

# Alpha Diversity Method 3

- **Chao1**

$$chao1 = S_{obs} + \frac{F_1^2}{2F_2}$$

- $S_{obs}$  = total observed species
- $F_1$  = number of singletons
- $F_2$  = number of doubletons

# Alpha Diversity Method 4

- **Faith's Phylogenetic Diversity** (PD\_whole\_tree)
- Sum up the length of all branches in phylogenetic tree
- If a species is close to another species...
- If a species is far from any species in the tree...