

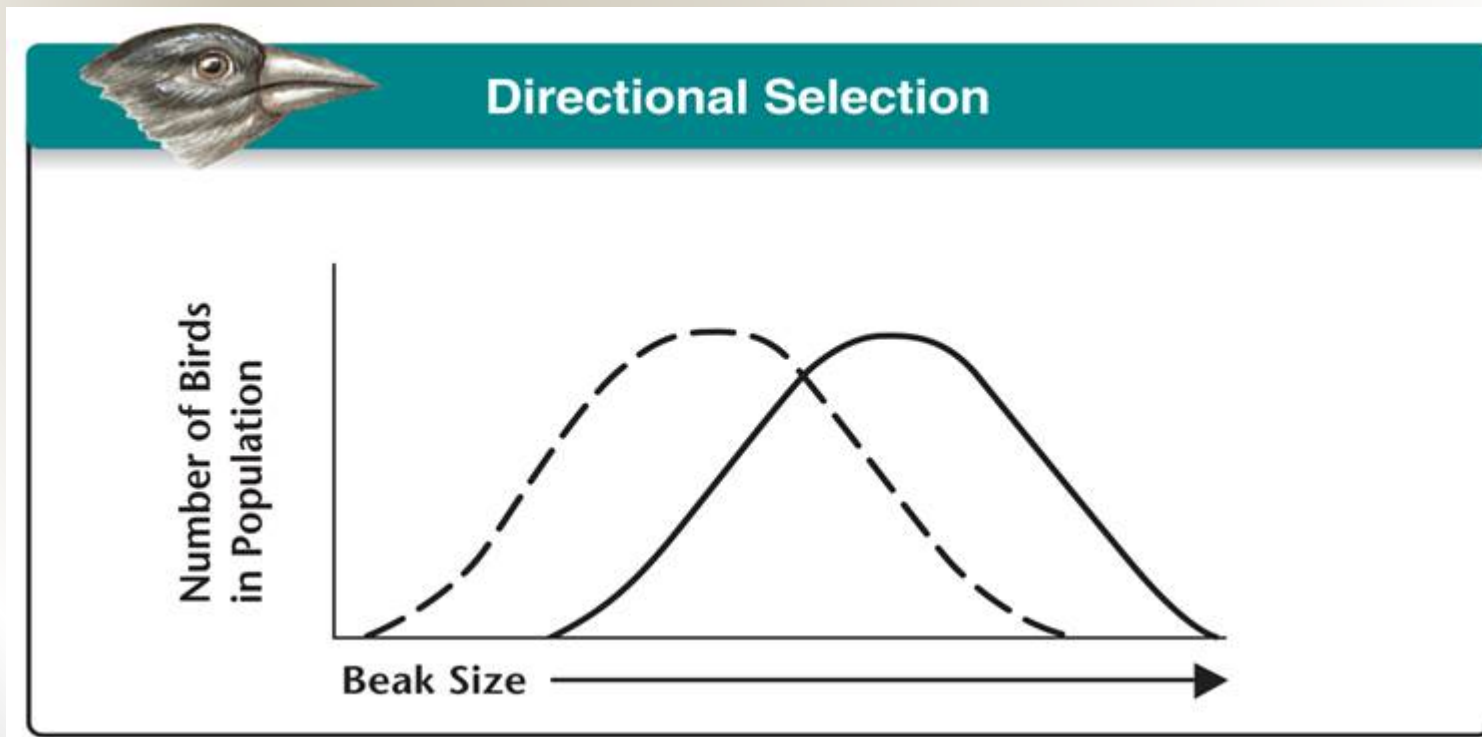
# Evolution as Genetic Change

Ch. 16.2

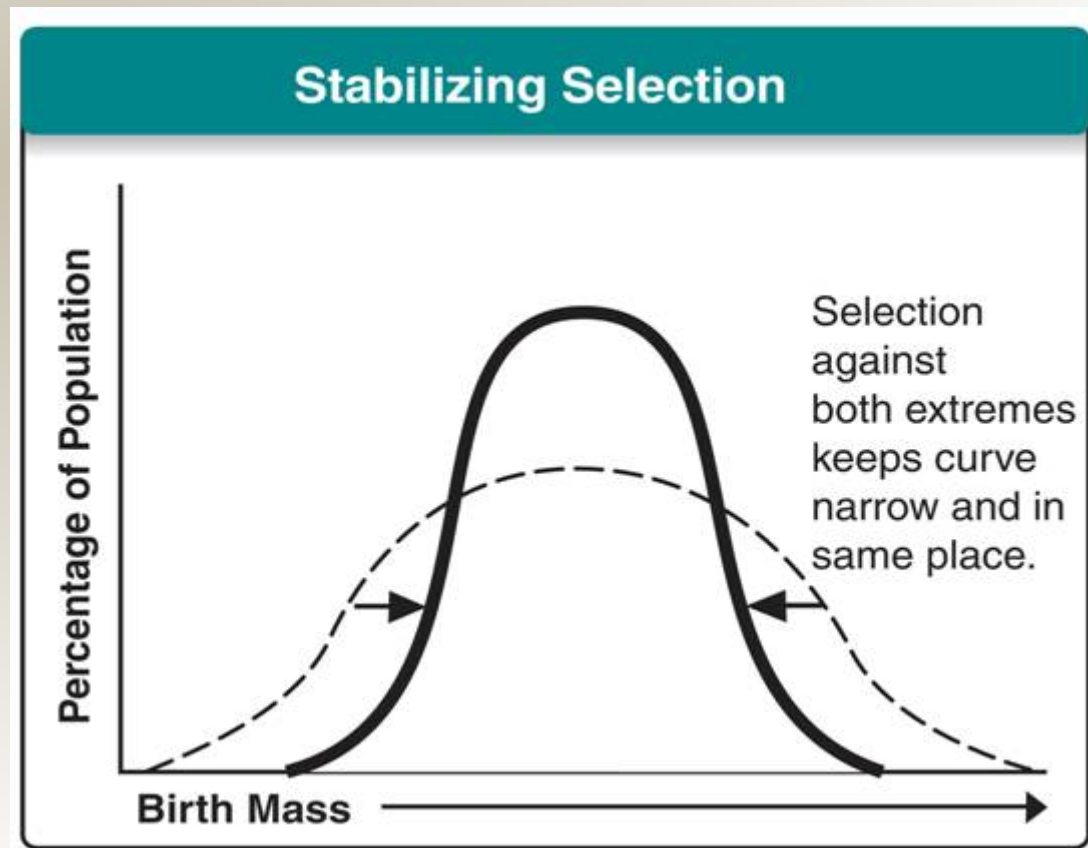
- Population evolves, not individual.

