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Conference Abstract

First data on the phenology and spermatogenesis of *Ilyocoris cimicoides* (Heteroptera, Nepomorpha, Naucoridae) from the Balkan Peninsula

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Abstract

Ilyocoris cimicoides (Linnaeus, 1758) is an aquatic bug, common predator in lakes and ponds (Denton and Rordam 1998). It is very broadly distributed: found in most of Europe and in Asia from Anatolia to Siberia and Northern China (Fent et al. 2011). The phenology of the species has been studied in Northern and Central Europe (references in Papacek and Gelbic 1989, Waitzbauer 1974), the Lower Volga region and Western Siberia (references in Kanyukova 2006). A chromosome formula of 2n = 48A + 2m + X and post-reduction of the sex chromosomes have been reported for *I. cimicoides* (as *Naucoris cimicoides*), based on specimens (no information about the developmental stage) collected north of the Danube River (Steopoe 1929). Von Divaz (1915) published a study on the spermatogenesis of *I. cimicoides* (as *Naucoris cimicoides*) from Serbia, but he did not in fact deal with the spermatogenesis, focusing instead on the presence and behaviour of specific chromatophilic bodies (“corpuscules archoplasmiques”). The only information on spermatogenesis during the preimaginal development of *I. cimicoides* has been reported by Papacek and Gelbic (1989) for South Bohemia. They studied the development of the internal male reproductive system with a brief comment on spermatogenesis observed in different nymphal stages. There are neither phenology nor chromosome data about *I. cimicoides* from the Balkan Peninsula published. Such information for this region could

contribute to a better understanding of the adaptations of this broadly distributed aquatic insect to the climate conditions in South-East Europe, or to potential climate changes.

We analysed *I. cimicoides* specimens collected between March and November 2008–2019 from more than 50 different localities in Bulgaria and determined the months of the year when each of the developmental stages was available. In addition, we studied the spermatogenesis in different nymphal stages and imago, collected between September 2018 and August 2019.

The analysis of the phenology data showed that in Bulgaria, similarly to the observations from other parts of its range, *I. cimicoides* has one generation per year (i.e. it is univoltine). In the studied region, the postembryonic development begins earlier (in April) than in Central Europe (in May) and western Siberia (in June) (references in Papacek and Gelbic 1989, and in Kanyukova 2006). We confirm the chromosome formula and the behaviour of the sex chromosomes reported by Steopoe (1929).

In stage V nymphs, collected in September, spematogenesis was already completed – we observed only spermatids/spermatozoa, as it has been reported by Papacek and Gelbic (1989). But in nymphs V, collected in July and August, we observed both first and second meiotic divisions – the spermatogenesis process was still going on.

The differences between the phenology data for *I. cimicoides*, reported for northern parts of its range (Central Europe and West Siberia), and the data obtained in the present study could be a result of an adaptation of the species to the climate specific for South-Eastern Europe (in particular, Bulgaria).

Keywords

aquatic insects, seasonal development, karyotype, Bulgaria

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