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Analyses

* PART 1: PHYTOPLANKTON AND INVERTEBRATE SPATIAL AND TEMPORAL VARIABILITY 5
  + What we said we’d do:
    - For invertebrates (Big blitz):
      * Calculate CPUE and BPUE
      * Compare to diet studies
      * Compare CPUE and BPUE across site types and habiat types using GLMs
      * NMDS and PERMANOVA, or other multivariate analyses, as appropriate
    - For phytoplankton: Same as invertebrates, but using literature on habitat associations to see which taxa are more benthic-oriented and which are more pelagic-oriented.
    - For Decker miniblitzes, test fit of linear and quadratic models, Man-Kendall or Granger tests to see when highest food availability overlaps with fish abundance
    - Pairwise comparisons between individual reference and restoration sites.
    - Year-to-year comparisons. Or maybe save?
  + What we did last year:
    - For Decker miniblitzes, tested the fit of linear and quadratic equations of log-transformed CPUE for macroinvertebrates to see when biomass peaks. Compared this to at-risk fish abundance to see which month had greatest fish catch +invert abundance.
    - For big blitz:
      * used GLMMs on total catch with region, site type, gear type as predictors and site as a random variable.
      * Post-hoc power analysis
      * PerMANOVA
      * NMDS
      * Power analysis
      * Coefficients of variation
* CHAPTER 2: CHANNEL-SHOAL GEAR COMPARISON
  + What we said we’d do:
    - For invertebrates: GLMs of BPUE and CPUE versus day of year, survey, and distance from golden gate
    - For nutrients; GLM of location within wetland versus concentration. Model of nitrogen versus chlorophyll to see if chlorophyll saturates at some value of nitrogen.
    - For fish: CPUE of lampara, townet, and FMWT compared using ANOVA or non-parametric equivalent. MANOVA, ANOSIM, or other multivariate analyses
  + What we did last year:
    - (for invertebrates): GLM on total log-transformed CPUE ~ distance to Golden gate + date + survey
    - For fish: Wilcoxon rank sum test or paired t-test at each location for abundance, and Kolmogorov-Smirnov test for differences in fish size distribution
    - Permanova
    - NMDS
* CHAPTER 3: Method Development
  + ARIS:
    - What we said we’d do:
      * Data will be quantitatively analyzed
  + Vegetation:
    - What we said we’d do:
      * GLMs of SAV biomass, biovolume, annual turnover, and indecies of diversity will be analyzed with a suite of environmental and biological parameters as predictors.
      * Community composition visualized using CCA and NMDA
      * ANOSIM to associate distinct SAV compositions with those in invertebrates. ANOSIM can also be used to compare estimates of invertebrate productivity (abundance, biomass, CPUE) with the SAV they came from
      * Site-level SAV biomass can be estimated from measurements taken at different points in the year. Within each time period two metrics will be calculated: 1. Samples will be treated as random quadrats representing a % of the site and 2. SAV biomass will be interpolated using R and GIS mapping to estimate biomass at the site. These metrics will be calculated for each site and time period. Metrics of invertebrate biomass and diversity can be plotted against SAV biomass and biovolume estimates. A GAM can be tested to confirm that rates of turnover are significantly linked to metrics of invertebrate biomass or diversity.