

How marine parasites pick their host?



Zoran Šargač

zoran.sargac@uib.no

Department of Biological Sciences

Larval development and settlement patterns in parasitic barnacles: effects of environmental drivers, inter- and intra-population differences, and host specificity

Background and motivation

As a marine ecologist, I specialized in small plankton organisms and crustaceans. My main areas of interest are parasites' effects on aquaculture and marine life, as well as the ways that climate change is affecting ecosystems, species, and human society. I am keen to discover new knowledge that will inspire industry and aquaculture to use marine resources more sustainably and to identify cutting-edge ideas and environmentally friendly technology solutions that can benefit society and the environment. By joining the SEAS programme, I can pursue my scientific interests while simultaneously putting research findings into practice to make a positive environmental impact in industry and influence maritime area management.



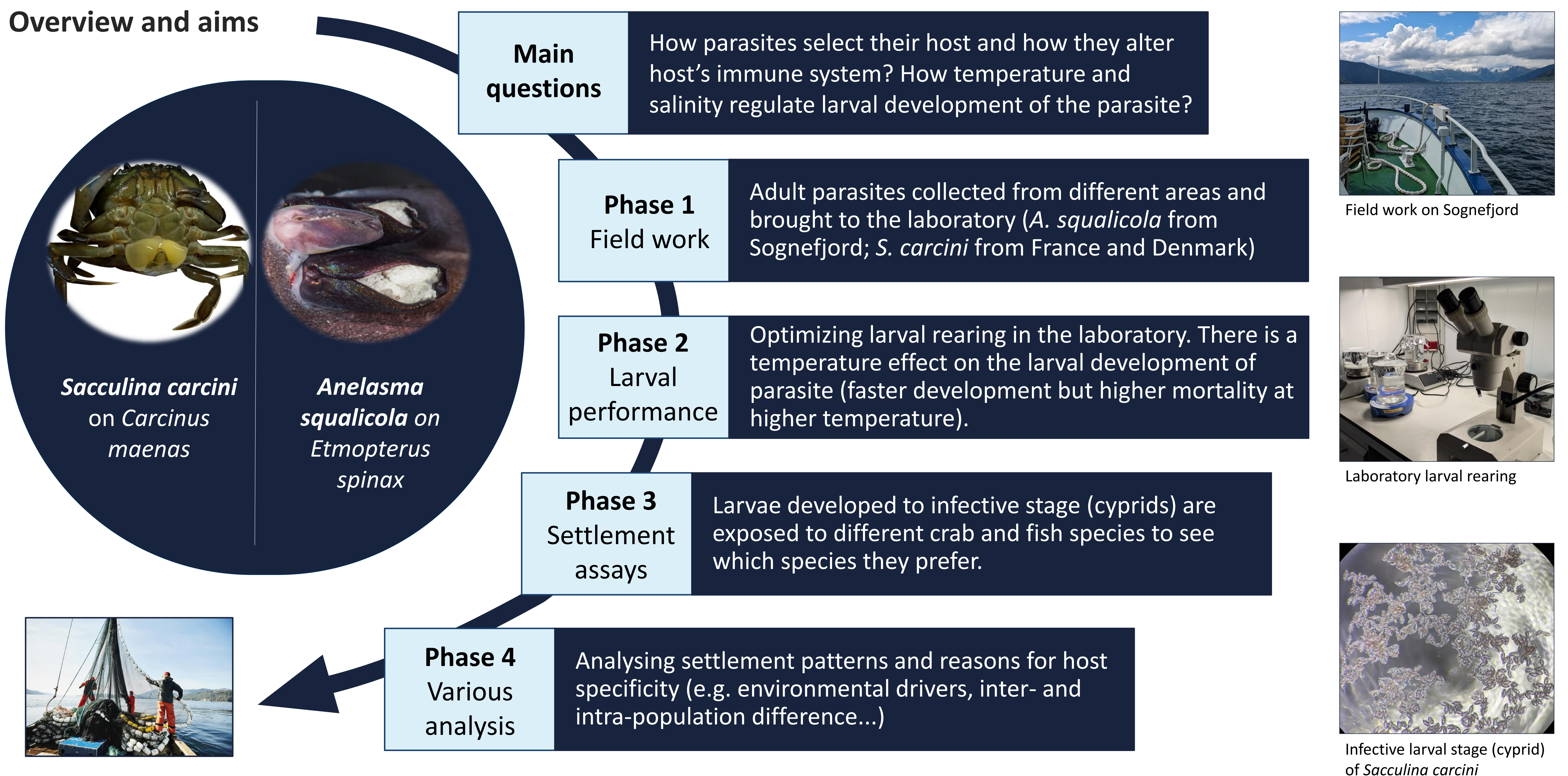
Crabs infected with parasite

Project description

Understanding the impact of parasites on organisms in coastal and deep-sea ecosystems and how climate change may affect them is crucial for future marine management. Parasites have a significant impact on marine ecosystems and can cause major issues in fisheries and aquaculture via sterilization of the host and ecosystem changes. My project investigates how and why parasites infect specific fish or crab species to help reduce economical losses in aquaculture. I work with two parasitic barnacles, *Sacculina carcini* and *Anelasma squalicola*. *S. carcini* is a well-known barnacle that infects various crab species, while *A. squalicola* is a unique barnacle that has recently made the first known transition into the parasite mode of feeding on vertebrate species, such as deep-sea

sharks. These animals attach to the host during their larval stage. I am combining different field and laboratory experiments to test their larval development and settlement patterns under different environmental treatments and their host choices for settlement. My project's objectives are to explore parasites' ecology and crab host preference and examine their potential to infect new fish species. The findings from this project will help in defining drivers that regulate infection patterns in marine habitats, improve aquaculture production and management of marine areas, and explore new ways to use parasites as a positive tool in the future to solve environmental problems.

Overview and aims



Marine sustainability

Sacculina carcini is a parasite that can cause major losses in aquaculture and fisheries via the sterilization of crabs. Knowledge about how *S. carcini* chooses crab host species for infection and which drivers regulate their individual choices will provide crucial information for the aquaculture industry. Since *Anelasma squalicola* is the only known barnacle that parasitizes vertebrate species and has multiple hosts recorded around the world, there is a concern that this species may infect new fish in the future and cause changes in marine ecosystems. Findings from this project will help in future assessments of marine habitats and resources and provide input for safer manipulation of invasive marine species by parasite-based biological control.

Planned activities and collaborations

- Collaboration with Institute of Marine Research (IMR), working on lobster larvae and toxicology
- International collaboration for investigating immune response of infected and uninfected crabs (University of Galway, Ireland and DTU Aqua, Denmark)



Supervisory team

- Prof. Henrik Glenner, University of Bergen, Department of Biological Sciences



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 101034309.



SEAS

