**Running head:**

**Title**: Phylogenetic Signatures of Oil Spill-Disturbed Communities Resemble Mass Extinction

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# Abstract

## Keywords

# Introduction

Oil spills cause local extinction and turnover in ecological community composition. Assessment of phylogenetic diversity makes it possible to compare patterns of community turnover in the absence of species overlap across sites, and allows for a characterization of the effects on local losses of distinct evolutionary history, and, by proxy, loss of functional diversity.

# Material and Methods

## Metabarcoding data collection and analysis

Re-iterate what was done in Holly’s paper in terms of sampling, sequencing, clustering (QIIME) and phylogenetic inference.

## Tree pruning algorithm

Outline of the MapReduce algorithm. Brief summary of implementation and availability of the MapReduce pruner.

## Tree shape analysis

Justification of the chosen tree topology index.

## Statistical validation

Demonstration that chosen tree topology index is independent of tree size but dependent on extinction rate. This is done by simulating trees of different sizes under different extinction rates.

Bootstrapping of the species lists to demonstrate that extinction is not random in this case.

# Results

## Turnover in phylogenetic diversity

## Tree shape analysis

Demonstration that tree topology index is indicative of high extinction. Would be nice to say how high an extinction rate this roughly corresponds with (based on our simulation, and perhaps based on other analyses?).

## Statistical validation

Demonstration of the location of actual pruned trees relative to ones that are pruned by bootstrapped names lists.

# Discussion

Local disturbance appears to resemble mass extinction. Partly because it is, but there is also taxonomic turnover. Apparently this turnover results in lower phylogenetic diversity than in undisturbed communities. Can this result be generalized to non-oil-spill disturbances?

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# References

# Figures

# Tables