment. Le nid est très probablement installé depuis plusieurs années dans la charpente en bois du bâtiment. Les interactions entre *C. scutellaris* et d'autres espèces de fourmis indiquent que cette espèce introduite ne semble pas constituer un problème pour la faune locale des fourmis indigènes et donc, n'est pas considérée comme espèce envahissante. Nous nous attendons à d'autres observations de cette espèce dans un avenir proche dans les environs du Rouge Cloître mais aussi ailleurs en Belgique.

Introduction

Results of faunistic studies on the ant fauna of Belgium were reported in publications during the last 10 years (WEGNEZ *et al.*, 2012; DEKONINCK *et al.*, 2012; BROOSSENS *et al.*, 2013). Despite the opinion that the Belgian ant fauna was well inventoried and almost completely known, several new species have recently been added to the Belgian fauna (VANKERKHOVEN *et al.*, 2018; DEKONINCK *et al.*, 2016, 2022). Some of them, like *Myrmica vandeli* Bondroit, 1920 and *Camponotus fallax* (Nylander, 1856) were expected as their typical habitat is present in Belgium, and they are reported from neighboring countries. Others, such as *Tapinoma magnum* Mayr, 1861, have been introduced by humans and via trade routes (DEKONINCK *et al.*, 2016).

We here report the discovery of a South-European ant species also introduced recently. A large nest of *Crematogaster scutellaris* was found in Auderghem in spring 2022 and seems to be present there already for several years.

Crematogaster scutellaris in Europe

(Fig. 1)

BOROWIEC (2014) mentions 14 species of *Crematogaster* Lund, 1831 to occur in Europe of which *C. scutellaris* is the most widespread. It is known from southeast-Europe, Italy, Slovenia, the eastern slopes of the Julian Alps up till the Adriatic coast in Croatia, the south-east of Bosnia and Herzegovina. It was introduced and has settled more north in Europe in the Netherlands (BOER *et al.*, 2021) and the south of Germany (SEIFERT, 2018) where several records of ant colonies lifting with cars and caravans from the south of Europe are mentioned.

BOER *et al.* (2021) reported 28 confirmed records of *Crematogaster scutellaris* from the Netherlands. In all these cases workers were foraging outside buildings. In some cases, records of alates (an indication that a colony is nearby) were also made. The first record in the Netherlands goes back to 1993. Most of the localities listed in the paper of BOER *et al.* (2021), still have a vital nest today (BOER, pers. comm.). Hence it seems that the species has become a settled species in the Netherlands. *Crematogaster scutellaris* is thought to be initially imported with plants, goods or luggage of tourists and due to global warming the chances of these colonies to settle successfully, have been increasing. The authors expect that *C. scutellaris* will continue dispersing naturally in the Netherlands from the established colonies (BOER *et al.*, 2021).

Discovered in Belgium via www.waarnemingen.be

Early March 2022, the third author discovered workers of a bi-colored ant species and reported it on: <https://waarnemingen.be/observation/234605904/> (Fig. 2 A). On the portal it was catalogued under the category Formicidae indet., until it was noticed by the other authors. The good pictures indicated that it was without any doubt a record of *C. scutellaris*, which had not yet been found outdoors in Belgium. On the 24th of March the first author visited the site in order to search for the nest and to see how the species interacts with the local native ant species. Other observations of workers foraging at the same site were posted on [waarnemingen.be](http://www.waarnemingen.be) later (Fig. 2 B).

On the 24th of March workers were observed tending aphids (*Aphid ilicis* Kaltenbach, 1843) on *Ilex quadrifolium* L. which was the only plant species in the hedge having leaves at that time. According to GIANETTI *et al.* (2021) *C. scutellaris* saves aphids in protected places during the winter.

