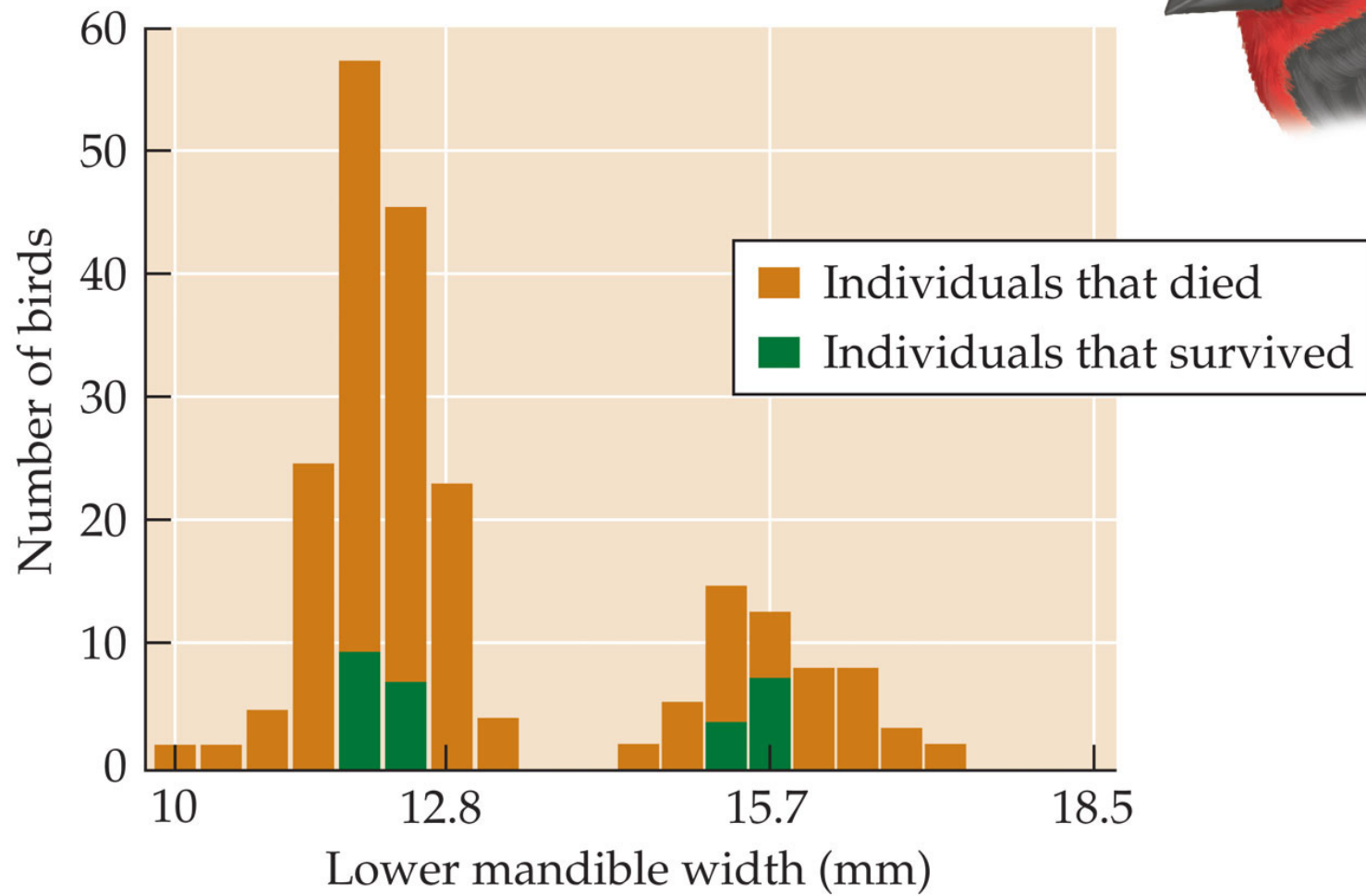
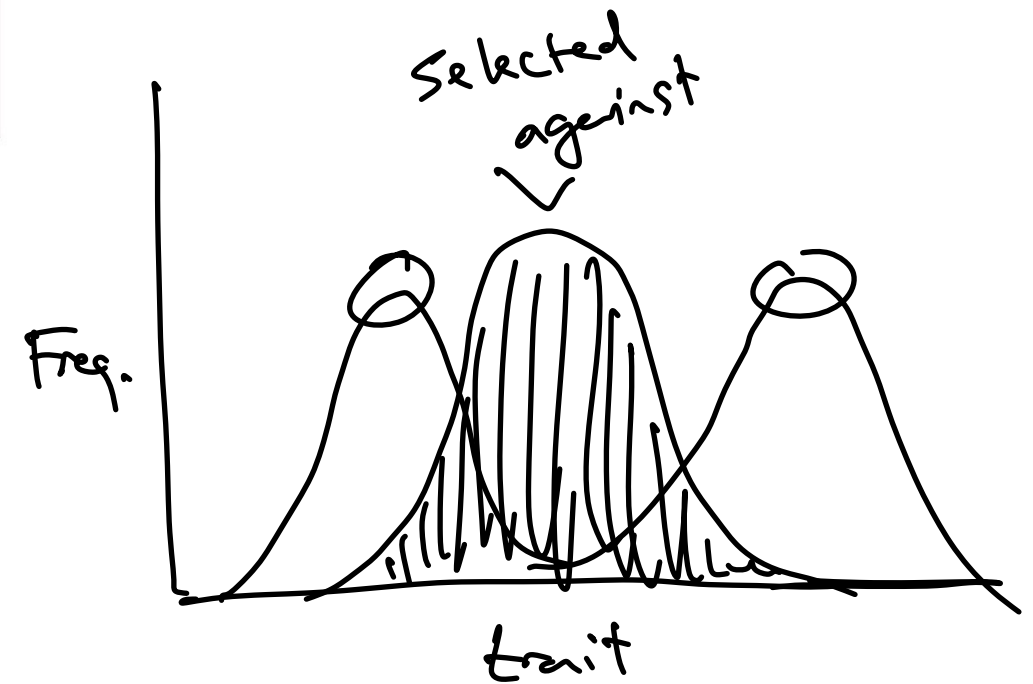


