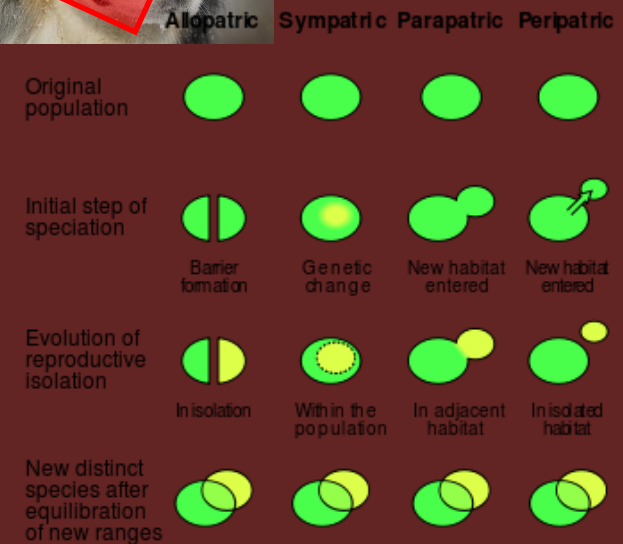
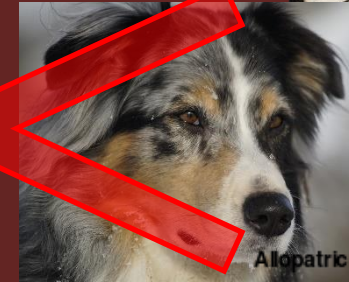
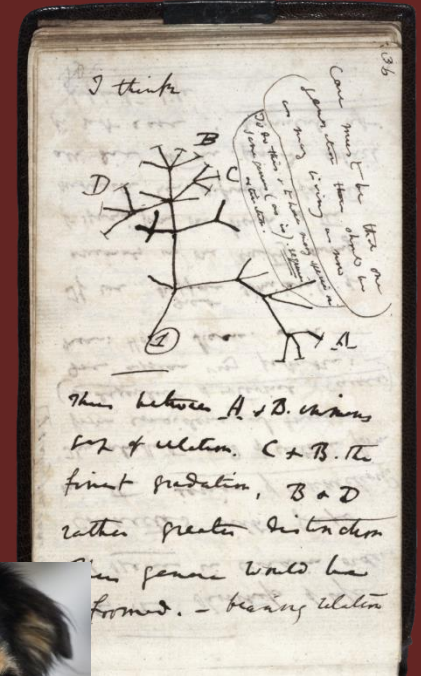
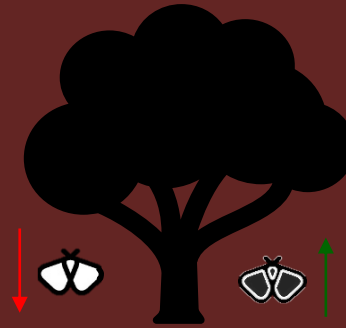


Speciation

- What is Evolution?
 - What is Speciation?
 - What is a Species?
 - Natural Selection
 - Genetic Drift
 - Speciation
 - Four Types of Speciation
 - Allopatric Speciation
 - Peripatric Speciation
 - Parapatric Speciation
 - Sympatric Speciation
 - A Fifth Type: Artificial Speciation
 - Activity
- 
- A red fox is shown standing on a snowy surface. A red arrow points from the top right towards the fox. The fox is facing left and has a white patch on its chest. The background is a clear blue sky.



TeachWithFergy

Preview File

Please enjoy this preview of your Student Version of the lesson. I've created this PDF for ease of viewing and to decrease the file size but of course, your lesson will be in PowerPoint format.

- Some slides appear blank because they have been removed.
- Student versions have portions of the text removed which is given in the teacher version and appear as _____
- Other slides may have on them, this represents writing that has been removed.

What is Evolution?

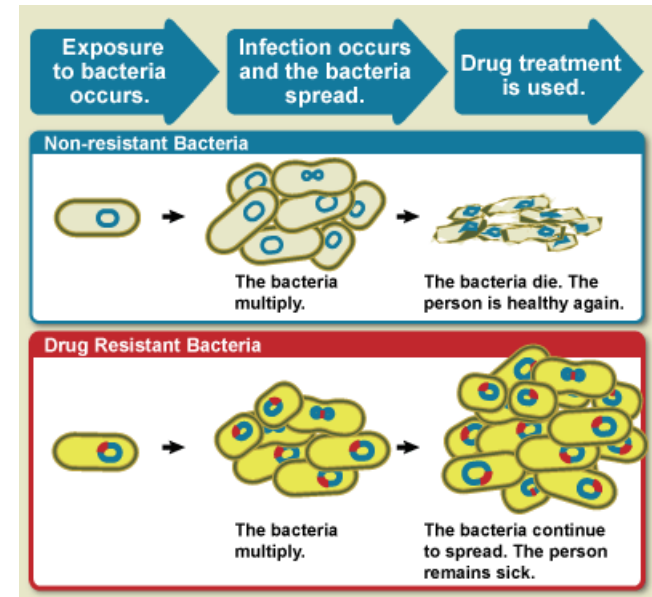
- _____
 -
 - Traits are physical or behavioral
 - _____
 - Changes that put an organism at a disadvantage decline
 - _____

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What is Evolution?