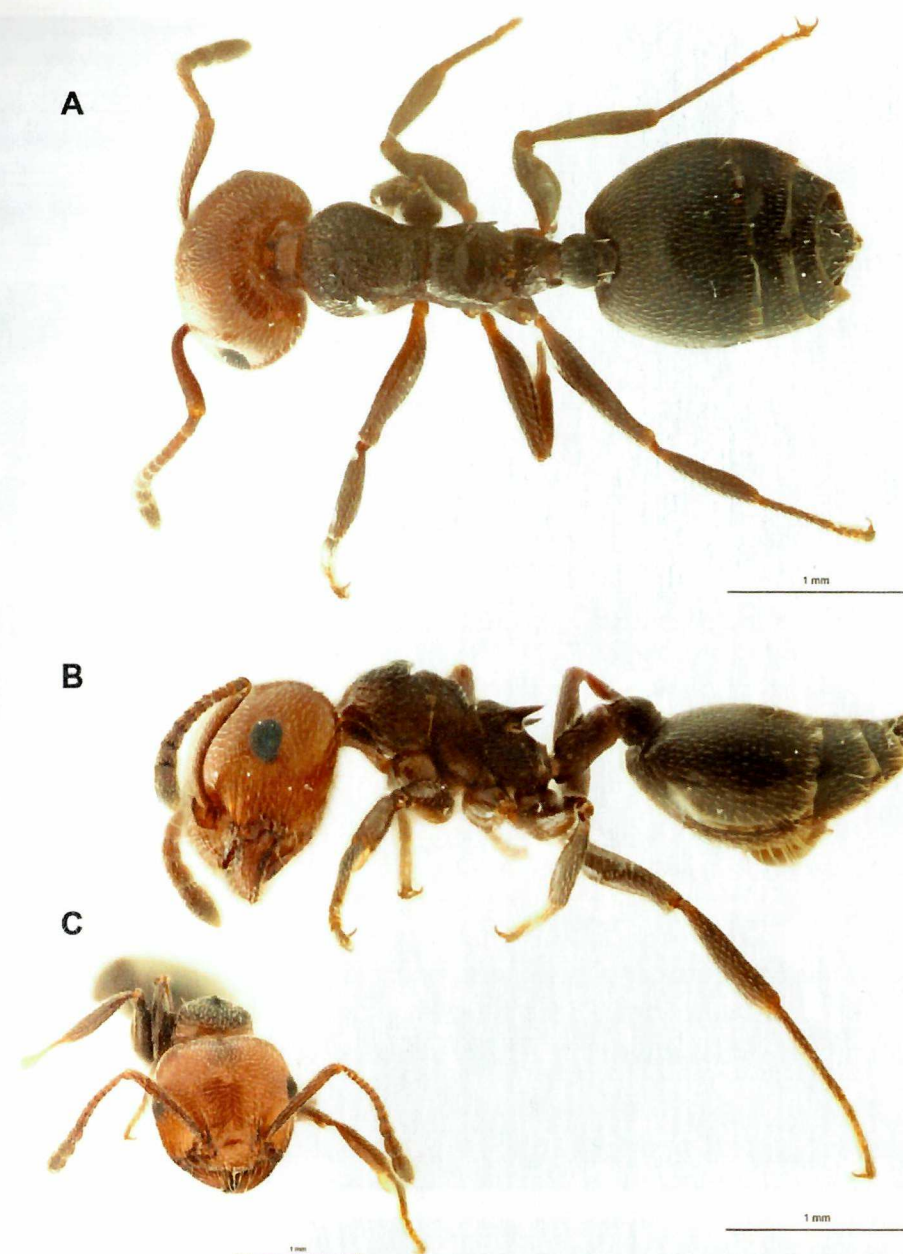


Fig. 1. *Crematogaster scutellaris*. A, dorsal view. B, lateral view. C, Head, frontal view. © Julien Lalanne.

Within a radius of 50 m of the foraging paths of *C. scutellaris*, *Lasius flavus* Fabricius, 1782, *Lasius niger* (Linnaeus, 1758), *Myrmica rubra* (Linnaeus, 1758) and *Formica fusca* Linnaeus, 1758 were found. Some interactions with *L. niger* and *L. flavus* were observed, with the native species deciding the confrontations in their favour.

No dominancy was shown by *C. scutellaris* towards food resources of *L. niger* next to the trail. Hence, we do believe that *C. scutellaris* is more or less integrated in the local fauna at Rood Klooster without showing a dominant and invasive behavior. However, this has to be confirmed or denied by a follow-up of the local situation.

