The hidden consequences of *Lithophaga lithophaga* (Linnaeus, 1758) illegal fishery

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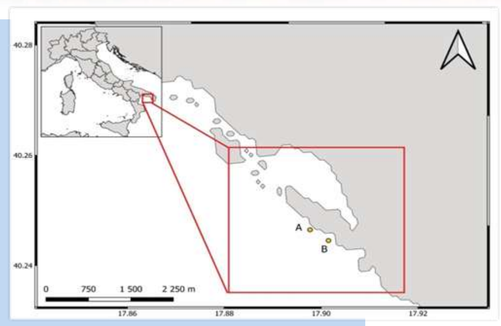
Introduction

The illegal fishery of the date mussel *Lithophaga lithophaga* is one of the most destructive practices for the rocky subtidal substrates in the Mediterranean Sea. Once the date mussel is fished, there is no evidence of full recovery of the habitat since several decades are necessary for the date mussels to regrowth after their harvesting. Assessing the consequences of the loss of this species from kilometers of coasts is critical to understand the ecological effect of this illegal fishery. We carried out a manipulative experiment to assess if the presence of *L. lithophaga* can affect the recovery of benthic assemblages, possibly also driving the development of a distinct epilithic microbial communities.

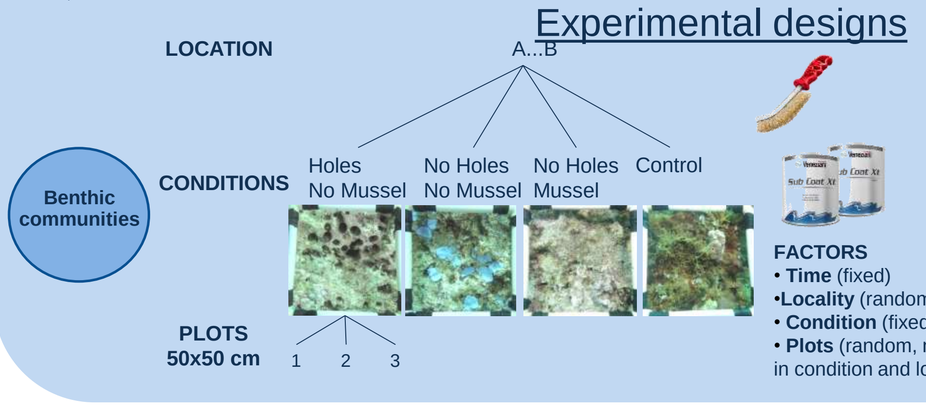
Material and Methods

Study area

We selected two sites 300 m apart within Porto Cesareo MPA (South Italy)



