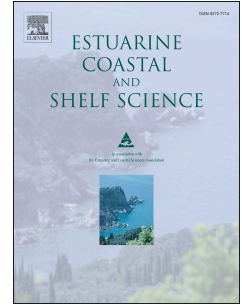


Accepted Manuscript

Isotopic determination of the trophic ecology of a ubiquitous key species - The crab *Liocarcinus depurator* (Brachyura: Portunidae)

Giulio Careddu, Edoardo Calizza, Maria Letizia Costantini, Loreto Rossi



PII: S0272-7714(17)30406-7

DOI: [10.1016/j.ecss.2017.04.013](https://doi.org/10.1016/j.ecss.2017.04.013)

Reference: YECSS 5451

To appear in: *Estuarine, Coastal and Shelf Science*

Received Date: 5 July 2016

Revised Date: 10 April 2017

Accepted Date: 14 April 2017

Please cite this article as: Careddu, G., Calizza, E., Costantini, M.L., Rossi, L., Isotopic determination of the trophic ecology of a ubiquitous key species - The crab *Liocarcinus depurator* (Brachyura: Portunidae), *Estuarine, Coastal and Shelf Science* (2017), doi: 10.1016/j.ecss.2017.04.013.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Isotopic determination of the trophic ecology of a ubiquitous key species - the crab *Liocarcinus depurator* (Brachyura: Portunidae)

Giulio Careddu^{1,2}, Edoardo Calizza^{1,2}, Maria Letizia Costantini^{1,2}, Loreto Rossi^{1,2}.

¹ Department of Environmental Biology, University of Rome “La Sapienza”, Via dei Sardi 70, 00185 Rome, Italy.

² CoNISMa, Piazzale Flaminio 9, 00197, Rome, Italy

Corresponding Author: marialetizia.costantini@uniroma1.it; [add telephone number at proof stage]

Highlights

- The $\delta^{15}\text{N}$ and $\delta^{13}\text{C}$ values of *L. depurator* and its prey in the Gulf of Gaeta were assessed.
- The trophic niche and diet of the crab *L. depurator* were isotopically determined.
- The trophic position of crabs did not change with prey abundance.
- Polychaeta Errantia were the most important crab prey.
- A range of environmental conditions in the Gaeta Gulf were identified.
- $\delta^{13}\text{C}$ values indicated that terrestrial matter was integrated along the food-chains.

Abstract

Knowledge of the trophic ecology of predators is key to understanding how they affect food web structure and ecosystem functioning. The harbour crab *Liocarcinus depurator* (L.) (Brachyura: Portunidae) is one of the most abundant decapod species in soft-bottom areas of the Mediterranean Sea and northeast Atlantic Ocean. It is both a common prey and predator of commercial and non-commercial marine species and its predation pressure appears to have little effect on the subtidal community assemblage. However, there are few studies of its diet and little is known about its role in mediating energy flows in marine ecosystems. In this study, carbon ($\delta^{13}\text{C}$) and nitrogen ($\delta^{15}\text{N}$) stable isotope analysis (SIA) and Bayesian analytical tools were used to characterise the trophic niche of *L. depurator* and to quantify the most important prey supporting this species under various environmental conditions. Specimens of *L. depurator*, their potential prey and basal resources were collected from two different subtidal areas of the Gulf of Gaeta, one affected by human activities (north side) and the other seasonally influenced by freshwater inputs originating from the River Garigliano (south side). While there were differences between the two sampling areas in terms of the abundance and $\delta^{15}\text{N}$ and $\delta^{13}\text{C}$ values of the macrobenthic prey community, no differences in the $\delta^{15}\text{N}$ values and trophic position of *L. depurator* were observed. Specifically, Bayesian mixing models showed Polychaeta Errantia as the main source of crab diets in both areas. The observed differences in the $\delta^{13}\text{C}$ values and the analysis of trophic pathways also indicate that the terrestrial

Download English Version:

<https://daneshyari.com/en/article/5765341>

Download Persian Version:

<https://daneshyari.com/article/5765341>

[Daneshyari.com](https://daneshyari.com)