

Master's Thesis Opportunity n. 2: Ontogenetic Dietary Shifts and Trophic Ecology of the Blue Crab in Mediterranean Coastal Lagoons

Topic

Ontogenetic changes in diet and trophic position of *Callinectes sapidus* through stomach content and stable isotope analyses.

Project:

The Research is framed within the Project “ZoeAI” – Regione Lazio Codice Intervento 116101 – Azione 1 – Obiettivo Specifico 1.6 – PN FEAMPA 2021/2027., February 2025-February 2026

Background

The blue crab (*Callinectes sapidus*) is an invasive species widely distributed across Mediterranean coastal lagoons, where it may significantly affect benthic communities and local trophic dynamics. Understanding feeding strategies and habitat-dependent trophic pathways across different ontogenetic stages is essential to evaluate the ecological role of this species and its interactions with local biological communities. While previous studies have described the general diet of the blue crab, detailed information on ontogenetic dietary shifts and resource assimilation in Mediterranean transitional systems is still limited. Combining short-term (stomach contents) and long-term (stable isotopes) dietary approaches provides a powerful framework to reconstruct trophic ecology across life stages.



Objectives

The main goal of the thesis is to investigate ontogenetic shifts in diet and trophic position of the blue crab in Mediterranean lagoon systems.

Specific objectives include:

- a) Characterizing diet composition across ontogenetic stages (juveniles, sub-adults, adults).
- c) Estimating the relative contribution of basal food sources to assimilated biomass.
- d) Quantifying ontogenetic changes in trophic position and niche width.

Expected Outcomes

1. Detailed characterization of ontogenetic dietary shifts in the blue crab.
2. Quantification of trophic position changes across life stages.
3. Identification of key basal resources supporting crab populations.
4. Insights into habitat-specific trophic pathways in lagoon coastal systems.
5. Improved understanding of the ecological impact of this invasive species.

Candidate Profile

We are looking for a motivated master's student with a background in Ecology and Biology. Interest in trophic ecology and food web analysis. Willingness to conduct both field and laboratory work. Attention to detail, especially for stomach content analysis. Basic knowledge of statistical analysis in R is preferred.

Start: May 2025

Duration: approx. 8 months

Location: Fieldwork in three Italian coastal lagoons of Central Italy for sampling and ecological characterization of the study sites; laboratory activities at the Laboratorio di Ecologia Sperimentale e Acquacoltura (LESA) – Dipartimento di Biologia, including collaboration with CNR IGAG facilities.

Supervisor: Prof. Eleonora Ciccotti

Co-supervisor: Dr Chiara Leone

Interested candidates are invited to send a short motivation letter to:

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