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Interactive comment on “Blastodinium spp. infect copepods in the ultra-oligotrophic marine waters of the Mediterranean Sea” by C. Alves-de-Souza et al.

Anonymous Referee #2

Received and published: 30 May 2011

Unicellular organisms parasitic of crustaceans are well known as a powerful factor controlling host mortality and fecundity in freshwater ecosystems (e.g. Green J, 1974; Burns C.W., 1985, 1989; Ebert D. et al. and some others). Prevalence values up to 80-90% are not too rare in highly productive systems with dense populations of plankton crustaceans. It is not like this in marine pelagic ecosystems. Moreover, these systems are rather poorly investigated in respect to host-parasite interactions. The results obtained for oligotrophic and ultra-oligotrophic waters of the Mediterranean Sea (16% of all copepods and even more, 51% of Coryceidae were infected with gut living parasites *Blastodinium* spp.) are very impressive and, at the first glance, the figures look too high in the situation of low biological productivity and low densities of populations. It seems

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that interacting populations of copepods and free-swimming stages (dinospores) of *Blastodinium* spp. should be aggregated and spatially overlapped. What hydrophysical (meso- and microscale) and biological (behavioural) mechanisms maintain such an overlapping? To understand these mechanisms, more coordinated experimental and field studies on copepods and parasites behaviour and microdistribution are required. Vertical structure of the water column, thin-layer patterns of hydrophysical parameters, and microcirculation should be a valuable addition to biological and ecological studies. However, these are the points for future investigations. The discussed paper contains valuable information on the morphological and genetic diversity of *Blastodinium* spp., their distribution among copepod hosts and within the water column. The suggested technique (FISH – fluorescent in situ hybridization method) for assessment of abundance and diversity of free-living dinospores allows to fill the gap in our knowledge of the life cycle of these widely distributed and ecologically important parasites. At this stage of *Blastodinium* studies, it is plausible to combine data on different aspects of parasite biology, ecology and phylogeny in one paper. Deeper, more specific investigations on phylogeny and diversity of these parasites, on the one hand, and ecology, behaviour and spatial distribution, on the other hand, require to tackle these problems separately. The paper is thoroughly prepared, properly structured and well written. I suggest only few small corrections: 1. P. 2578, l. 11-14 – negative correlation between dinospores and total eucaryotes is indicated, but $RS = 0.60$ is given in l. 14. Should be “-0.60”. 2. P. 2578, l. 24 – “typical of” instead of “typical for”

Interactive comment on Biogeosciences Discuss., 8, 2563, 2011.

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