

Biogeosciences Discuss., author comment AC3  
<https://doi.org/10.5194/bg-2021-240-AC3>, 2021  
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## Reply on RC2

Emanuela Fanelli et al.

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Author comment on "Spatial changes in community composition and food web structure of mesozooplankton across the Adriatic basin (Mediterranean Sea)" by Emanuela Fanelli et al., Biogeosciences Discuss., <https://doi.org/10.5194/bg-2021-240-AC3>, 2021

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Dear Anonymous Reviewer 2,

we are very grateful for your precious comments which will allow us to better define mesozooplanktonic communities of the Adriatic basin in terms of assemblage structure, mostly linked to the peculiar oceanographic settings of the area. All your comments have been considered, in the preparation of the, edited version of the manuscript

Best regards Emanuela Fanelli

This paper describes the spatial distribution of mesozooplankton communities in the whole basin of the Adriatic Sea as well as the food structure of mesozooplankton based on isotope analysis. In general, the authors attempted to present the spatial differentiation of mesozooplankton community among the different areas of the Adriatic Sea. Although to be presented the zooplankton community for the whole basin is something rather new for the area, their findings regarding the observed differences in the mesozooplankton community between offshore and inshore among the areas it is something that is expected. What is missing is to investigate if the observed differences can be attributed to different mesoscale features existing in the area. However, the innovative part of this study are the results for the isotope analysis. The authors have used many species and they tried to find through the isotope analysis the food web structure of the mesozooplankton in the Adriatic. Although their findings are quite interesting and contribute with new knowledge especially regarding the findings from the isotope analysis, there are some parts in the methodology as well as in the results that the authors have to clarify before this article has the quality to be published. In the following notes, I will give some comments and suggestions on the different chapters that could help the Authors to improve their article.

In the abstract, a relative to the results conclusion is missing. Please add a more specific conclusion regarding to your findings.

*Authors, Thanks we're preparing a revised version of the manuscript amending all these points*

Either in the Introduction or in the Methodology/study area description chapter, it would be helpful the authors to add a description of the hydrological conditions /mesoscale features/circulation that they exist in the Adriatic Sea during the sampling period.

*Authors, Thanks for this suggestion, we'll add this missing information.*

Line 110. It seems that the selected areas are based only to the topography and fishery management reasons. What about the existing circulation and mesoscale features of the area? Have you take into consideration other parameters as well for the division of the area?

*Authors, The project this paper is based on is finalised to the assessment of small pelagic fishes, this is the reason for our first choice, however, according to your suggestions and also considerations from AR1, we'll change such approach by considering oceanographic settings of the area.*

Line 116. Explain the reasons that you have done the zooplankton sampling in June/July since it is not one of the corresponding period to examine zooplankton in the open sea.

*Authors, As reported in the previous reply, the survey of zooplankton was linked to the sampling and assessment through acoustic methods of small pelagic fishes, thus the survey was linked to a favourable period for small pelagic sampling. We acknowledge your observation and add a better rationale for this choice, also in view of further analysis of that surveys' samples aiming at assessing the importance of zooplankton for small pelagic fishes in the basin.*

Line 123-131. Besides the selected oceanographic characteristics to separate the areas, have you tested if also other oceanographic variables such as T, S, O<sub>2</sub>, Chl<sub>a</sub> and nutrients are significantly differentiated among them?

*Authors, No we didn't but thanks to your suggestion, we're now testing these variables for differences with the appropriate statistical techniques.*

In addition, what is the sampling bottom in areas GSA17S and GSA18? In the figures below there are six areas. It seems that the description of the selected areas is rather confusing. Thus, please clarify better how you have done the separation. It would be helpful if there is a Table to present the oceanographic characteristics and variables from the different areas as well as the significant differences among them

*Authors, Thanks we're preparing an additional table with information about the the oceanographic characteristics and variables from the different areas as well as the significant differences among them*

Line 135-137. Some lines before (121-123) you have mentioned that you separated each sample in two subsamples. The first one is frozen and the second one is preserved in formalin. However, you preferred to do the identification of the zooplankton community in species level from the frozen samples. Can the authors explain why they have not chosen the preserved samples for their analysis, since the animals in the preserved samples will be in a better condition for their identification?