# 3 ways Natural Selection affects Population

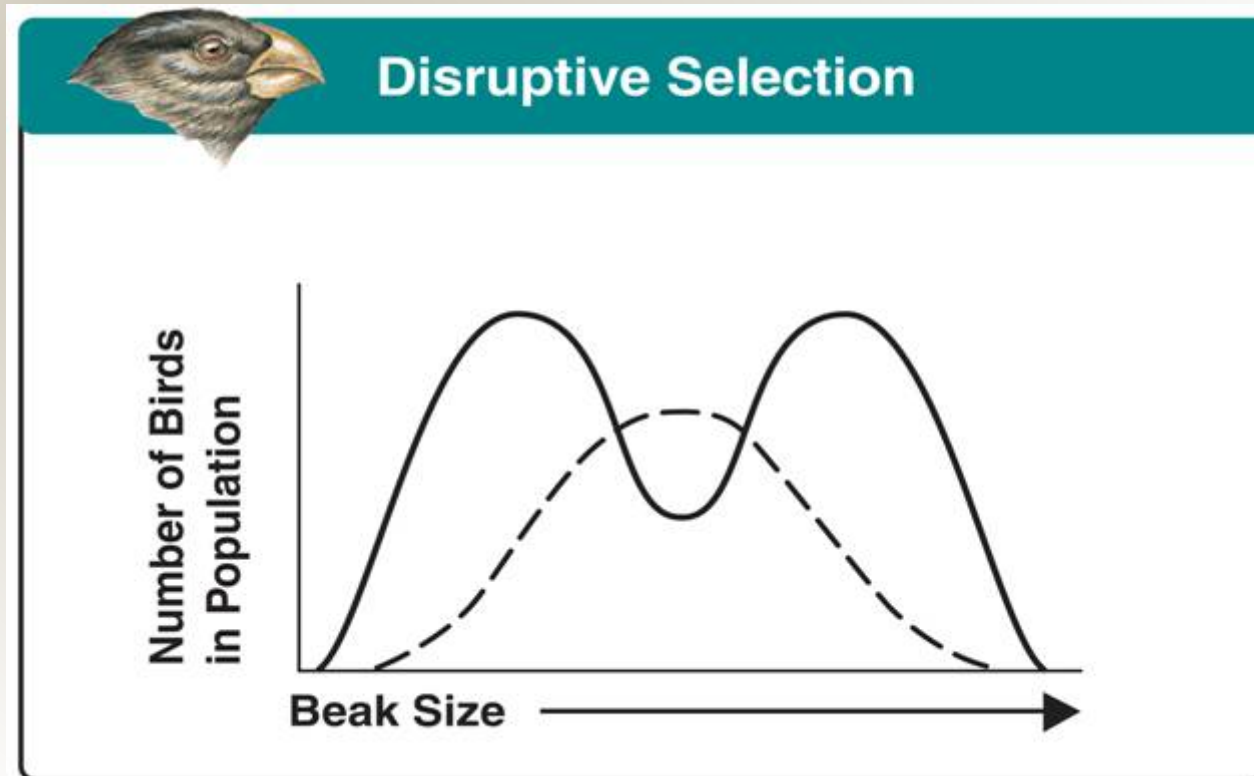
- 1) **Directional Selection**: Individ. on 1 end of the curve has higher fitness
- Eg: Bigger beaks have higher fitness