(C) Disruptive selection



ECOLOGY 3e, Figure 6.6 (Part 3)  
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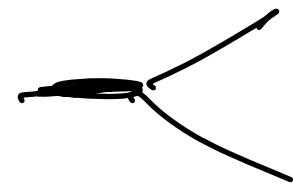
Disruptive Selection



African seedcrackers

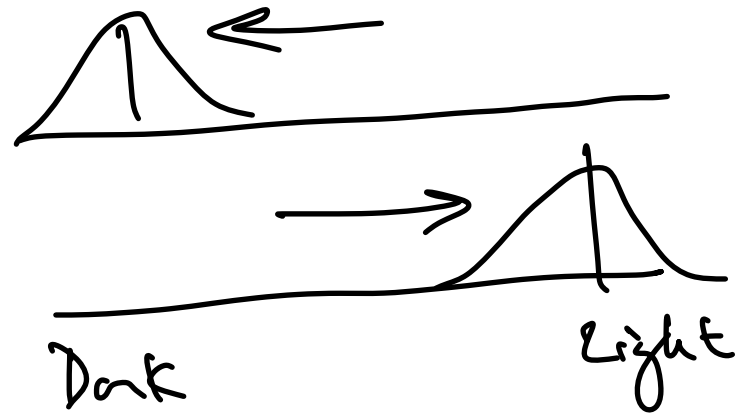
disruptive

- Can result in speciation if there is formation of a reproductive barrier



Lava Flow

Sandy Desert



Genetic Drift - occurs when chance events determines which alleles are passed on (unrelated to fitness)

Island of the Colorblind

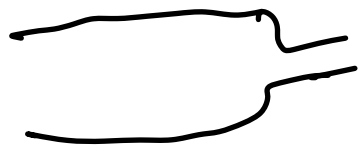
Pingelap - atoll in Micronesia  
1775 Typhoon Lengkieki

