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Molecular and morphometric characterisation of the invasive signal crayfish populations in Croatia

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Abstract

The signal crayfish *Pacifastacus leniusculus* (Dana, 1852) is a native species to North America. It was introduced to Europe and Japan where it rapidly spread as an invasive species. In Croatia, it is recorded in the rivers Mura and Drava, where it spread downstream from Slovenia, and in the Korana River, where it has been recently illegally introduced. In the invaded areas, signal crayfish outcompetes native crayfish species. Since the knowledge on the genetic diversity of this invasive species is limited, microsatellite markers and sequences of mitochondrial gene for 16S rRNA were analysed to explore the genetic relations between the two Croatian populations (Mura and Korana rivers) as well as their relation to other already studied European populations. Moreover, 16S rRNA sequence fragments of Croatian samples were compared with those from the native range in the west North America. Morphometric characteristics were also studied to determine if there are significant differences between studied populations and if these are concordant with the genetic analyses results. Also, morphometric data were used to assign Croatian signal crayfish into subspecies classification according to Miller's discriminant function formula, and to compare claw surface area among Croatian, Japanese and North American populations. Based on the results of morphometric characteristics Croatian samples showed *Pacifastacus leniusculus leniusculus*-like morphology. Phylogenetic reconstruction based on 16S rRNA, positioned Croatian samples into *P. leniusculus sensu* Larson et al. (2012). Results on microsatellite