**Microplastic pollution induces algae blooms in experimental ponds but bioplastics are less harmful**

Project Description:

Plastic pollution is increasingly pervasive, yet its ecological impacts remain poorly understood.

We conducted a three-month mesocosm experiment to examine the effects of three types of thermoplastic polyurethane (TPU) microplastics — including two biodegradable bioplastics — on plankton communities across a range of concentrations.

We measured changes in algal biomass, zooplankton, and microbial community composition (via 16S and 18S rRNA sequencing).

This repository contains the datasets and analysis code necessary to reproduce the results presented in the manuscript.

**Repository Structure**

| **Folder/** | **Description** |
| --- | --- |
| Data/ | Contains raw data files used in the analyses. |
| Scripts/ | Contains R scripts used for data cleaning, analysis, and figure generation. |

The primary datasets are located in the data/ folder:

**MP1\_16S 16S\_BioP\_metadata.csv** — [metadata used for 16S data analysis]

**16S\_Final\_feature\_table.biom** — [16S biom table]

**BioP-rooted-tree-FINAL.nwk** — [16S feature table]

**16S\_taxonomy\_Final.csv** — [16S taxonomy]

**MP1\_18S 18S\_Phyto\_metadata.csv** — [metadata used for 18S data analysis]

**18S\_Phyto\_tree.nwk** — [18S feature table]

**18S\_Phyto-ASVtable.biom** — [18S biom table]

**PR2\_TaxonomyFinal.csv** — [18S taxonomy]

**MP1\_Chla\_NPP\_ER MP\_Chla.csv** — [Chlorophyll-α data]

**NPP\_ER.csv** — [Dissolved oxygen data used for NPP and ER]

**MP1\_Zoop MP Zoop Measurements - Zoop\_Lengths.csv** — [Zooplankton length data used for biomass]

**MP Zooplankton Counts - zoop\_counts.csv** — [Zooplankton count data used for abundance]

**MP1\_YSI MP1\_YSI\_Data.xlsx** — [Additional YSI data]

The primary R scripts are located in the script/ folder:

**MP1\_16S 16S\_Updated\_SGM\_Dec1\_2024\_Filter\_ASV.R** — [R script for all 16S analysis and figure creation]

**MP1\_18S MP\_18S\_SGM\_Updates\_Dec\_5\_2024\_Filter\_ASV.R** — [R script for all 18S analysis and figure creation]

**MP1\_Chla\_NPP\_ER MP\_DataProcessing\_CHLA.R** — [R script for all chlorophyll-α analysis and figure creation]

**MP\_DataProcessing\_NPP\_ER.R** — [R script for all NPP and ER analysis and figure creation]

**MP1\_Zoop MP1\_ZoopData\_Master\_Code (1).R** — [R script for all zooplankton analysis and figure creation]

**Contact**

For any questions or clarifications, please contact:  
**Scott G Morton**

**University of California , San Diego**

**smorton9292@gmail.com**