

## Rediscovery of *Amara strenua* (ZIMMERMAN) in the "Uitkerkse polder" area (Flanders, Belgium) (Coleoptera Carabidae)

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### Abstract

Since 1950, *Amara strenua* was no longer found in Flanders and was thought to be extinct (Red Data Book category 0; DESENDER *et al.*, 1995). During a recent study we found a small population of this species in the 'Uitkerkse polder' in the western part of Flanders. This short paper summarizes this data.

**Keywords :** *Amara strenua*, former arable land, wetlands.

### Résumé

Depuis 1950, *Amara strenua* n' a plus été capturée en Flandre et était considérée comme éteinte (Red data Book catégorie 0, DESENDER *et al.*, 1995). Lors d'une étude récente, nous avons découvert une population restreinte de cette espèce dans le 'Uitkerkse polder' dans la partie ouest de la Flandre. Cette communication résume toutes nos données.

### Introduction

*Amara (Zezea) strenua* Z. recently has been found during a nature conservation study in Flanders on the restoration of former arable land into moors and wet grasslands. Three wetland areas were therefore sampled with pitfall traps from April till October 2000 : Uitkerkse polder, Daknamse meersen and Leiemeersen (see Fig. 1). In all three wetland areas several nature development sites were compared to one (or two), so called, reference site(s). Three plots were sampled in Uitkerkse polder, 2 nature development sites and one reference site. Only in the nature development sites 20 individuals of *Amara strenua* were obtained, whereas in the reference site and the other sampled wetlands the species did not occur.

Uitkerkse polder is situated near the town of Blankenberge at the North Sea coast. This nature reserve was established in 1991, mainly as a refuge for birds. The former meadows are situated in an agricultural environment (see Fig. 2). Between 1991 and 1995, different measurements were taken to improve the natural value of this area. Some areas were for example levelled

or the top soil layers were removed. The current management is different for each site and consists of retarded mowing and grazing, limited

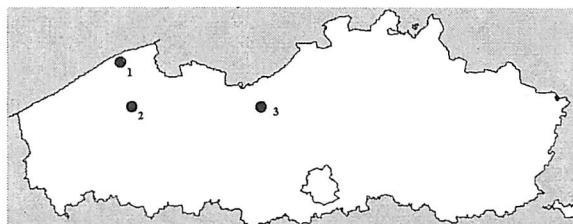


Fig. 1. Location of the 3 sampled areas during our study : 1 = Uitkerkse polder (2 = Leiemeersen, 3 = Daknamse meersen).



Fig. 2. The Uitkerkse polder, picture of one of the two sites where *Amara strenua* was found.

levels of manuring, extensive grazing and restoration management.

*Amara strenua* was found in 2 nature development plots, sod cut in 1992. Nowadays, these plots are grazed by cattle and the water level is periodically altered (water is pumped into the reserve and parts of the reserve are flooded). Some elements of saline grasslands are already present like *Juncus gerardi*, *Alopecurus genicullatus* and *Puccinellia distans*; but the major part of the vegetation and soil surface consists of grasses and bare sand.

#### Distribution, ecology and habitat of *Amara strenua*

The geographical distribution of this European species is limited to the northern part of Central Europe and to Northwest Europe (HIEKE, 1970).

In England and Denmark the habitat of this very hygrophilous species is limited to saline grasslands along the coastline, where it is found under vegetation and stones (LINDROTH 1974, 1986 & LUFF 1998). The species occurs very locally at the southern part of the English coast from east Norfolk to north Somerset. Early this century it was mainly reported from the Thames estuary, still before it was recorded mainly from the Isle of Wight. From these areas there are no recent records, but the species was found recently in Norfolk, Kent and Somerset.

In inland areas, *Amara strenua* can, according to TURIN (2000), be found in the basin of the most important European rivers. The beetles are mostly discovered between litter and under drifted plant waste, between the roots of plants but are also seen on grasses (HIEKE, 1970).

This ground beetle is very rare in the Netherlands. Old captures are known from the major river estuaries, while recently (1999) some individuals were found in Yerseke (BOEKEN *et al.*, 2002).

In Germany, *A. strenua* is very rare, the only observations are from the northern part of the country, e.g. in the surroundings of the Elbe river (HIEKE, 1970; HORION, 1941). More to the Northeast, this species can be found in Ukraine (south-western part) and Poland (BOEKEN *et al.*, 2002).

*A. strenua* was supposed to have disappeared from Flanders; since 1950 there were no more

records. In Belgium the species is known from 4 old captures only (between 1874 and 1942) along the major rivers (DESENDER *et al.*, 1995). In total, only 8 individuals were captured earlier. Derenne made one observation in 1936 in Visé (near Liège along the river Meuse): 4 specimens were found on grass seeds in flower heads and

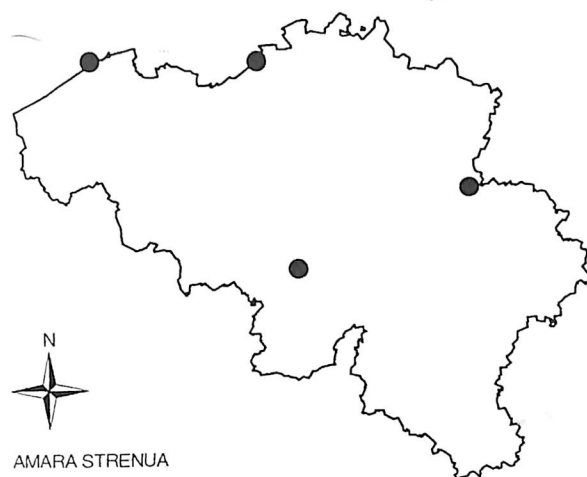


Fig. 3. Localities where *Amara strenua* was found in Belgium (all before 1950). Our observations come from the same coastal UTM-square as on this map.