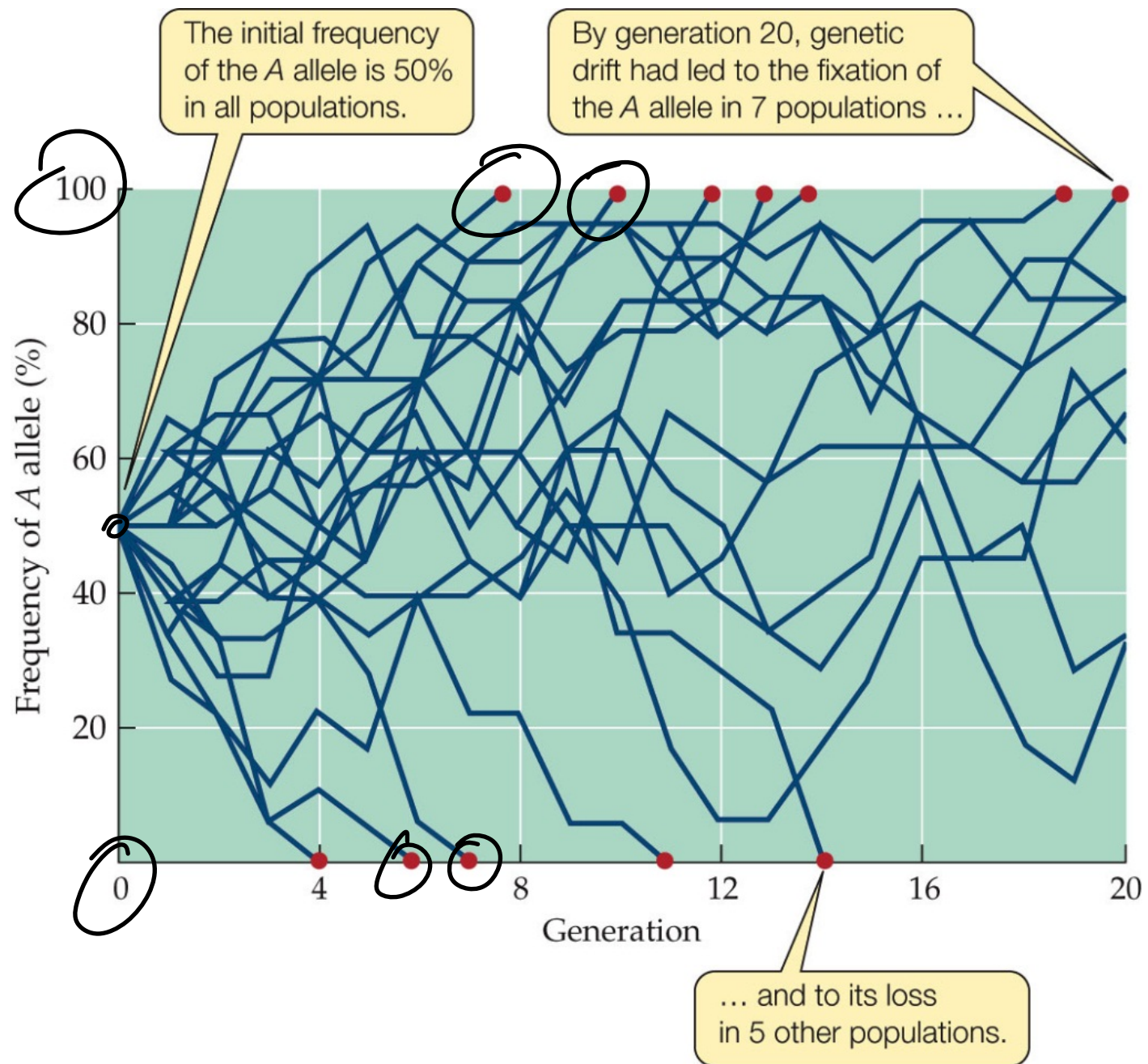
~20 survivors

1 heterozygous achromatopsia

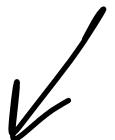
5% → 30% in 5 generations

- Initial event was due to genetic drift
- \* Cannot see in bright sunlight
- \* Better perception in faint light conditions

