

Interactive comment on “Global distribution of pteropods representing carbonate functional type biomass” by N. Bednaršek et al.

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The referee made some particularly insightful comments with regards the conversion of abundance to biomass and potential net sampling biases. Much of former issue overlapped with comments made by Referee#1 and we will refer to our response to that referee when considering these issues. Further responses are detailed below:

Firstly, we have changed the title to ‘Global distribution of shelled and non-shelled pteropods and their contribution to carbonate and carbon biomass in the modern global ocean’ to be more explicit about the range of pteropod groups addressed within the article, particularly the fact that we considered both shelled and non-shelled taxa.

Secondly, we agree with the referee about the importance of mesh size and the type

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of nets to sampling performance. We have addressed this firstly through now including mesh sizes, net types and sampling strategies (wherever available in the literature) within the database. In certain cases, multiple mesh-sized samplers were used, of which we have included descriptions. We are also aware that differences in mesh size can influence the size range of specimens captured. We do not feel that restricting the database to a single mesh size to eliminate such a source of variance is appropriate since it reduces the scope of the database. Furthermore, although this factor is undoubtedly a source of variance, we did not find any geographic trends in the use of different mesh sizes, indicating that this is not a source of bias in the large-scale geographic analyses that we performed (Fig Response 1). We therefore consider the patterns we reported were appropriate, despite this source of variance.

Finally, in terms of converting abundance to biomass, we agree that inaccuracies in carbon biomass estimates could be substantial if using just one universal equation to convert from length to weight. We followed the advice of Referee #1 in using shape-specific length-to-weight conversions, available from WHOI Silhouette DIGITIZER (2003), and restricted the use of the equation applied in the original draft to Limacinidae species only. A separate equation was used for Gymnosomata (non-shelled) species, making a total of 5 different length-to-weight equations applied to the revised database. Greater detail on these matters is given in our response to Referee #1. We now believe that our new database can provide suitable first order approximations of large scale biomass patterns appropriate for global biological and biogeochemical modelling.

Please also note the supplement to this comment:

<http://www.earth-syst-sci-data-discuss.net/5/C112/2012/essdd-5-C112-2012-supplement.pdf>

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