

Interactive
Comment

Interactive comment on “ Eutrophication and warming effects on long-term variation of zooplankton in Lake Biwa” by C. H. Hsieh et al.

C. H. Hsieh et al.

chsieh@ntu.edu.tw

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Reviewer 1 agrees very much with our analyses and results. The comments are editorial. We have made all those editorial corrections and improvements.

The comments from the reviewer are copied below in bold, followed by our replies and changes in the manuscript.

Although this study showed that eutrophication-reoligotrophication and warming seem to have influenced the long-term patterns, I wonder if other factors may have influenced as well. For example, a zooplankton assemblage can be shaped by higher trophic levels (e.g. fish and invertebrate predators) and com-

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petitive interactions among zooplankton species. There may be other missing factors. More comprehensive analyses including these possible factors would be ideal, but usually we do not have enough data to do so. The authors would discuss more about the limitation of the present analysis based on the limited data set and suggest what research and monitoring are required in order to understand what kind of problems, which were unanswered in the present study.

We agree with the reviewer's suggestion. Potential effects of species interactions and top-down control from higher trophic levels are now discussed in the revised version. On page 15, line 13-19: "While warming effects on zooplankton has been widely documented (George and Harris, 1985; Molinero et al., 2007), the mechanisms underlying the complex pattern in Lake Biwa zooplankton are far from clear. Top-down effects from planktivorous fishes or other invertebrates on zooplankton community may also be important (Carpenter and Kitchell, 1988) but cannot be examined here due to lacking of data. Future monitoring of Lake Biwa should include higher trophic levels."

Minor comments: Table 2, "Feeding type" is missing from the middle of the table. Fixed in the revised version. Thanks.

Figure 6 (b), the right black arrow should be removed? We keep the black arrow in Figure 6b, because the phytoplankton biomass is a surrogate to eutrophication gradient.

Table A1, "the upper lower"??, the caption states "all pair-wise correlations are significant", so that "0.545" and "0.351" (both in the upper triangle) would be mistyped. We stated in Table A1 that "Except for TP versus Chlorophyll a, all pair-wise correlations are significant ($\alpha=0.05$, without adjusting autocorrelation in time series)." The typo, "0.351" should be "0.035". Thanks for the correction.

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