

Notes to the conservation status and ecology of the benthic water bug *Aphelocheirus aestivalis* (FABR.) (Heteroptera: Aphelocheiridae) in the Czech Republic

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Aphelocheirus aestivalis have shown dramatic declines during the last century in some parts of Europe (see DAMGAARD 2005). It is evaluated as endangered water bug species in some European countries (Škapec, 1992) including central European ones, for example in Germany and Czech Republic too. But HOFFMANN (2004) stated: „Damit ist eine evt. Gefährdung der Art doch sehr fraglich und neu zu diskutieren“. PAPÁČEK & BAUER (2006) presented the opinion that this species is not really endangered in the Czech Republic. What are the reasons which are their opinion based on?

Occurrence, phenology, habitat and food preference of *Aphelocheirus aestivalis* were monitored and studied in the southern part of the Czech Republic in the Lužnice River basin more or less irregularly since 1987. The topic of this investigation was also the influence of floods on *Aphelocheirus* populations. Lužnice River basin is a part of the Biosphere Reserve Třeboňsko, which is located in the close proximity to the Elbe – Danube watershed.

Aphelocheirus aestivalis is distributed in numerous sites of a lower part of the Lužnice River basin including 13 km long artificial channel (Nová řeka River), which was built 450 years ago. It occurs only in the rocky and sandy bottom where current speeds and dissolved oxygen are both high in this area. Preferred microhabitats are represented by sand and coarse gravel, that overline the larger boulders, rocks, dead woods (broken tree trunks or branches) sandy or rocky places with submerged plants, especially with common water moss (*Fontinalis antipyretica*, Fontinalaceae).

MESSNER ET AL. (1983) ascertained that some populations of *A. aestivalis* seasonally migrate to other habitats like pools and backwaters. Migrations or occurrence in stagnant waters like pools or backwaters in the Lužnice River basin yet were not noted.

Although the upper part of the Lužnice River (SW from the Suchdol nad Lužnicí City) is compound by both potamal and rithral zones (also by crenal part in the Novohradské hory Mts. = Weinsberger Wald in the Austrian side) and has numerous sites with character of optimal habitats for *A. aestivalis*, this species does not occur in this part of the river. Important right-side tributary of Lužnice River from the biodiversity and natural conservation point of view, is the Dračice River (= Reissbach in the Austrian side). *A. aestivalis* is relatively abundant in this rivulet. New habitats in the Lužnice River basin are inhabited only downstream from the mouth of Dračice River by this species.

Larvae of *Baetis*, *Ephemerella* (Ephemeroptera) and *Hydropsyche* (Trichoptera) are probably preferred prey of *Aphelocheirus* in the investigated area (PAPÁČEK & BAUER 2006).

The Lužnice River and its tributaries are characteristics by often floods. These floods form and slowly change route of stream and also produce new oxbows and backwaters every few years, especially in the upper part of the basin with meanders of the river (without occurrence of *A. aestivalis*). In the lower part of the basin, their destructive and „creative“ influence are realized especially by hard flushing of river bed and by destruction of the banks. Changes of chemical parameters are also connected with these floods and flushing of banks as well as artificial water bodies in the flooding area. The values of nitrates and phosphates can be relatively high sometimes in some sites after flooding events. Most destructive floods were noted in the August 2002 and in the March and August 2006. It is out of any discussion, that floods as well as both short and long term changes of chemical parameters of waters are environmental

factors that can influence composition of benthic communities in a substantial way. But populations of *A. aestivalis* are relatively stable in all the investigated sites. The benthic communities, including *Aphelocheirus*, have good recovery ability after flooding events and relatively good resistance to the some environmental changes.

ŠKAPEC (1992) listed *A. aestivalis* in the list of endangered invertebrates of the former Czechoslovakia. But above mentioned facts as well as new records of the species of *A. aestivalis* from numerous localities (rivers and streams) of the Czech Republic, is the reason why PAPÁČEK & BAUER (2006) stated that the species is not really endangered in the Czech Republic at present. On the other hand, these authors noted, that the dispersal ability of these insects is strictly limited due to their flightlessness (central European population is more or less wingless) and tight valency on the habitats with highly aerated water and with specific structure of the bottom, and that the arteficial destruction of original habitats is usually the reason for emigration or extinction of *A. aestivalis* population in such locality. All the insensitive technical adjustments, reparations after flooding events or larger constructions in the „*Aphelocheirus* localities“ can really threaten local populations of the species.

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