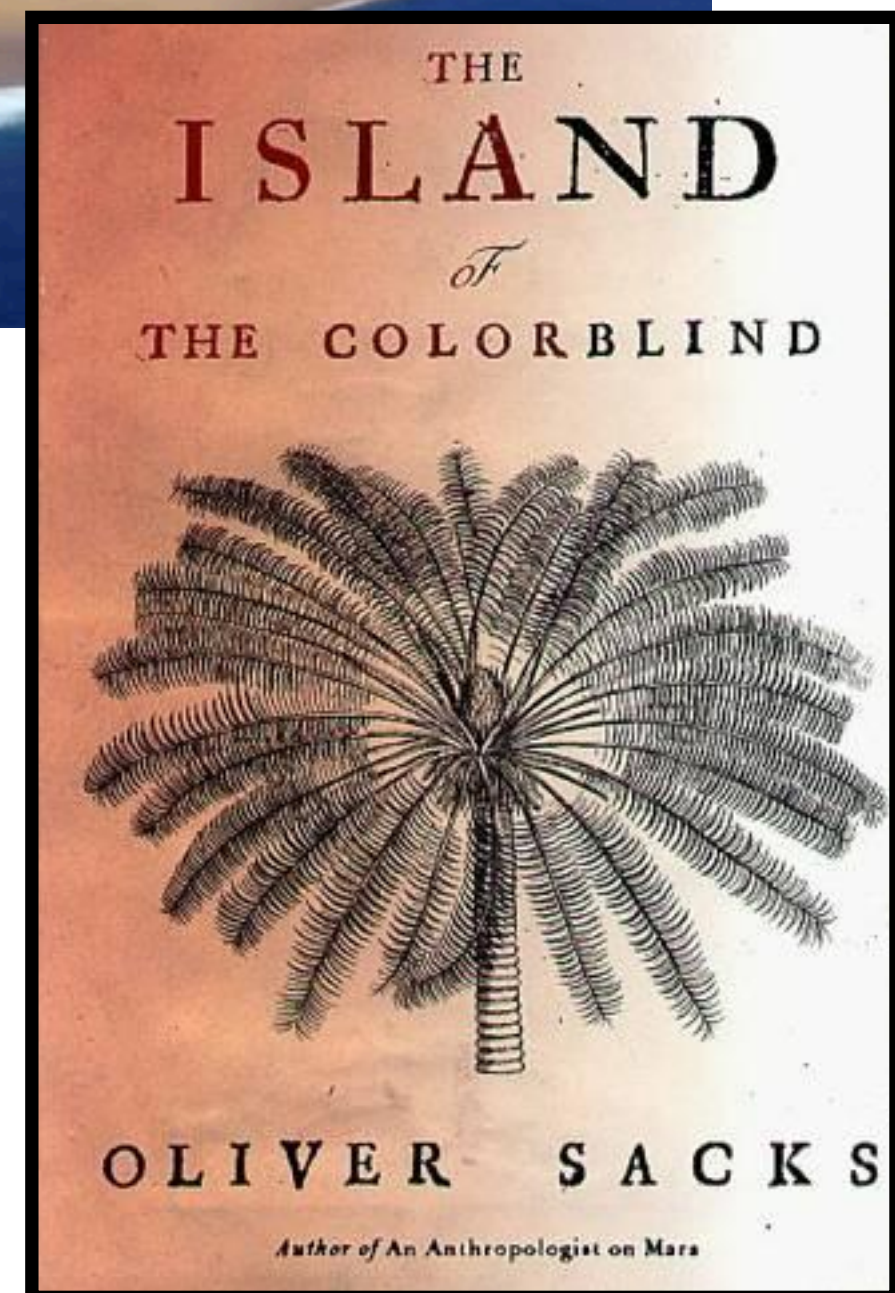




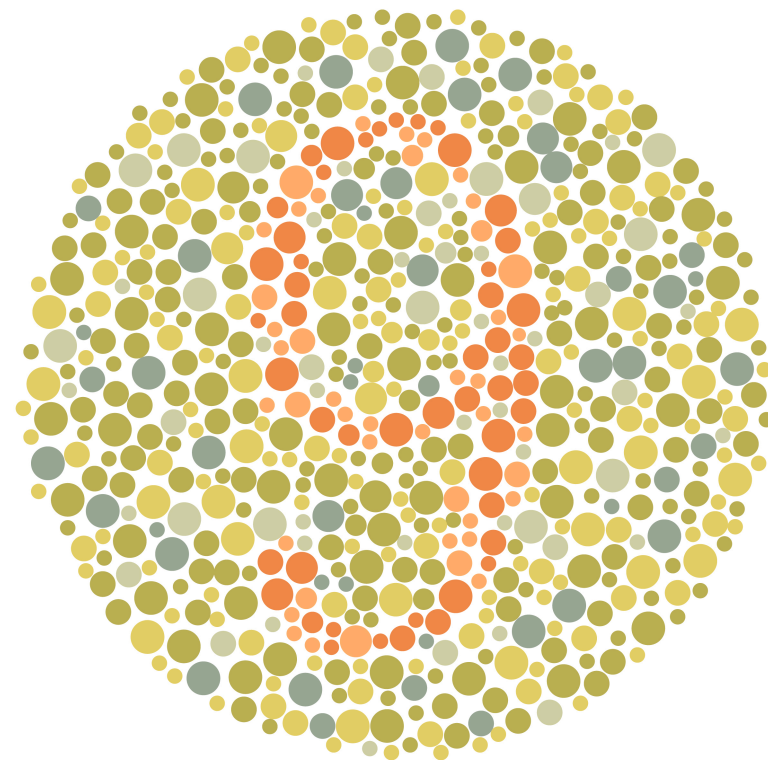
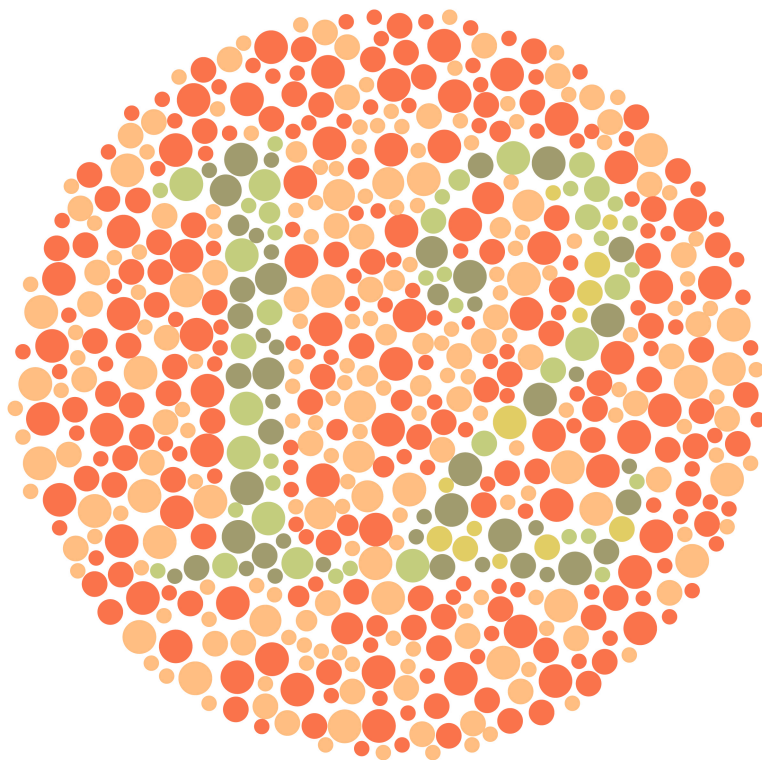
