

Biomonitoring invasive species: the case study of the red swamp crayfish in Friuli Venezia Giulia.

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The impact of introduced species on ecosystems has been widely recognized as one of the factors causing loss of biodiversity. This is the case of the red swamp crayfish (*Procambarus clarkii*) which has been introduced in the Friuli Venezia Giulia (FVG) in 2007, and that represents a threat to the native white-clawed crayfish.

This study presents the findings obtained from a massive sampling campaign conducted from 2012 to 2013 within the FVG. Nine out of 216 stations sampled resulted positive to the presence of *P. clarkii* and most of them were located in the southern part of the region. The genetic variation among these nine populations was examined using partial sequences of the mitochondrial COI gene.

A phylogenetic reconstruction showed that the majority of introduced populations remain very similar to each other, with the exception of the one from Casette locality, which was the most divergent one.

From an analysis of population size changes, Casette, resulted characterized by populations in expanding phase and statistical analyses highlighted as the population did not stem from a neutral model of constant size.

Casette is therefore the locality presenting higher variability of *P. clarkii* populations and could be the point of introduction in FVG of this species. For an early warning and a better management of this invasive species we have set up a web site for public reports (<http://gamberialieni.divulgando.eu/>). We also demonstrated that the red swamp crayfish in FVG is able to live and reproduce in water 12°C colder than the alleged optimum (Peruzza *et al.*, 2015). Monitoring actions on *P. clarkii*'s populations are due in order to define the state of the invasion, to collect information about the vectors and the number of introductions and, as a consequence, we may attempt to halt or to slow down the invasion process.