Exercise 11. Multiple comparisons
Due: 11/19/2013

Note: E-mail a single Word document with your results to both Instructors. All analytical work needs to be done in R (unless otherwise noted). Scripts and output from R should be included as an annex in the Word document for full credit.

Please summarize your results in standard ANOVA table format. Failure to do so will result in an automatic loss of one point per ANOVA analysis. Be careful with sample sizes!

Using the Medley and Clements (1998) data on diatom diversity grouped by different concentrations of zinc in various Rocky Mountain streams (Medley.txt):

1. Calculate unplanned multiple comparisons (Tukey's HSD and Dunnett's procedures) and interpret the results (3 points).

2. Calculate planned contrasts by starting with the contrast between the **background** versus **all the other** concentration treatments, and then defining the remaining *orthogonal* contrasts that you consider relevant. Please describe in a short paragraph a rational for these selections. Do not forget to: (1) check for the proper independence and orthogonality of your contrasts, (2) interpret the biological relevance of these results, and (3) present a table that summarizes your results and shows the proper sums of squares of the contrasts you are proposing (6 points).

3. Why are we not doing these analyses from a Bayesian framework? (1 point)