



Peer Community In Ecology

A longer-term view on benthic communities on artificial reefs: it's all about location

James Davis Reimer based on peer reviews by 2 anonymous reviewers

sylvain blouet, Katell Guizien, lorenzo Bramanti (2022) Artificial reefs geographical location matters more than its age and depth for sessile invertebrate colonization in the Gulf of Lion (NorthWestern Mediterranean Sea). Missing preprint_server, ver. Missing article_version, peer-reviewed and recommended by Peer Community in Ecology.

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In this study by Blouet, Bramanti, and Guizen (2022), the authors aim to tackle a long-standing data gap regarding research on marine benthic communities found on artificial reefs. The study is well thought out, and should serve as an important reference on this topic going forward.

Artificial reefs (ARs) are increasingly deployed in coastal waters around the world in order to reduce pressure on fisheries or to enhance fisheries stocks, via providing a hard substrate and complex shapes that induce the development of benthic communities, which together with the shape of the ARs themselves can provide areas for fish species to live. Much research has documented the effects of ARs on fish abundance and diversity, and documented over the short-term the benthic communities that settle and grow on ARs. However, there is a clear data gap on longer-term (e.g. greater than 10 years) trends of benthic communities on ARs. As well, any study on ARs must also account for the shape(s) of the ARs themselves, as there are numerous designs deployed, and also consider the depth of the ARs, and the age of the ARs.

The authors used the extensive ARs deployed in the Gulf of Lion in the northwestern Mediterranean to examine the effects of AR shape, depth, age (time since deployment), and location, both at local and wider regional scales, specifically examining the presence and absence of five marine species; 2 gorgonian octocorals, 1 ascidian, 1 annelid, and 1 bryozoan. Results indicate that location influenced the benthic communities above all other factors, suggesting the importance of considering the geographic location in future AR deployment and management of communities. The authors theorize that larval supply processes are important in shaping the observed patterns.

I conclude that this is an important report on AR ecology for several reasons. Firstly, the authors collected data from a variety of benthic species, including species that are habitat-forming but unfortunately perhaps not as focused on as more commercially important species. Secondly, by utilizing ARs deployed from as far back as the mid-1980s, the authors have generated longer-term information on benthic communities on ARs than what is commonly seen in the literature. Finally, the authors should be commended for their clever and hard work to incorporate all of the various factors into their analyses, and elucidating the importance of location. In fairness, this last point represents the only true limitation of the paper, as some of the statistical analyses were limited due to the small numbers of ARs fitting certain categories, and thereby limiting some of the conclusions. Still, it is very rare that a marine experimental ecologist would be in charge of AR deployment designs for 40 years, and the authors cannot be faulted for this shortcoming over which they had no control. On the contrary, the fact that the authors have performed this important work in the face of potentially limited analyses should be recognized. Marine ecology is often strongly limited by a lack of past data. In order to move past this impediment, more excellent work like the current paper is needed, conducted in a wider variety of ecosystems. I hope Blouet et al. (2022) can serve as a template for future work on a wider scale. **Reference**

Blouet S, Bramanti L, Guizien K (2022) Artificial reefs geographical location matters more than shape, age and depth for sessile invertebrate colonization in the Gulf of Lion (NorthWestern Mediterranean Sea). bioRxiv, 2021.10.08.463669, ver. 4 peer-reviewed and recommended by Peer Community in Ecology. <https://doi.org/10.1101/2021.10.08.463669>

Reviews

Evaluation round #1

DOI or URL of the preprint: <https://doi.org/10.1101/2021.10.08.463669>

Authors' reply, 10 February 2022

Dear recommender,

We are pleased to send you a revised version of our manuscript.

We would like to thank the reviewers and you for their time devoted to the review of the manuscript, for the encouraging comments and for their suggestions, which I have no doubt, have enabled us to improve the manuscript.

We have taken all of your feedback into account in the attached revised manuscript, and Supplementary materials. We would like to emphasize that following the suggestion by reviewer 1 we added the test of the artificial reef shape which led us to slightly modify the title of the manuscript in order to better reflect our findings:

Artificial reefs geographical location matters more than shape, age and depth for sessile invertebrate colonization in the Gulf of Lion (NorthWestern Mediterranean Sea)

We also provide a letter for each reviewer addressing their respective comments in details.

We sincerely thank you for your time and effort that goes into the publication of this paper.

Best regards

Sylvain Blouet, Katell Guizien and Lorenzo Bramanti

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Decision by [James Davis Reimer](#), posted 28 December 2021

Decision on PCI Ecology #400

Thank you for submitting your work to PCI Ecology. I have read your work myself, and heard back from two expert reviewers. Based on my reading of your work combined with the reviewers' comments, I can wholeheartedly state that I believe this work will become a valuable addition to the literature on benthic community succession. As such, I believe I can recommend this preprint, but before doing so, I would be grateful if the authors can address the comments by the two reviewers. I believe the comments to be constructive and helpful, and look forward to seeing a revised version of your work!

Reviewed by anonymous reviewer 1, 15 November 2021

Dear S. Blouet, L. Bramanti and K. Guizien,

Your article is great and I really wish to see it published!

After several readings of your manuscript I attached below a list of my comments and suggestions. I hope this could help to improve the final draft.

Sincerely,

[Download the review](#)

Reviewed by anonymous reviewer 2, 27 December 2021

Dear Sylvain Blouet, Lorenzo Bramanti, and Katell Guizien,

I enjoyed reading your manuscript. Long term monitoring data acquired during these projects are of extremely importance to managers since they can provide crucial ecological patterns not discerned from short term studies.

The authors do an overall great job at introducing the topic of artificial reefs (ARs) and their importance. Perhaps an additional sentence may be added regarding additional negative effects (e.g., chemical pollution, marine debris, beacons for fishermen). I was able to follow the materials/methods sections, as well as the results and discussion. This is perhaps, along with the data provided, their strongest quality of their written work. I also really enjoyed their figures and tables because they were easy to follow and read.

In my opinion, their conclusion is their weakness, and feel the authors should dedicate additional time to this section. The authors mention since the introduction that ARs are primarily deployed to reduce fishing pressures in certain fisheries, if not all (non accessible scuba sites may be protected from these). However, the authors do not provide data regarding the biomass, abundance, and species diversity of fish associated with the deployed ARs. They only provide data on five sessile invertebrates which dominate these ARs. I only mention this because of how the manuscript is ended, "The present study advocates accounting for the geographical arrangement in planning ARs deployment to enhance fish productivity while avoiding the spread of invasive species.", but the authors do not provide evidence of such.

I wonder why the authors decided to just analyze the dataset from the years 1985 and 2000 (on forward)? The dataset from 1992-1999 may provide additional and important data pertaining to the area. These may allow the authors to observe additional patterns which may strengthen their scientific argument.

Lastly, I would like to congratulate the authors for their effort and dedication.

Best regards,

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