Under the “Gate”, next to the “Poorthuis, Priorij Rood Klooster”, the presence of many larvae of *Euroleon nostras* (Foucroy, 1785) (Neuroptera: Myrmeleontidae) was observed (Fig. 3 B-D, identification with BADANO & PALTANEONI, 2014). They probably profit from the shelter under the Gate of the Poorthuis.



Fig. 2. *Crematogaster scutellaris* in Rood Klooster, Auderghem, workers. A, on wood on 22.III.2022. B, on a metal wire on the 29.III.2022. © Marc Vandenberghe.

However, the large foraging trails of *C. scutellaris* present in the Gate of the Poorthuis might also be an advantage for *E. nostras* in Rood Klooster as the larvae can predate on workers of *C. scutellaris* passing by at that spot. Several parts of *Crematogaster* workers (earlier prey) were observed at the borders of the dimples.

Discussion

In the southeast of Europe the species is known to nest in cavities in dead wood still connected to living trees but also under stones and in walls (LEBAS *et al.*, 2019). Sometimes polydomous populations are observed in which the brood is divided over several satellite nests during the summer which then, later become one big nest again in autumn (FRIZZU *et al.*, 2015). The species is often observed while tending aphids and foraging in impressive routes from and towards the nest to supply food and honeydew of the aphids they tend.

In some case these foraging routes can be sheltered by an overarching paper like construction built of sand and plant material (BOER *et al.*, 2021) also observed with other *Crematogaster* species in more tropical regions (WARD & BLAIMER, 2022). As is the case with termites (ABE *et al.*, 2000), they are protected against their enemies. The nest itself is also partly constructed with this paper like material inside the trees, walls and or wooden constructions where this species often nests.

In Auderghem we assume the nest is hidden in the wooden construction of the Gate of the Poorthuis (Fig. 4). Maybe the species arrived here a few years ago with construction material during the restoration of the Gate of the Poorthuis. This is only a consideration as we cannot provide any evidence for it. The species does get introduced in more northern countries in Europe due to transport of goods, and wooden material. In the Netherlands, where many interceptions of the species have been done the last decades, the species was imported with cork, wooden packing material, living plants, caravans, Christmas ornamentation material, beehives, and even cars (BOER *et al.*, 2021). Also, in Germany several times *C. scutellaris* lifted with cars and caravans towards the north of the country coming from more southern European regions (SEIFERT, 2018). In this context we mention an observation of workers of *C. scutellaris* and workers of *Camponotus lateralis* (Olivier, 1792) on 2/VII/2014 in Les Mazures in the North of France close to the Belgian border (leg. D. Muls, det. W. Dekoninck, coll. RBINS) that lifted from Southern France more northwards and hence arrived on the camp site. Large trails of workers were observed at respectively two different locations on the Camping site in the near vicinity of campers.

Conclusions

C. scutellaris has been reported in the Netherlands on many localities and was catalogued recently as an assumed established species (BOER *et al.*, 2021). It was no big surprise and to be expected, that it would be discovered in Belgium. As large and very active trails of workers were detected in the hedge and along the walls of a small building at this first locality in Belgium, it seems clear that the species has settled already a few years ago but was left unnoticed. Hence it is plausible that nuptial flights already have taken place in Rood Klooster and maybe more nests are already present in the neighborhood. Nevertheless, the chance for this is assumed to be rather low as for successful enlargement of a population HELLER (2004) suggest that more nests are necessary. However, there is a big chance that on other localities in Belgium this species was already introduced and might have settled too. It is therefore not inconceivable that this species has already established itself in several places in Belgium but has remained under the radar until now.

