

***Xylococoris ovatulus* (Heteroptera: Anthocoridae) – first record after 50 years and fourth record worldwide**

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Abstract: New records of the extremely rare anthocorid bug *Xylococoris ovatulus*, last found more than 50 years ago, are presented and first information on habitat and phenology are given.

Key words: Heteroptera, Anthocoridae, *Xylococoris ovatulus*, Germany, Hesse, distribution, habitat, phenology

Introduction

The true bug fauna of Germany is relatively well studied, as illustrated by its treatment in a Palaearctic Catalogue (AUKEMA & RIEGER, 1995, 1996, 1998, 1999, 2001, 2006), Check Lists for all Federal States (HOFFMANN & MELBER, 2003), a Red Data Book (SIMON et al. in prep.) and a comprehensive series on the biology and distribution of all species (WACHMANN et al., 2004, 2006, 2007, 2008). Nevertheless we succeeded in collecting in Germany the bug *Xylococoris ovatulus* Reuter, 1879 that had been recorded worldwide only on three previous occasions (France (REUTER 1879), Germany (PÉRICART, 1972) and Italy (WAGNER 1954)) and more than 50 years ago (AUKEMA & RIEGER, 1996, Fauna Europaea, 2011). *X. ovatulus* is the only representative of its genus. It belongs to the tribe Dufouriellini within the subfamily Xylocorinae of the Anthocoridae. So far our knowledge about its biology was only anecdotal.

Material and Methods

Investigations were conducted from 21.06.1999-21.06.2001 in the forest reserve „Kinzigau“ (50.142452°N, 8.985546°E; 120 m a. s. l.),



Fig. 1: Forest Reserve “Kinzigau” east of Frankfurt am Main, Germany

Fig. 2: Tree trunk eclector (here in the forest reserve “Stirnberg” in the Rhön Mountains, Hesse, Germany)



Fig. 3: Window trap on tree trunk (here on a *Platanus* tree in the vicinity of the Senckenberg Museum, Frankfurt am Main, Germany)

that is part of the nature reserve „Erlensee bei Erlensee“, situated in the Rhein-Main plain east of Frankfurt am Main, Hesse, Germany (Fig. 1). It comprises 18.1 ha of wet, floodplain forest (Stellario holostaeae-Carpinetum betuli Oberd. 57, subass. with *Stachys sylvatica*). Apart from the dominant *Quercus robur*, also *Fraxinus*, *Tilia*, *Alnus* and *Ulmus* are found in the upper tree layer, while the middle layer mainly consists of *Carpinus*, *Acer* and *Tilia*. In the widely developed lower layer *Crataegus*, *Prunus spinosa* and *Cornus* are dominant. The forest, on typical alluvial clay, is regularly flooded in spring. A small stream with numerous meanders passes through the reserve. On three sides the reserve is embedded in further floodplain forests, and on the fourth it adjoins a wet meadow and a pond. Mean annual temperature is 9.6°C (16.3°C in the vegetation period) and mean annual precipitation 712 mm (326 mm in the vegetation period) (NITSCHKE & NITSCHKE, 2002, BUNDESANSTALT FÜR LANDWIRTSCHAFT UND ERNÄHRUNG, 2009, own observations).

In 1993 the forest reserve was designated and all forestry management activities were stopped, except to secure safety along access routes. The fauna was recorded qualitatively over two years using a broad spectrum of traps (including pitfall traps, trunk eclectors (Fig. 2), window traps, blue, yellow and white pan traps) and hand sampling. For details of the standard set of traps used in Hessian forest reserves see DOROW et al. (1992). In addition to these traps small window traps (acrylic glass, 30 cm high, 18 cm wide, white plastic container 21 cm long, 10 cm wide, 7 cm deep; Fig. 3) were fixed directly on one trunk of each different tree species. All traps were emptied every four weeks. A detailed report on the heteropteran fauna of the reserve – as for all Hessian reserves – will be published in the series „Naturwaldreservate in Hessen“ (see NORDWEST-DEUTSCHE FORSTLICHE VERSUCHSANSTALT, 2010).