- 2) **Stabilizing Selection**: Individ. in the center of the curve have higher fitness.
- Eg. Babies mass.



- **3) Disruptive Selection**: Individ on both ends of the curve have higher fitness.
- Eg. Seeds of avg size is scarce.

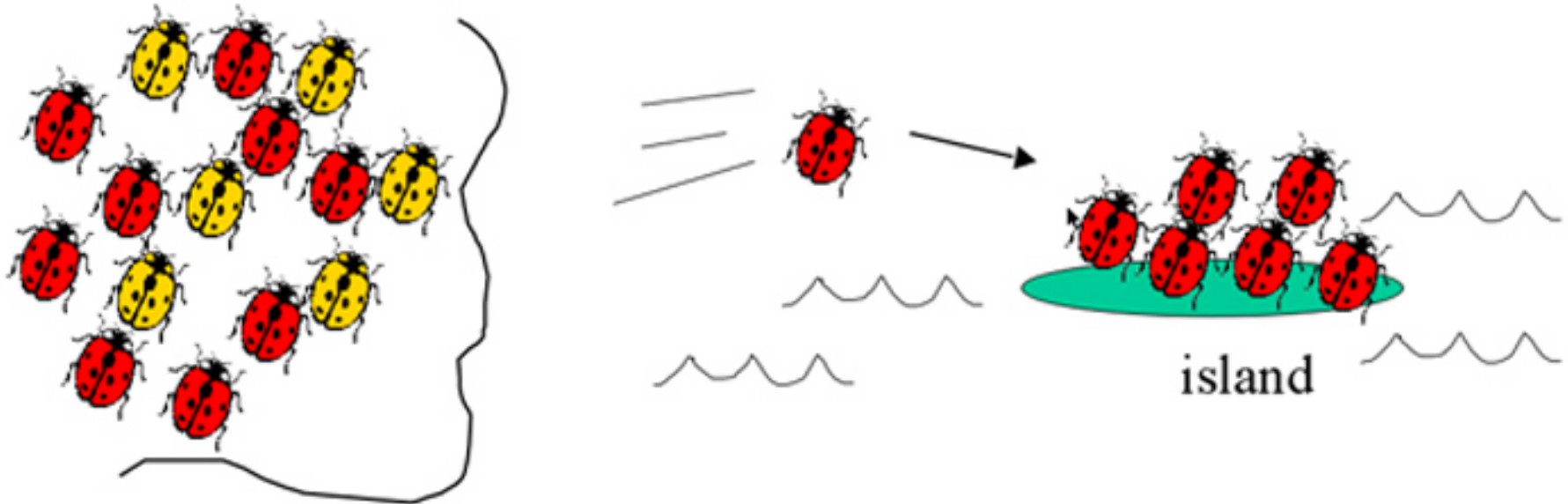


- Genetic Drift – a random change in allele frequency
- -- by chance, some indiv. leave behind more descendants.



- Founder effect – when a new colony is started by a few members of original pop'n.

~~- founder effect: a few individuals from a population start a new population with a different allele frequency than the original population~~



- Equilibrium : when no evolution is occurring
- Pop'n is in equilibrium when these 5 conditions are met. These are called Hardy Weinberg Principle
  
- 1) No mutations
- 2) No gene flow (movement in & out of pop'n)
- 3) No natural selection
- 4) Must be a large population
- 5) Random mating (indiv pair up by chance)
  
- If these conditions are not met, then evolution will occur!



- HWP (Hardy Wein Principle) states that allele frequency will remain constant unless 1 or more factors cause it to change.

- HW Equations:
- $p$  = frequency of dominant allele (A)
- $q$  = frequency of recessive allele (a)
- $p^2$  = frequency of homozygous dominant (AA)
- $q^2$  = frequency of homozygous recessive (aa)

- Memorize!



- $p + q = 1$

- $p^2 + 2pq + q^2$