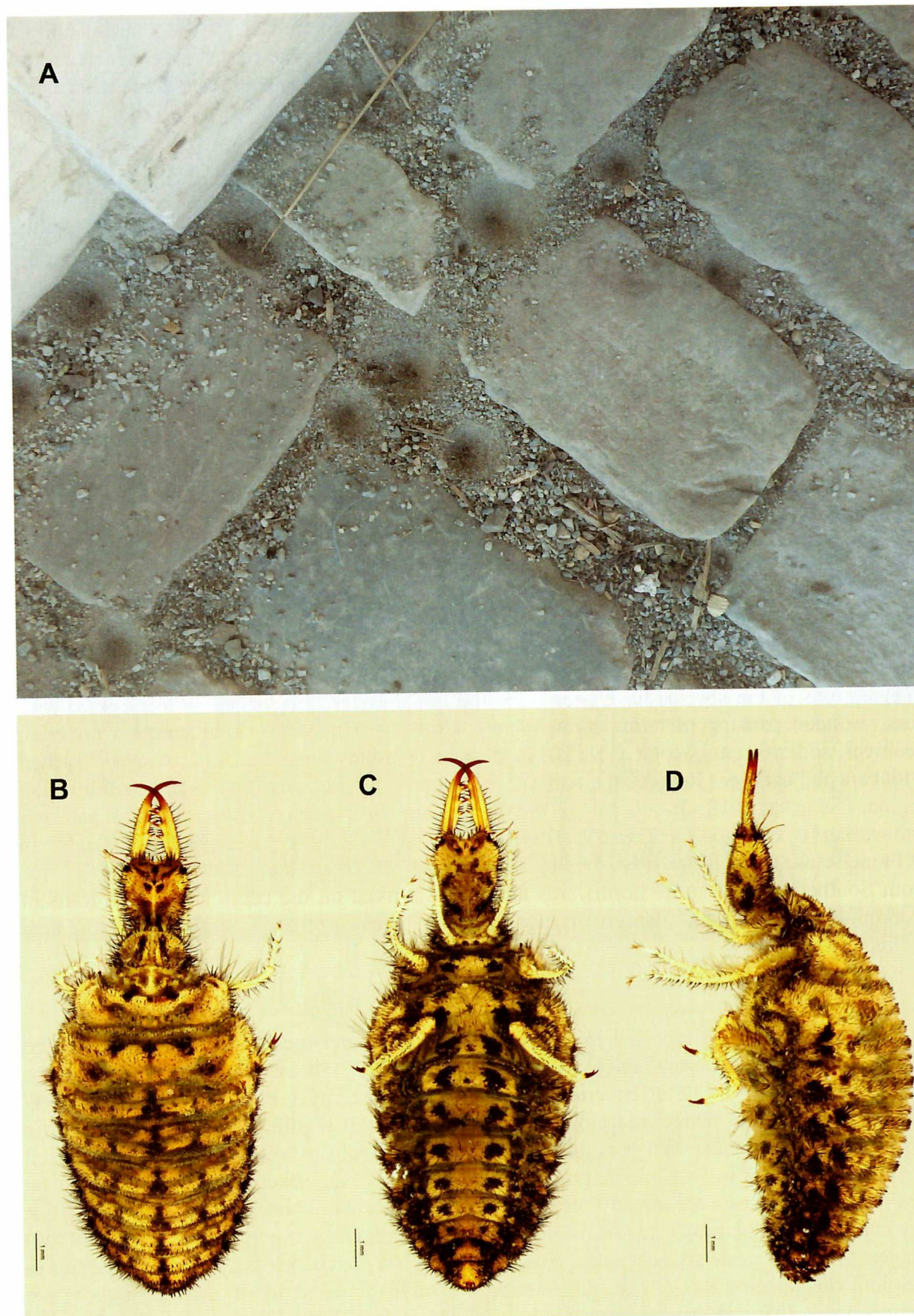


Fig. 3. *Euroleon nostras*. A, Dimples with larvae of under the Gate of the Poorthuis. © Wouter Dekoninck. B-D, larva. © Julien Lalanne. B, dorsal view. C, ventral view. D, lateral view.

