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Interactive comment on “Effect of ocean acidification on marine fish sperm (Baltic cod: *Gadus morhua*)” by A. Y. Frommel et al.

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This interesting and well written study is one of the first to examine the potential effects of ocean acidification on swimming speed and motility of fish sperm. The methodology is sound and follows techniques successfully used to test sperm performance under acidified condition in marine invertebrates. The results are important because they clearly show that predicted changes in pCO₂ and pH in the ocean are unlikely to affect sperm performance in cod from the Baltic Sea. Interestingly, these cod experience naturally high pCO₂ levels in their environment, which suggest they might be adapted to local environmental conditions. Future experiments repeating this work with cod stocks in other areas will provide an interesting test of this hypothesis. These results add to the small number of other studies conducted to date with marine fishes, which

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similar to this study have not detected negative effects of near future levels of ocean acidification on early life history development. The paper will be a valuable addition to the literature with some minor modification.

Page 5863, line 8. The wording here is a bit awkward. Perhaps “no difference among treatments” would be clearer.

Page 5863, line 18. “in controls” is repeated in this sentence.

Page 5863, line 20. You mention 20 males here, but N=18 males at line 4.

Results: Because replicate sperm samples from each male are not entirely independent it would be better to analyse this as a repeated measures ANOVA, or with males as a blocking factor, if possible. This is simply a technical issue and I have no doubt that the results are entirely robust.

Results: Was there a relationship between male size and sperm swimming speed or mortality? If so, ANCOVA or analysis of regression residuals in ANOVA could be used to account for some of the variation.

Discussion: You argue that the effects size analysis presented in the Discussion is the appropriate statistical test. If so, you should simply present that as the main analysis in the Results.

Philip Munday

Interactive comment on Biogeosciences Discuss., 7, 5859, 2010.

BGD

7, C2385–C2386, 2010

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