



Conference Abstract

The amount of environmental DNA increases with freshwater crayfish density and over time

Corinna Wallinger[‡], Daniela Sint[§], Bernhard Kolp[§], Leopold Füreder[§], Michael Traugott[§]

[‡] Sinsoma, Voels, Austria

[§] University of Innsbruck, Innsbruck, Austria

Corresponding author: Corinna Wallinger (corinna.wallinger@sinsoma.com)

Received: 25 Feb 2021 | Published: 04 Mar 2021

Citation: Wallinger C, Sint D, Kolp B, Füreder L, Traugott M (2021) The amount of environmental DNA increases with freshwater crayfish density and over time. ARPHA Conference Abstracts 4: e65030.

<https://doi.org/10.3897/aca.4.e65030>

Abstract

eDNA analysis is ideally suited to monitor the occurrence of endangered or invasive species because of its non-invasive nature and high sensitivity. European freshwater crayfish are threatened across the whole continent. Classical crayfish monitoring is challenging and time consuming due to their nocturnal activity and hidden lifestyle. Therefore, eDNA-based monitoring of native as well as invasive species seems to be of great benefit for the conservation of the native species and it has indeed been increasingly applied in recent years. Nevertheless, comparably little is known on the relationship between eDNA concentration and crayfish population densities, a prerequisite for estimating population size based on eDNA measurements. Here, we performed laboratory experiments to investigate the relationship between the concentration of crayfish eDNA and population densities - measured as crayfish size and biomass. There was a strong correlation between the two measurements. Moreover, the amount of eDNA increased at least during the first three days after crayfish stocking in the aquarium. The experiments also indicate, that crayfish activity might have a strong influence on the eDNA signal strength. Our findings will significantly contribute to an optimization of the monitoring of freshwater crayfish via the analysis of eDNA and therefore be important for the conservation of these threatened species.

Keywords

Astacus leptodactylus, narrow clawed crayfish, diagnostic PCR, crayfish density

Presenting author

Corinna Wallinger

Presented at

1st DNAQUA International Conference (March 9-11, 2021)

Acknowledgements

We thank Martina Nindl for supporting and supervising BK during the laboratory analysis.

Author contributions

DS, LF and MT planned and developed the study design, DS developed the molecular assay, BK conducted the experiments and lab analysis, ORR performed the statistical analysis, DS drafted the first version of the manuscript and all authors commented on it and approved the final submission. CW revised the manuscript and presents the study.

Conflicts of interest

None