

Status of the noble crayfish *Astacus astacus* (L.) in Germany : monitoring protocol and the use of RAPD markers to assess the genetic structure of populations



On the basis of a literature review and new studies in Brandenburg, northeast Germany, the status and the genetic structure of the noble crayfish *Astacus astacus* (L.) in Germany are described. The present situation is characterized by a patchy distribution comprising at least 719 stocks, documented after 1990. Stocks are mainly confined to the uppermost stretches of small streams or to small lakes without connection to other surface waters. As is typical of Europe, geographical isolation, inbreeding and genetic drift may play an important role in the population structure of the noble crayfish in Germany. By means of RAPD-PCR, stocks in Brandenburg (Br1, Br2 and Br3), Schleswig-Holstein (SH) and Bavaria (B1 and B2) were analysed for their genetic structure. RAPD markers show high ability to separate significantly all investigated stocks as single populations. Mean non-dimensional distances were 5.8, 5.6 and 4.2 for SH-B, SH-Br and B-Br between-region comparisons, respectively. Values for within-region comparisons were 3.1 and 1.3 for B-B and Br-Br, respectively. However, even the three different lakes located in Brandenburg, which are only about 20 km apart from each other, contained significantly distinguishable populations. So far it is not possible to judge

whether the distinct populations result from isolation of stocks or indicate local adaptations to the specific environmental conditions. The answer to this question is important with respect to conservational management and the design of restocking programmes. A decision tree for the inventory and monitoring of noble crayfish stocks is suggested, since some areas in the northeast of Germany may still contain many unknown stocks, which are of considerable importance for conservation.

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