Notonecta viridis Delcourt, 1909, a waterbug new to Luxembourg, with additional records of *Notonecta maculata* Fabricius, 1794 (Insecta, Heteroptera)

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Abstract. *Notonecta viridis* Delcourt, 1909 is recorded as new to Luxembourg, where the species was collected from two localities in the Gutland. Additional data are given for *Notonecta maculata* F., 1794, a species believed to be rare in Luxembourg, which was found in two new localities. Both species seem to prefer recently created pools with sparse vegetation.

1. Introduction

Reichling & Gerend (1994) listed 35 species of aquatic Heteroptera for the fauna of Luxembourg. This result was based on Hoffmann's monograph of that order published in 1959 and a paper by the present author (Gerend 1993) which added another 8 species to the Luxembourg list. The count was put to 36 species by the present author with the recent addition of *Micronecta scholtzi* (Fieber, 1860) (Gerend 2006).

In 2005 and 2006, the staff of the Zoology Department of the National Natural History Museum of Luxembourg carried out a further investigation into the invertebrate fauna of the gravel pits in the alluvial plain of the river Moselle near Remerschen, in the south-east of Luxembourg. The aquatic Heteroptera sampled in the course of that survey were submitted to the present author for identification in 2006. Two specimens of *Notonecta viridis* (Fig. 1) were found among a batch of rather widespread species. Another specimen of that species was found amidst material collected in 2002 in central Luxembourg by the present author.

In this paper, details are presented for these new records. In addition, new information is given on another backswimmer, *Notonecta maculata* F., 1794, whose distribution in Luxembourg is only poorly known.

2. Methods

The aquatic Heteroptera were collected using a sturdy, fine-meshed (1 mm) net, which was swept through the aquatic vegetation and layers of detritus close to the banks of the pools. The contents of the net were then transferred into a white tray and carefully searched for insects. The collected specimens were preserved in vials containing 70% isopropanol and later identified with the keys provided by Savage (1989) and Poisson (1957). The *Notonecta*-specimens were dry-mounted on stainless needles and integrated into the author's collection.

3. Results

Specimens were collected from the following locations:

Notonecta viridis Delcourt, 1909

Luxembourg, Remerschen, „Haff Réimech" (nature reserve), alluvial plain of the river Moselle, flooded gravel pit, 2 specimens (1 male), leg. Danielle Dolizy (sample code 39Cc2), 2005 or 2006, identified by R. Gerend.

Luxembourg, Eppeldorf, „Bloschett" small (200 m²), semi-permanent pool on triassic marlstone in pasture, 49°51'7,1"N 06°15'21,7"E, 1 male (genitalia dissected), 18/03/2002, leg. R. Gerend.



Fig. 1. *Notonecta viridis* Delcourt, 1909, specimen from Remerschen-Wintrange. Note the acute angle of the anterior part of the pronotum. The individual is 13 mm long.



Fig. 2. *Notonecta viridis* Delcourt, 1909, specimen from Remerschen-Wintrange. Note the acute angle of the anterior part of the pronotum.

Notonecta maculata Fabricius, 1794

Luxembourg, Fischbach, „Seitert", artificial pool in woodland glade, 49°45'15,4"N 06°10'58,9"E, 2 females, 22/08/2002, leg. R. Gerend.

Luxembourg, Sandweiler – Kréintgeshaff, artificial pool in a meadow, 49°36'18"N 06°13'19" E, 1 specimen, 14/08/2009, leg. R. Gerend.

4. Discussion

According to Wachmann et al. (2006), *N. viridis* is a species with a southern, circum-mediterranean distribution, reaching the Near East and western Asia. It is absent from northern Europe but can be found throughout Germany, though it doesn't seem to be common in most parts of its Central European range. In the British Isles it is known as

a rare or sporadic species from the southern parts of England and from Ireland (Savage, 1989). According to Poisson (1957), it can be found along the French coasts of the Atlantic and the Mediterranean, but it is also known to occur inland in freshwater habitats.

As with most species of the genus *Notonecta,* it is difficult to describe the ecological requirements which, in any case, seem to be rather wide. *N. viridis* is known to occur in brackish waters, without, however, being restricted to that kind of habitats. It seems to prefer pools and ponds with relatively high conductivity levels and pH-values of >6 and rather low percentages of plant cover or organic detritus (Savage, 1989). Wachmann et al. (2006) describe it as an early colonizer in waterbodies with a gravelly or stony bottom.

The site „Bloschett" near Eppeldorf is a small pond, created hardly more than a year ago at the time when *N. viridis* was found there. The bottom was covered with a thick layer of clay and vegetation was still very sparse, almost absent. The muddy water was well mineralized, with an electric conductivity value of 385µS/cm and a pH of 8,3. *N. viridis* co-occured in 2002 with waterbeetles and dragonflies known to be typical of newly created waterbodies, pioneering species in fact, that disappear when the pond gradually becomes overgrown with aquatic and helophytic vegetation and layers of organic detritus accumulate on the bottom. The respective species are the dytiscids *Hygrotus confluens* (F., 1787) and *Agabus nebulosus* (Forst., 1771), the helophorid *Helophorus griseus* Herbst, 1793 and the dragonfly *Libellula depressa* L., 1758. Larvae of the latter were found to be common in most of the newly created ponds in the spring of 2002.

As for the two specimens of *Notonecta viridis* collected from the Remerschen-Wintrange gravel pits by the museum staff, the exact location and circumstances of the capture were not recorded and are therefore unknown. The majority of the ponds of the area can be described as fairly nutrient-rich and well-mineralized, many of them being fed by water seeping from triassic rocks. Since their creation in the 1950s, most of these ponds have developed dense beds of riparian and submerged vegetation. However, some of the pits were created or reshaped more recently, therefore providing more open habitat conditions.

So far no other records of *Notonecta viridis* are known from Luxembourg, but it is very likely that the species has been overlooked in the past and, upon closer inspection, many a backswimmer hastily identified as the common *Notonecta glauca* (L., 1758) might actually belong to the rarer sibling.

Notonecta maculata is probably underrecorded from Luxembourg, though it may as well be genuinely rare. We simply don't know for the moment and further sampling should clarify this question. The species seems to prefer newly created pools with much open water and a low density of vegetation, though it is by no means restricted to this type of habitat (Wachmann et al., 2006). The two sites at which the species was recorded in Luxembourg are pools that had been quite recently dug out for conservation purposes. At the Fischbach site, *N. maculata* coexisted with *Notonecta obliqua* Thunberg, 1787, a species which, much as *N. maculata* and *N. viridis*, seems to be definitely rarer in Luxembourg than the fairly ubiquitous *N. glauca*.

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