Experimental designs

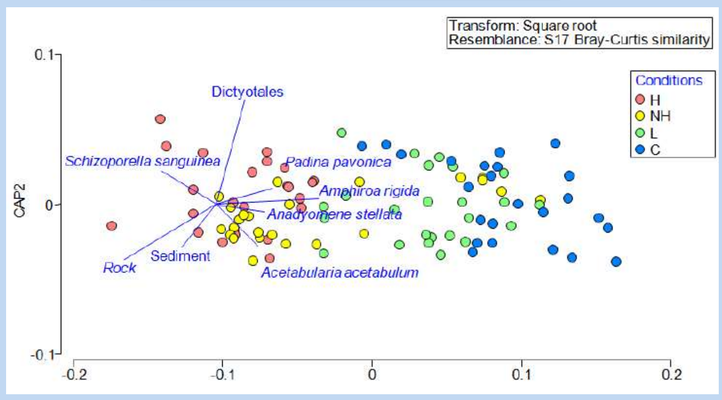


Results

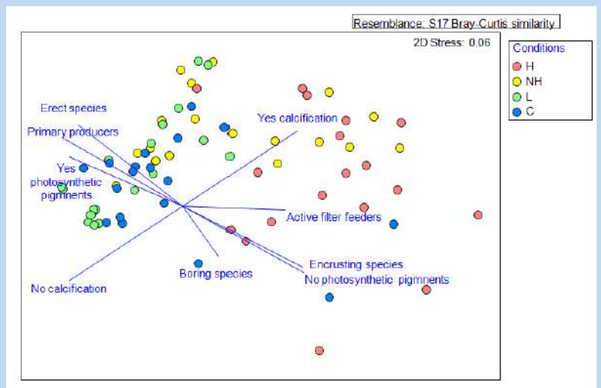
Effect of *Lithophaga lithophaga* on

Benthic communities

Benthic community structures

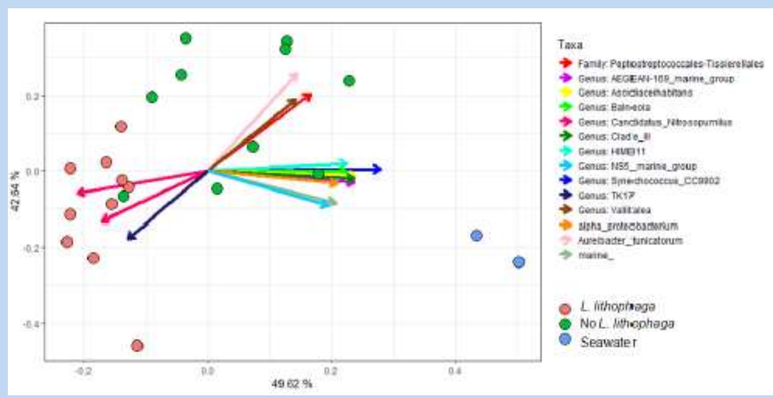


Benthic community functioning

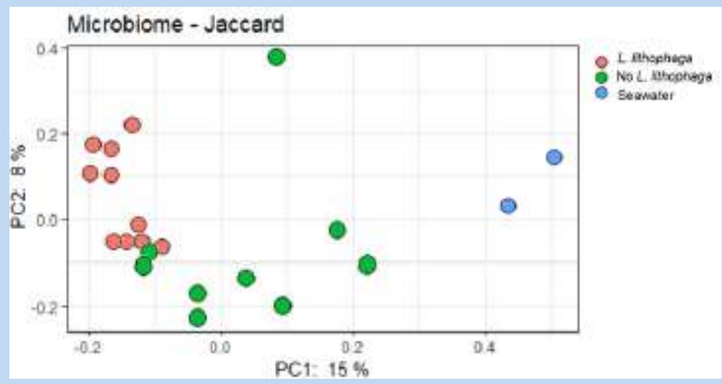


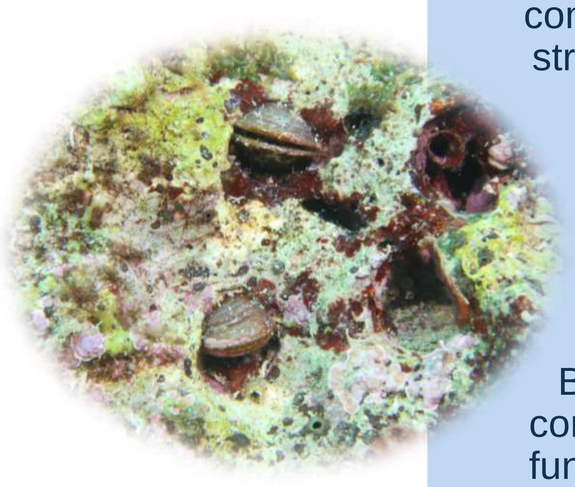
Microbial communities

Microbial community structures



Microbial community compositions

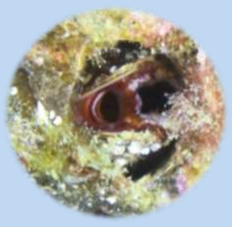




Discussions and conclusions

The presence of *L. lithophaga* drive the development of distinct benthic assemblages and microbial community

• The presence of *L. lithophaga* drives the development of distinct benthic assemblages favouring the colonitation of primary producers and erect species



• *L. Lithophaga* favours the presence of microbes involved in the hydrolysis of organic matter and nitrogen cycle

• High variablility of microbial communities within impacted substrates

Date mussel illegal fishery have consequences on benthic and microbial communities possibly affecting ecocystem services of coastal habitats

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