Results

In the forest reserve „Kinzigau“ we trapped five specimens (four males, one female) of *Xyloecocoris ovatulus*. The female and three males were captured with the trunk eclector KI 031 fixed at a height of about 2 m above ground on the trunk of a living *Fraxinus excelsior* tree. The other male was trapped with the small window trap KI 174 fixed at 2 m on the stem of a living *Fraxinus excelsior* tree.

The males were trapped in the periods 23.08.–22.09.1999, 24.05.–21.06.2000, 21.06.–20.07.2000, 20.7.–21.08.2000, the female in the period 20.04.–24.05.2000.

Discussion

Distribution of the species

Probably the oldest record of *Xyloecocoris ovatulus* originated from Germany. PÉRICART (1972) found it in the BAERENSPRUNG Collection in the “Museum für Naturkunde an der Humboldt-Universität Berlin” and according to him the macropterous male is labelled „Berl., Hab., *parvicornis* Costa, n°8578“. But the label actually reads “*Anthocoris parvicornis* Costa, Berl. Hal.“, not „Berl., Hab.“ (pers. comm. U. GÖLLNER-SCHIEDING). Probably the abbreviation means Halensee. Halensee is the name of a sub-district as well as one of the lakes forming the “Grunewaldseenkette” in the district of Charlottenburg in the southwestern part of Berlin (52.494957°N, 13.281018°E; 40-50 m a. s. l.). As BAERENSPRUNG often used short abbreviations on his labels such as “Berl. Tieffb.”, which means Berlin as locality and TIEFFENBACH as collector (DECKERT, 2001), it seems also possible, that “Hal.” is an abbreviation of a collector’s name. Further details of the date or place of collection cannot be clarified. DECKERT & WINKELMANN (2005) assume that the individual was collected before 1850 by BAERENSPRUNG. Friederich Wilhelm Felix von BAERENSPRUNG was born in 1822 in Berlin and lived there until 1843, returning 1853-1862 (DECKERT, 2001, *Catalogus Professorum Halensis*, 2010). Therefore a date of collection before 1862 is most likely. HOFFMANN & MELBER (2003: 244) list the species under “without valid record for Germany” and “after 1950?” for Brandenburg/Berlin. The date seems to be erroneous and the record refers most certainly to the specimen collected by BAERENSPRUNG (MELBER, pers. comm. 2011). DECKERT & WINKELMANN (2005) consider the species to be an extinct element in the Berlin fauna. The next record was from southern France (Languedoc-Roussillon, Herault, Béziers, one female, leg. MAYET, which is the holotype of *Xyloecocoris ovatulus* Reuter 1879 [Muséum National d’Histoire, Paris] (no exact date given). Most likely the collector was Valérie MAYET (1839-1909), a coleopterist living in southern France (GROLL 2011). WAGNER (1954: 151) described 12 specimens (2 sub-brachyptere; 10 macroptere (including 5 males and 5 females)) of *X. ovatulus* as *Brachysteles mancinii* from Italy (Toscana: Provinz Siena, Bettolle, leg. A. MARCHI) [Zoologisches Museum, Universität Hamburg; collection C. MANCINI, Genova] without giving further details on place and date of collection. Azelio MARCHI was a lawyer, who collected mainly Carabid beetles between 1910 and 1995 in Tuscany (LEBBORONI, 1991; FARRACCI, pers. comm.). Cesare MANCINI published

some works on Italian Heteroptera in the 1950's. CARAYON & WAGNER (1962: 183) synonymized *B. mancinii* with *X. ovatulus*. In the light of the new records in the forest reserve "Kinzigau" east of Frankfurt am Main we suspect that *X. ovatulus* has a relatively wide distribution in southern and Central Europe. It seems unlikely that the finding in Berlin, as DECKERT & WINKELMANN (2005) assumed (or that near Frankfurt) resulted from migration. More probably this worldwide extremely rarely found species has a very hidden mode of life.