Fig. 4. *Amara strenua*.

thus suggest that the species is granivorous. This could indicate at the same time that the species could benefit of some kind of flight possibility, in order to be able to locate sites with abundant food. The other old observations were from Wenduine (near the coast), Lilo (the river Schelde) and Charleroi (the river Meuse) (see Fig. 3).

Our study suggests that, at least in the northern part of Belgium, *A. strenua* prefers brackish/saline grasslands, whilst inland this species can be found along riversides.

### Biology and identification of *Amara strenua*

This very hygrophilic *Amara* species (see Fig. 4) is supposed to be active during the day. Probably its reproduction takes place in springtime but not much is known of the reproduction, the larvae and hibernation (TURIN, 2000). During our study adult individuals of this species were found from June till August and again in October (at that time the sampling was stopped) (see Fig. 5). This confirms the hypothesis that the species reproduces during spring.

According to HIEKE (1970), *Amara strenua* feeds on milk-ripe seeds of grasses.

There are no previous data on wing- and flight muscle development of this macropterous species available (TURIN, 2000). In our study, some individuals showed functional muscle development, others did not. This can be explained in different ways : maybe one part of the population is able to fly and colonises other areas or all beetles can, according to the season, alternate between functional and autolysed flight muscles linked to the necessity to escape severe environmental circumstances (e.g. inundations) alternated with the reproductive periode. We collected to few individuals to confirm one or the other hypothesis.

*Amara* (Bonelli) is a Holarctic genus reaching the Neotropical, Afrotropical and Oriental regions (HURKA, 1996). Typical *Amara* species are oval and have a bronze colour. This genus is distinct from other related genera by the head having 2 supraorbital setiferous punctures at each side, the lack of a puncture in the third elytral interval, and by the presence of crossed epipleura

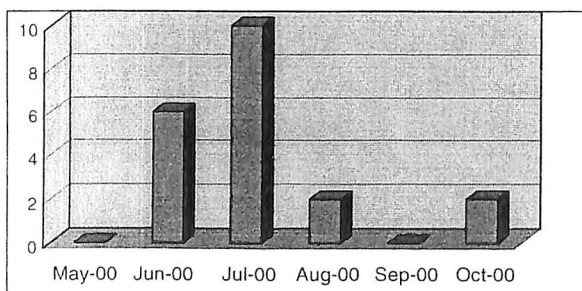


Fig. 5. Phenology of *Amara strenua* during this project (April-October).

before the tip of the elytra (BOEKEN, 2002).

Like many other *Amara* species, *Amara strenua* cannot easily be identified in the field. Typical features of the species are : three-pointed end-spine of the front leg, metal green shine (when kept in alcohol the colour can disappear) and a total length of about 10 mm.

### Remarks

The loss of salt marshes and coastal wet grasslands are probably the cause of the decline of *Amara strenua* populations. Actions should be taken to maintain this diverse habitat, and the habitat requirements (more studies necessary, monitoring) of the species should be taken into account in future action plans for salt marshes and wet grasslands.

The position of *Amara strenua* in the Red Data Book of Flanders is partly due to a lack of investigation of its habitat. The details of this species its habitat are not wellknown and more and profound studies are therefore necessary. *Amara strenua* probably prefers saline habitats with periodical inundations, but it is likely difficult to sample this species where it normally lives under stones and vegetation, especially along rivers. In England it was mostly found in flood debris (after heavy storms), maybe it could be interesting to look for this species at such moments in our region to.

### Acknowledgements

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## Additions et corrections à la faune des Hétéroptères de Belgique (Hemiptera Heteroptera)

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### Abstract

Six bugs species are recorded for the first time from Belgium : the Mirid *Hypseloecus visci* (PUTON), the Anthocorid *Xylocoridea brevipennis* REUTER, the Tingids *Acalypta marginata* (WOLFF) and *Derephysia sinuatocollis* PUTON, the Scutellerid *Odontotarsus purpureolineatus* (ROSSI) and the Cydnid *Ochetostethus nanus* (HERRICH-SCHAEFFER). The Tingid *Acalypta nigrina* (FALLÉN) is excluded from the Belgian fauna, because misidentification.

**Keywords :** Heteroptera, faunistics, Belgium.

### Résumé

Le Miridé *Hypseloecus visci*, l'Anthocoridé *Xylocoridea brevipennis*, les Tingidés *Acalypta marginata* et *Derephysia sinuatocollis*, le Scutelleridé *Odontotarsus purpureolineatus* et le Cydnidé *Ochetostethus nanus* sont signalés de Belgique pour la première fois. En revanche, le Tingidé *Acalypta nigrina*, mentionné de longue date d'une seule localité belge, est exclu de la faune régionale suite à une erreur d'identification.

Cette notule s'inscrit dans le cadre de la préparation de la nouvelle liste des Hétéroptères de Belgique. Celle-ci regroupe actuellement 620 taxons (cf. DETHIER & BAUGNÉE, 2000) et sa publication est prévue pour la fin 2002.

La présence en Belgique de six espèces appartenant à des familles variées est dévoilée ici pour

la première fois. Il y a cependant une exception : c'est *Acalypta marginata* (WOLFF), dont l'unique mention antérieure repose sur une erreur d'identification. Une rectification est également apportée au sujet du signalement déjà ancien d'*Acalypta nigrina* (FALLÉN) en Belgique.

Les données sont classées par districts phyto-