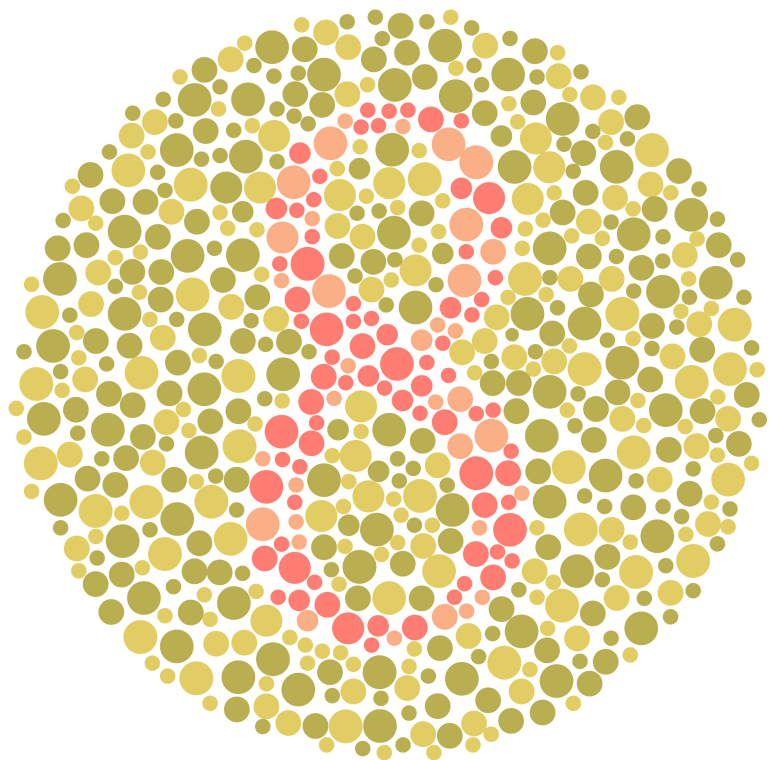
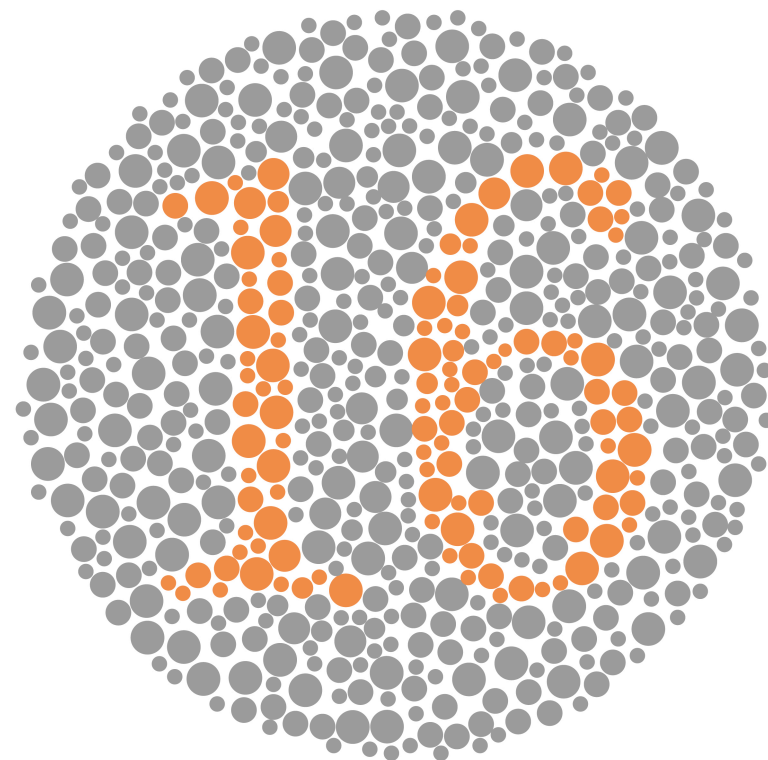
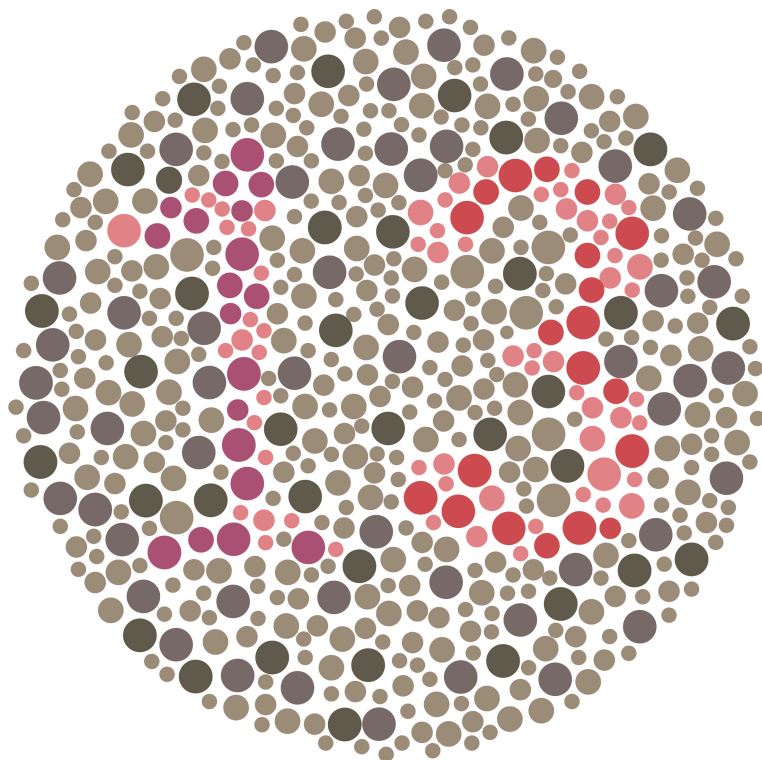
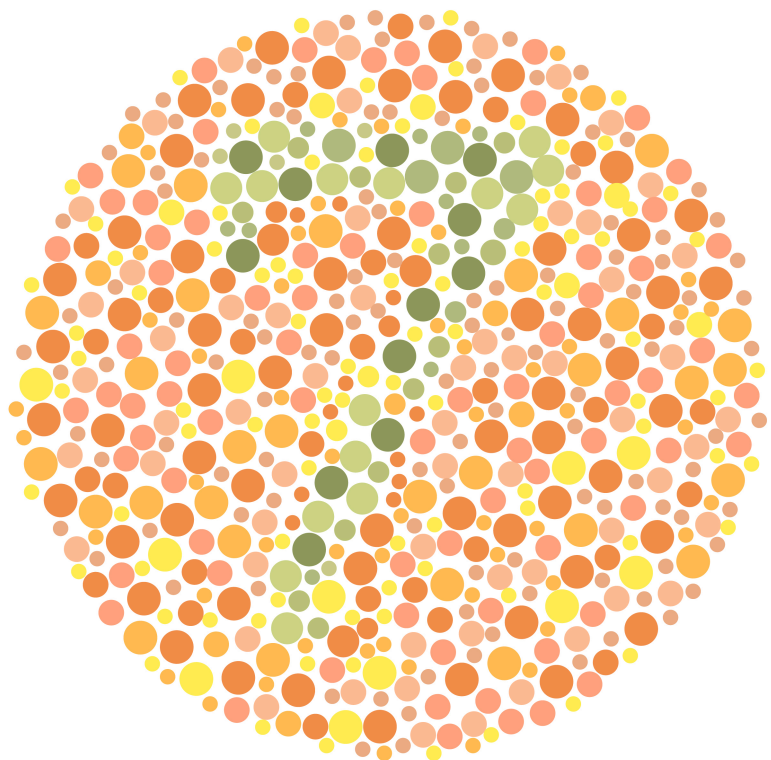