Habitat

So far all that was known of the habitat of *Xyloecocoris ovatulus* was that the holotype had been collected below the bark of *Platanus* (REUTER, 1879, cited in REUTER, 1884, PÉRICART, 1972, WACHMANN et al., 2006). In Berlin DECKERT & WINKELMANN (2005) assign the species to the preferred habitat „Biototyp Grün- und Freiflächen“ (= grassland and open areas) and the reason for its endangerment is given as "Abhängigkeit von Zuwanderung" (= dependence on immigration – for classification of habitat types see SAURE & SCHWARZ, 2005). The findings in France and in the forest reserve „Kinzigau“ make it more probable that the species lives in crevices in tree bark and below loose bark. Possibly the habitat needs to have a relatively high humidity (such as occurs in floodplain forests, or in trees near lakes). It is remarkable, that the species was only found on *Fraxinus excelsior* although trees of *Acer campestre*, *Alnus glutinosa*, *Carpinus betulus*, *Fagus sylvatica*, *Tilia cordata* and *Ulmus laevis* had also been investigated with window traps on stems and *Quercus robur* with a trunk eclector. The species was not found in different types of dryer beech forests in Hesse, which were studied with the same set of traps (DOROW, 1999, 2001, 2002, 2006, 2009). The hybrid *Platanus* × *hispanica* Münchh. (= *Platanus hybrida* Brot. = *P. acerifolia* (Art.) Willd.) is often planted at road sides in southern and Central Europe. It is a hybrid of *Platanus occidentalis* L. (from eastern North America) and *Platanus orientalis* L. (distributed from Greece to western Himalaya). Both species prefer fertile, wet soils and are abundant on alluvial soils close to water. Thus the *Platanus* species live in habitats similar to those at the forest reserve "Kinzigau" and the introduction of *X. ovatulus* from one of these countries is a possibility. The specimen from Berlin could possibly originate from such a habitat in a chain of lakes. A requirement for rather humid habitats seems also to be likely because *Platanus* trees on road sides in the cities are well known to harbour a number of interesting heteropteran species below loose bark, which hibernate or hide

there, and therefore have been collected intensively in the past, but *X. ovatulus* was never present. The species of the subfamily Xylocorinae (= Lyctocorinae) – as far as known – mainly live in decomposing plant material or subcortically on trees, only rarely being found exposed on living plants (PÉRICART 1972). WACHMANN et al. (2006) point out the specialisation of most members of the subfamily on microhabitats such as ant, bird or mammal nests or beetle galleries and that they often occur in buildings. Due to the fact that *X. ovatulus* was found in the present study only on the trunks of living trees, although dead standing trees had also been investigated with trunk eclectors at the same locality, such a microhabitat-specialisation seems not to be essential for the species. In floodplain habitats decomposing plant material is abundant in “Ufergenist”, i. e. accumulations mainly of plant material deposited by floodwaters at the margins of streams, often clumped together in branches of nearby shrubs. Such habitats were searched for insects by the senior author, but *X. ovatulus* was not found. Berlese treatments of the “Genist” should prove, whether the tiny species (1.1-1.5 mm) was overlooked by hand sampling. Broom sweeping of trunks of the different tree species in the reserve documented several other bark living species but not *X. ovatulus*. Our findings suggest, that the species is not specialized on loose bark (although it was found there in France), but prefers living trees with rough bark, where it probably lives in the deeper parts of the crevices – a habitat extremely difficult to search for tiny insects, which could explain the rarity of the findings. A further possibility is nocturnal activity of the species on the bark.

Phenology

First phenological data resulting from the new records can now be made available: Adult individuals were present from April/May to August /September, suggesting that the species overwinters in the adult stage. Males were present from May/June to August/September, the only female was found in April or May. In the Italian sample the sexes were equally abundant, while in the Hessian series males dominated. Further research should aim to reveal the sex ratio and whether apparent imbalances are for example due to a more active way of life of the males, perhaps because of intense searching activity for females.

Dispersibility

WAGNER (1954) reported brachypterous, sub-brachypterous and macropterous specimens. Unfortunately he did not assign these states to

the sex of the individuals. The newly found female was macropterous, the males were brachypterous.

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