

## Part I xray

### Introduction

- Define MDRD
- Introduce Hawaii xray
- logistics (link to course website)

### Abundance

- Abund data import (long)
  - taxize introduction
  - reshaping abundance data  
long → wide → site by species
  - visualization as SADs
  - sum stats  
shannon / simpson
  - hill numbers
  - hill numbers // sad shapes
- suggest load as tallies sp | abund  
and demo → site x sp matrix before hillt's
- update to match popgen
- maybe cut; refocus on "effective n of species"

### Traits

- Trait data import
- repeat of taxize workflow
- aggregation → species level means  
introducing group by
- joining traits x abundance  
left-join

} maybe → this is the intro for both of these?

→ \* uses abundance tallies, created in the abundance episode

- plot histograms & density plots
  - all sites
  - using 'split' to compare sites

- hill numbers in traits
- visualization rank-trait // hill numbers

↳ this takes me a second to grok

(there's also some escaped divs in this text,  
just need tidyng)

## Popgen data

- Defining "genetic diversity"  
GEOBON, contributing factors
- Visualizing g. div (FS)  
and what the shape of the dist says
- Summary statistics  
 $\pi$ ; hill nbs (within and across species)
- Working w/ popgen data
  - FASTA, alignment, diagnostics w/ ape
  - genetic diversity -  $\pi$   
SNPs
  - hill # within spp / populations
  - hill # across species

↳ this is a super helpful means of explaining what g. div. is.

This seems like a really effective structure:

- conceptual intro,  
viz,  
repr viz.

Translate for  
abund. traits?

# Phylo

- Intro to phylogenies
- Imputing (newick / nexus)
  - ape
  - visual (w / rplot)
  - v. toy.
  - then workshop data
- clean w / taxize
- add spp w / mt tips  
in the tree
- summarizing w / hills
- relating hills to pattern  
via viz

phylo hills are  
a bit of a  
conceptual lift?

Is the incoming structure:

## Data type

- Definition
- Relate → what it tells us
- Use hill nbs to understand pattern

Then,

tools for exploring this

- load
- dtype specific cleaning
- dtype specific hill calcs
- visuals, reproducing

?