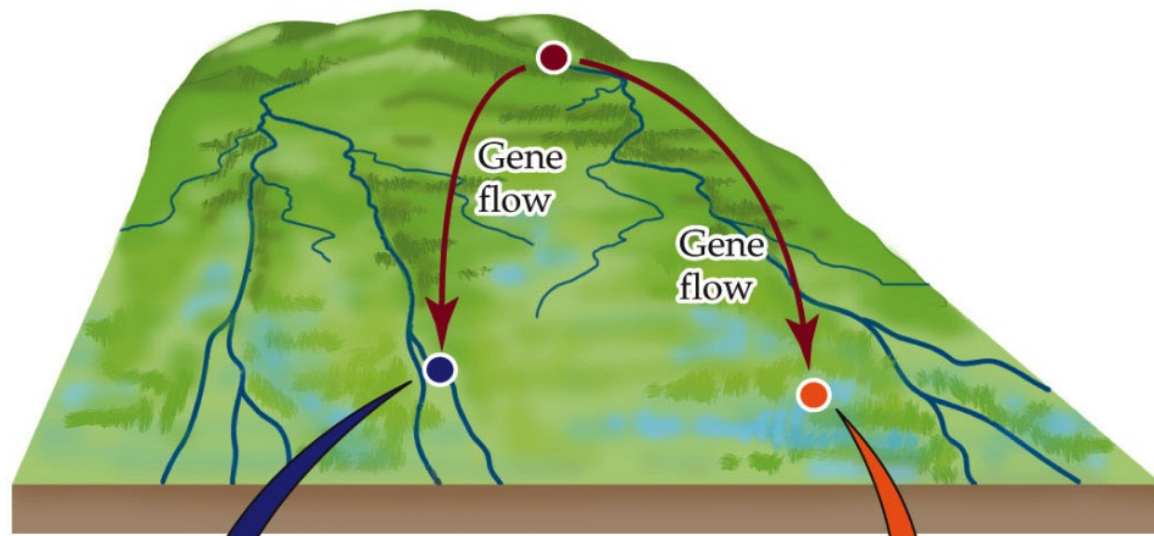










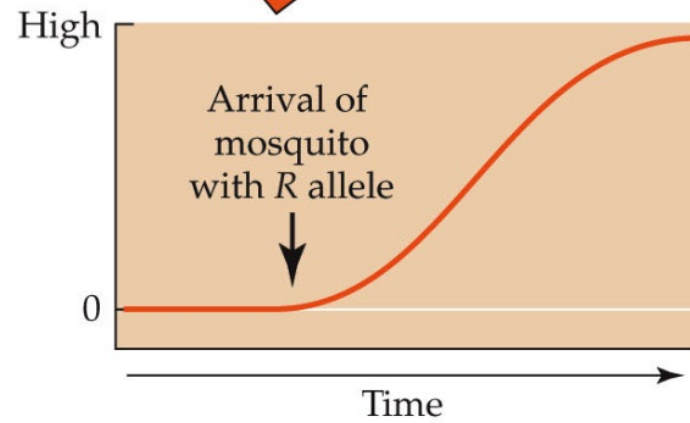
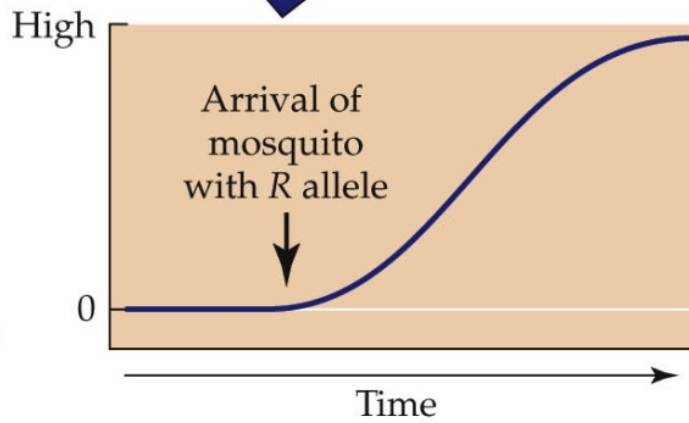


