# How residence time constrains diversity

Ken Locey, Jay Lennon May 31, 2015

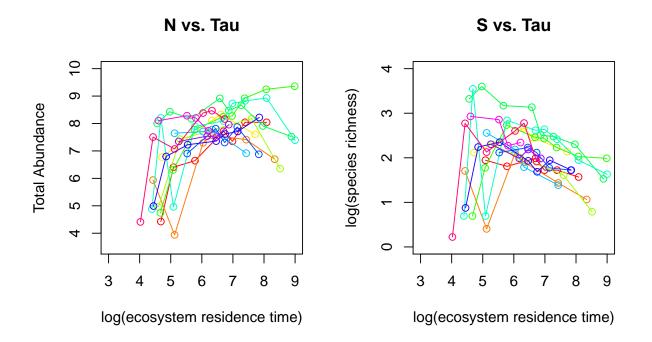
### INTRODUCTION

Here, we explore the influence of mean cell residence time, hydraulic residence time, and particle residence time on abundance, local  $(\alpha)$  diversity, physiology, and resource availability and diversity.

These simulations

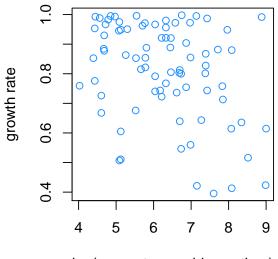
## Load Data
sim.data <- read.csv("~/GitHub/hydrobide/results/simulated\_data/2015June/June16/SimData.csv")</pre>

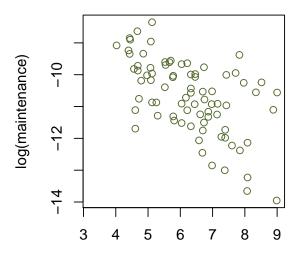
#### Univariate relationships



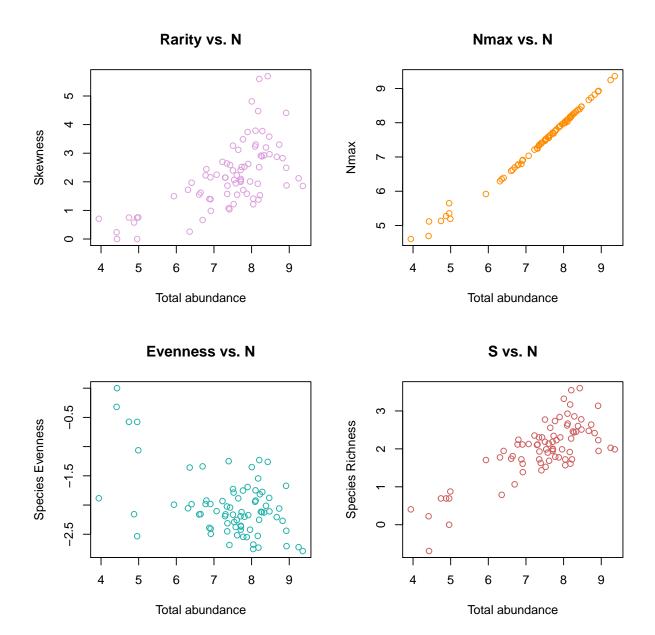
## Per capita growth vs. Tau

## owth vs. Tau Per capita maintenance vs. Tau



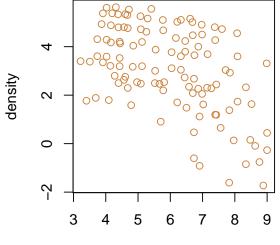


log(ecosystem residence time)



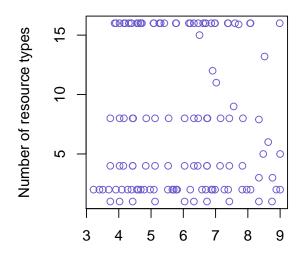
## Resource density vs. Tau

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log(ecosystem residence time)

### Resource richness vs. Tau



log(ecosystem residence time)