Alpha Diversity Method 3

- **Chao1**

- *Sobs* = total observed species

- F_1 = number of singletons

- F_2 = number of doubletons

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

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 if far from any species in the tree…

Alpha Diversity Method 3

- **Chao1**

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

- *Sobs* = total observed species

- F_1 = number of singletons

- F_2 = number of doubletons