Gene flow: occurs when alleles are transferred from one population to another via movement

Effects:

- 1) Populations become more similar
- 2) New alleles can be introduced

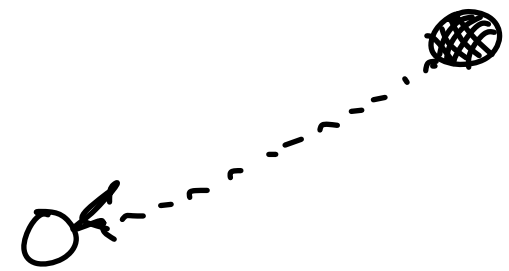
Frequency of R allele in mosquito population exposed to insecticides



*Culex pipiens* - mosquito // west Nile virus  
Malaria

1960's a mutation led to new alleles that introduced resistance to pesticides

Spread to other populations via gene flow





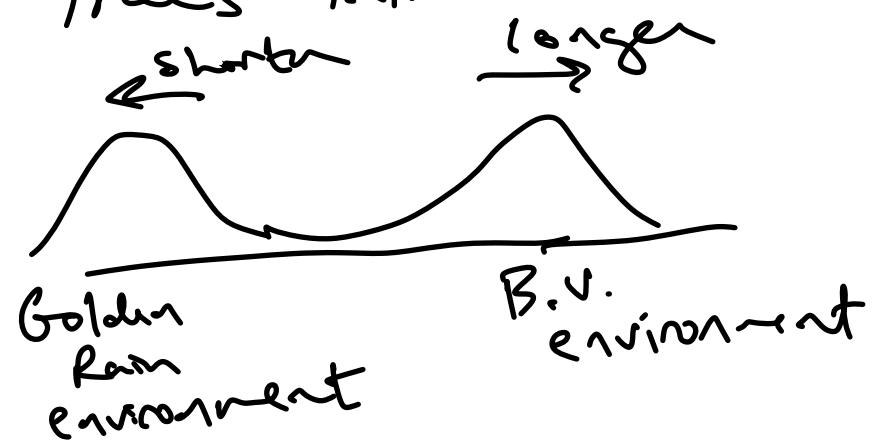
# Adaptations

Features of organisms that improve their ability to survive and reproduce (↑ Fitness)