*Authors, we need the samples for the isotopic analysis, of course we'd have analysed also the portion in formalin, but we cannot then considered this portion for SIA, while doubling our effort. This kind of approach has been used before in other papers (Rumolo P., Fanelli E., Barra M. Bonanno A. et al. Trophic relationships of zooplankton in the Central Mediterranean sea: a stable isotopes approach. Hydrobiologia Special issue, DOI 10.1007/s10750-017-3334-9; Madurell T., Fanelli E., Cartes J. E. (2008). Isotopic composition of carbon and nitrogen of suprabenthos fauna in the NW Balearic Islands (western Mediterranean). J. Mar. Syst. 71, 336-345, Fanelli E., Cartes J.E., Rumolo P., Sprovieri M. (2009) Food web structure and trophodynamics of mesopelagic-suprabenthic deep sea macrofauna of the Algerian basin (Western Mediterranean.) based on stable*

isotopes of carbon and nitrogen. *Deep Sea Research I*, 56: 1504-1520); Cartes J.E., Fanelli E., Papiol V., Zucca L. (2010). Distribution and diversity of open-ocean, near-bottom macrozooplankton in the western Mediterranean: analysis at different spatio-temporal scales. *Deep Sea Research I* 57(11): 1485-1498; Fanelli E., Cartes J.E., Papiol V. (2011) Trophodynamics of zooplankton fauna on the Catalan slope (NW Mediterranean, etc.): insight from  $d^{13}C$  and  $d^{15}N$  analysis. *Journal of Marine Systems* 87: 79-89 and although it's true that not all the specimens can be identified at species level, this allows to analyse also the samples for SIA.

Line 138-139. Explain why you have chosen to use the wet weight biomass and no other expression of biomass like dry weight or in carbon.

*Authors, as for the previous reply, samples were used for SIA, thus specimens were weighted after the identification, then some specimens were selected for SIA while preserving the other material for potential further analyses.*

Section 2.7. It would be good to compare the isotopic niche using the species found in all sampling areas. Clarify why you have taken Gaetanus as a baseline, since you have found it only in one station. You should clarify why you made such a decision, otherwise it would be good for the baseline to use a common species throughout the study area. Use also recent publications for the eastern Mediterranean for your comparison and discussion.

*Authors. Many thanks for this comment, according also to a similar comment from AR1, we're restructuring this part according considering only species in common to the three areas, considering a common species to the three areas as baseline and taking into account recent publications for the eastern Mediterranean for your comparison and discussion*

Line 251-253. Do you mean here that there are not inshore-offshore differences between the same areas or between the different subareas? Please clarify your results. It would be more helpful to show in the Table the significant differences or not among the selected areas. It is difficult to follow the results.

*Authors. Thanks, we're amending the existing table, to better clarify our results, sorry for this.*

Also the observed significant differences are only for the South to North areas? What about the central one?

*Authors. Thanks, we're discussing all the results in the amended version, including not significant ones.*

Line 274-275. There is also a clear separation of GSA18 offshore from the other stations and the offshore stations of the GSA17N is close to those of the GSA17C-S according to the figure. Please explain better the results.

*Authors. Sorry, as mentioned above, we're improving this part on the results representation and discussion.*

Line 278-279. In the Figure 3 legend, what is the sub area 1??

*Authors. Sorry, it was an oversight, this is the name given to the factor, now corrected in "sub-area".*

Section 4.2. Almost the whole paragraph should be moved to the results section in order to understand why you have made the selection of the areas.

*Authors, sorry and thanks, this has been done in the revised version.*

Line 431-432. DO is not only the major factor according to your analysis. Salinity and fluorescence have higher percentage. What about them?

*Authors, we're discussing also these other two variables in the revised version, many thanks for this suggestion.*