

$$P_{GT}^*(\text{things with zero frequency}) = \frac{N_1}{N} \quad c^* = \frac{(c+1)N_{c+1}}{N_c}$$

- Unseen (bass or catfish)

- $c = 0$ :
- MLE  $p = 0/18 = 0$
- $P_{GT}^*(\text{unseen}) = N_1/N = 3/18$

- Seen once (trout)

- $c = 1$
- MLE  $p = 1/18$
- $C^*(\text{trout}) = 2 * N_2/N_1$   
 $= 2 * 1/3$   
 $= 2/3$
- $P_{GT}^*(\text{trout}) = 2/3 / 18 = 1/27$