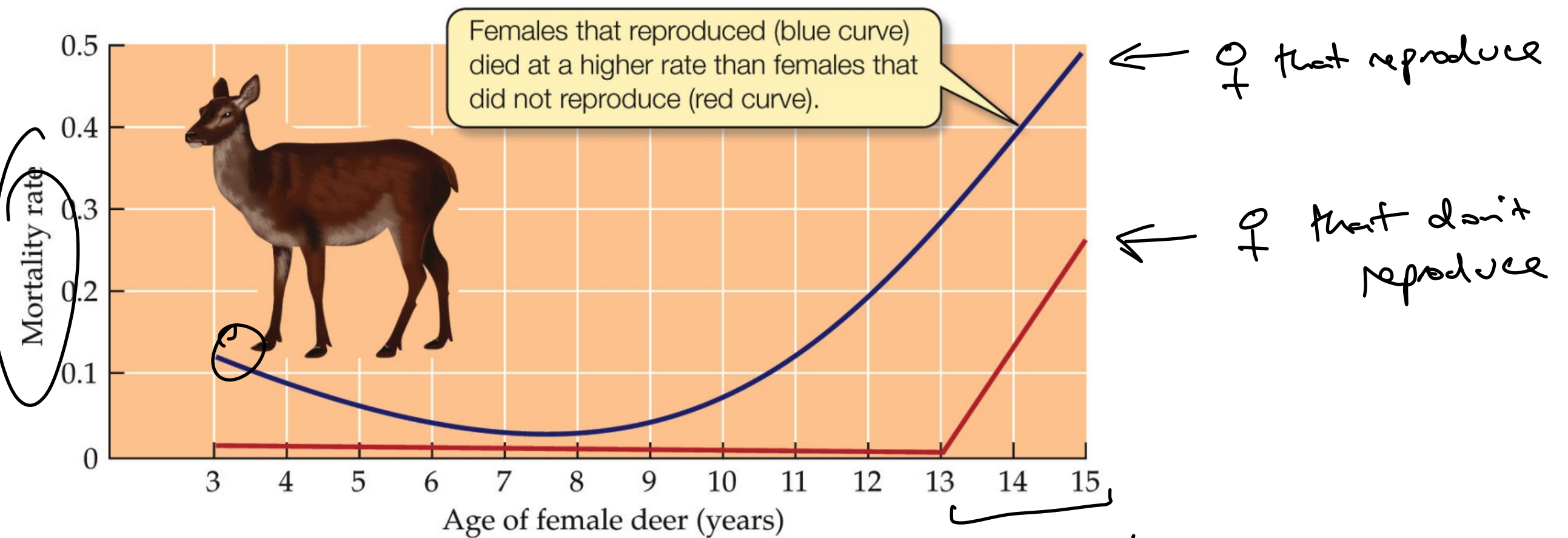
Natural Selection → Adaptive evolution

SOAPBERRY BUGS - feed on Balloon Vines  
- length of beak ~ depth of the seed

⊕ Golden Rain trees introduced



- Environments are always changing  
No such thing as a perfect match



Foraging cost  
Predation cost

red deer

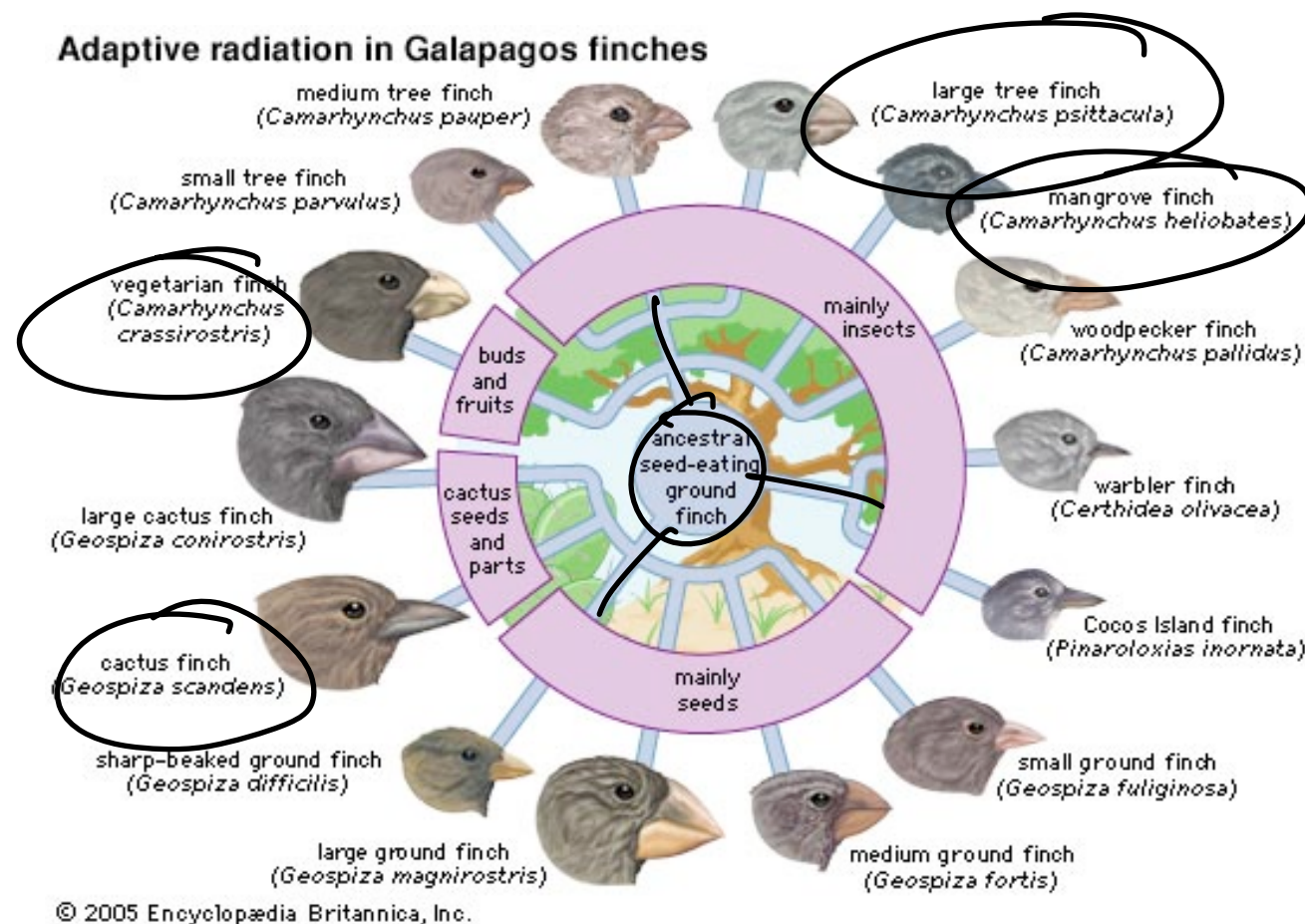
- 1) lack of genetic variation
- 2) Evolutionary history
- 3) Ecological trade-offs

# Adaptive Radiation

Evolution can occur on much smaller timescales than once thought



## Finch Radiation



## Islands: Natural Laboratories

1. Inherited traits (beak size)
2. Variation in trait
3. Fitness differences, (different in each environment)