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Interactive Comment

## Interactive comment on "Similar patterns of community organization characterize distinct groups of different trophic levels in the plankton of the NW Mediterranean Sea" by V. Raybaud et al.

## V. Raybaud et al.

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Response to reviewers' comments

Reviewer #1

Comment 1: The independence, or non-interactivity, of the 3 groups of organisms is based upon the following considerations:

1) Large copepods likely feed on both Ceratium and tintinnids but large copepods are a minor source of mortality for Ceratium and tintinnids. This consideration is based on the observations that the filtration rates of large copepods is roughly100 ml per day (Dagg et al. 2006), multiplied by the concentrations of large copepods 2 - 60 per cubic



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meter (Fig 1), yields an estimate of "large copepod community grazing" which is less than 0.06% of the water column sampled.

2) Tintinnids are not a source of Ceratium mortality. Based on data from laboratory experiments, the maximum size of tintinnids food items is about one half of the lorica oral diameter and the size of prey items most efficiently exploited are of a size equal to ¼ the oral diameter (Dolan et al. 2002). As the smallest Ceratium species is about 100 microns and most tintinnids have an oral diameter of 30-40 microns it is unlikely that tintinnids feed on Ceratium. Furthermore there are no reports of tintinnids consumming Ceratium.

These arguments and reasoning will be highlighted in the 'Introduction'.

Comment 2: The possibility that longer sampling times may reveal even larger numbers of species.

The observation that none of the groups appeared to be completely sampled will be added to the discussion.

Comment 3: What are the larger implications of the findings?

We believe the that the most important conclusion to be drawn from our comparison is that the 'Paradox of the Plankton' applies to quite distinct groups of planktonic organisms. The 'paradox' was originally formulated by Hutchinson with regard to phytoplankton and most solutions proposed have addressed specifically, more or les, the phytoplankton. We believe an important conclusion from our study is that any solutions proposed must apply to organisms of different sizes, motilities, generation times, etc.

These considerations will be clarified in the Discussion.

Reviewer #2

- The term 'community' will be replaced by biotic assemblage.
- Comparing heterogenous assemblages:

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Sampling details, taxonomic identification, and sample sizes for each of the 3 assemblages appear as 3 independent papers (Dolan et al. 2009, Lasternas et al. 2008, Raybaud et al. 2009). All 3 groups were treated by workers considered as experts, with regard to taxonomy as well as sampling, in their respective fields (Dolan for tintinnids, Tunin-Ley for Ceratium, the Sevastopol group for copepods). Taxonomic skills employed in examining the 3 groups can be considered as expert and as the best available. Problems of cryptic species, lumping of varieties, etc. are treated in the 'primary' papers. Our paper is an attempt to compare the relative, not absolute, characteristics of the distinct groups in terms of community organisation.

It appears that we were not sufficiently clear in stating that our analysis is restricted to making observations based on relative values. Thus, we did not wish to compare the absolute values of species richness or the Shannon index among groups. Indeed this would be silly. Rather, we examined 1) the community structure of the groupings in terms of the existence or 'core' and 'occasional' species, 2) the temporal variability of population sizes compared to diversity, and 3) species accumulation with time.

We will, in the introduction and discussion as well as conclusion, clarify the fact that we are examining, although for the first time, relative characteristics of the 3 biotic assemblages.

(References cited above appear in the manuscript.)

As the reviewer points out, fractal models are still questionable. We wish to retain our comparisons in terms of the 'good-old-fashioned Shannon' and species richness because these are the most often-reported and most familar to a wide audience. Again, we did not wish to make absolute comparisons, but rather compare patterns among distinct sets of organisms.

Minor points will dealt with as requested by the reviewer

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