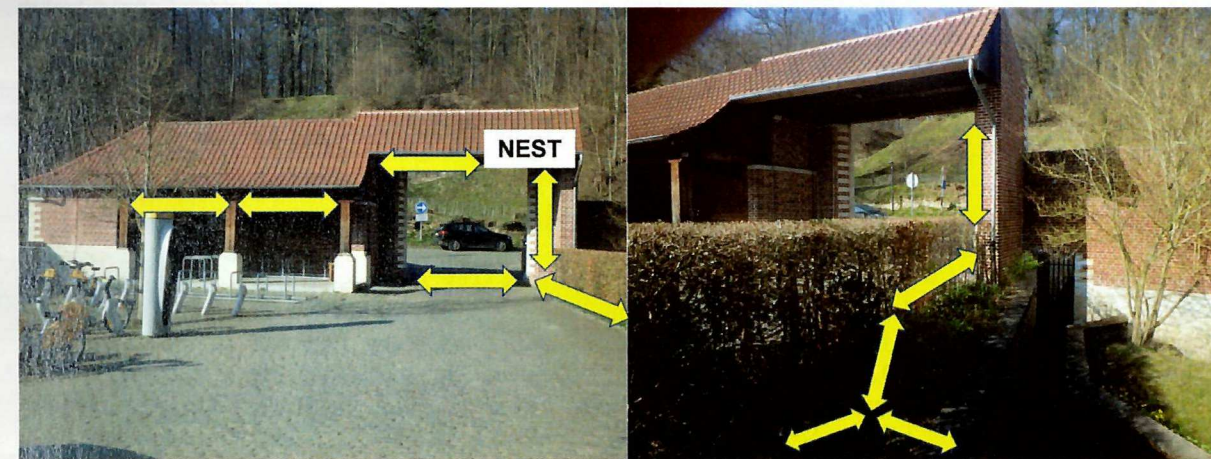


Fig. 4. Foraging routes of *Crematogaster scutellaris* in Rood Klooster, Auderghem and situation of the place where the nest is probably situated. © Wouter Dekoninck.

Platforms like waarnemingen.be and others already proved to be important sites where pictures of new species for Belgium are posted and later taken up by country-experts for the specific insect group (VERHEYDE *et al.*, 2021) and can constitute an important extra channel for faunistic data. As we did not observe any negative interactions with the local ant fauna in Rood Klooster yet, we think the species can be considered as an outdoor settled Belgian ant species from now on. We expect that more records of this species might be discovered in the near future in Belgium. So far, no negative impact on the Belgian fauna was observed; however that must be confirmed or denied by further observation at the site at Rood Klooster.

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Discovery of a new inland population of *Amara strenua* Zimmerman, 1832 at Heverlee, central Belgium (Coleoptera: Carabidae)

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Abstract

A new inland population of the rare ground beetle *Amara strenua* Zimmerman, 1832 is reported for Belgium. This species was encountered during a survey using pitfall traps at Abdij van Park near Heverlee. This observation marks the first record in Flemish Brabant, as well as the most inland known population of *A. strenua* in Flanders. Details on the habitat and the phenology of the newly discovered population are provided. Furthermore, an overview of the known records and an updated distribution map are given and discussed.

Keywords: Ground beetles, Flanders, rare species, pitfall traps, distribution

Samenvatting

We rapporteren de vondst van een nieuwe Belgische binnenlandse populatie van de zeldzame loopkever *Amara strenua* Zimmerman, 1832. Deze soort werd waargenomen tijdens een onderzoek met bodemvallen in Abdij van Park in Heverlee. Deze opmerkelijke vondst telt zowel als de eerste observatie voor Vlaams-Brabant, als de meest binnenlands gekende populatie in Vlaanderen. Gegevens over de habitat en fenologie van deze ontdekte populatie worden gegeven. Verder wordt een overzicht van de gekende records gemaakt en besproken, samen met een aangepaste verspreidingskaart.

Résumé

Une nouvelle population du rare carabe *Amara strenua* Zimmerman, 1832 est mentionnée en Belgique. L'espèce a été observée lors d'un inventaire à Abdij van Park (Heverlee). Cette observation constitue le premier signalement de l'espèce dans le Brabant flamand et sa localisation la plus à l'intérieur des terres en Flandre. Des informations détaillées sur l'habitat et la phenologie sont fournis. En outre, une carte de distribution actualisée et un compte rendu des observations sont donnés et discutés.

Introduction

Amara strenua is an 8-10 mm long ground beetle (Carabidae) (Fig. 1). It is characterized by a metallic green or bronze dorsal coloration and trifurcate protibial spur. It can be identified reliably by the unique shape of the male genitalia. *A. strenua* most closely resembles *A. tricuspidate*, but can be differentiated by a deeper groove-shaped basal impression on the