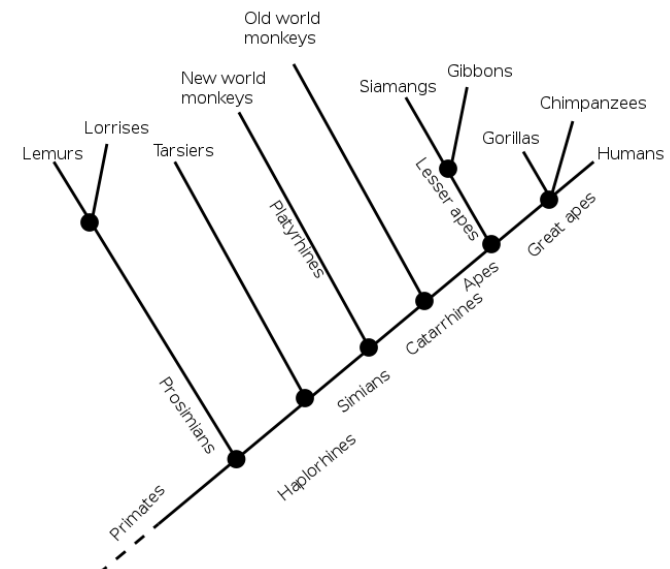
- Microevolution

—



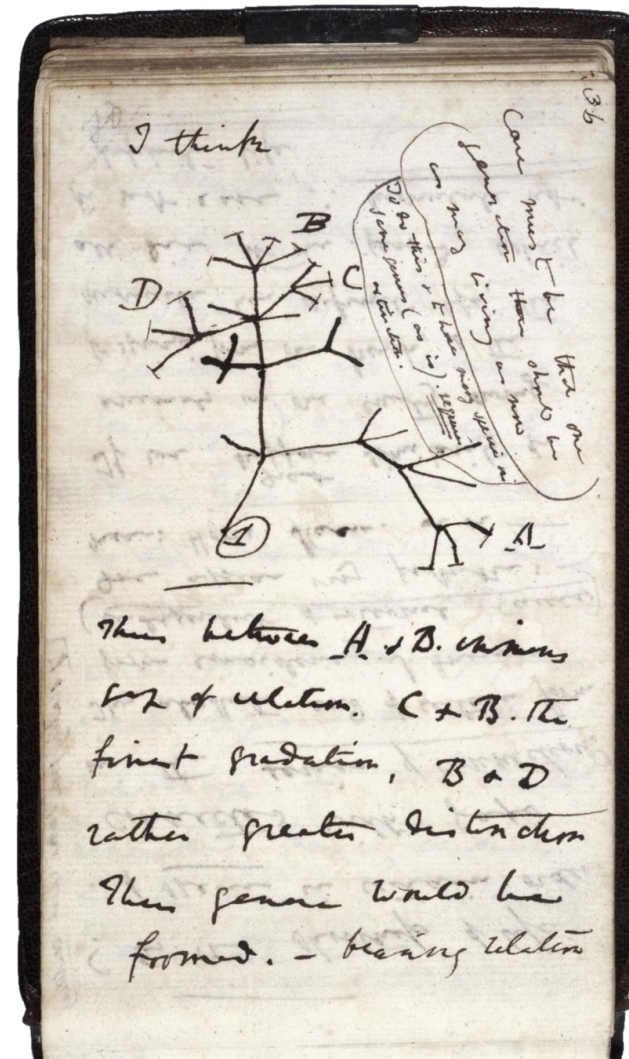
- Macroevolution (speciation)

—



What is Speciation?

- - Must be reproductively isolated from others in lineage; often due to geographic isolation
 -
 -



A page from Darwin's notebook

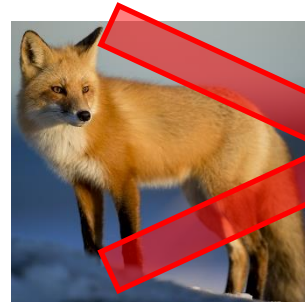
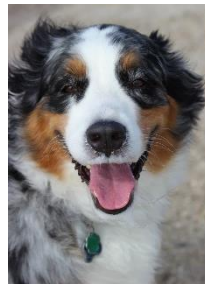
What is a Species?

- More complex question than it seems
-
- _____
- But there's more to it than that



What is a Species?

-
- Changes accumulate within a species, but cannot be spread to another species



What is a Species?

- Species: _____
- Not always that simple:
 - _____
 - Successful hybridization (breeding between apparently different species)
 -

What is a Species?

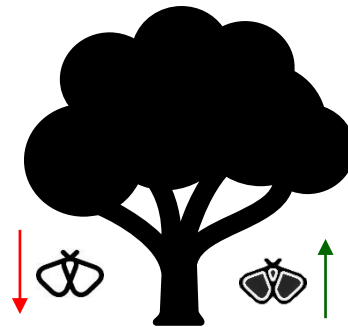
- Species is a term invented by humans to make identification easier
- Not perfect, but for the most part, it works



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Natural Selection

- _____
-
- Descent with modification: _____



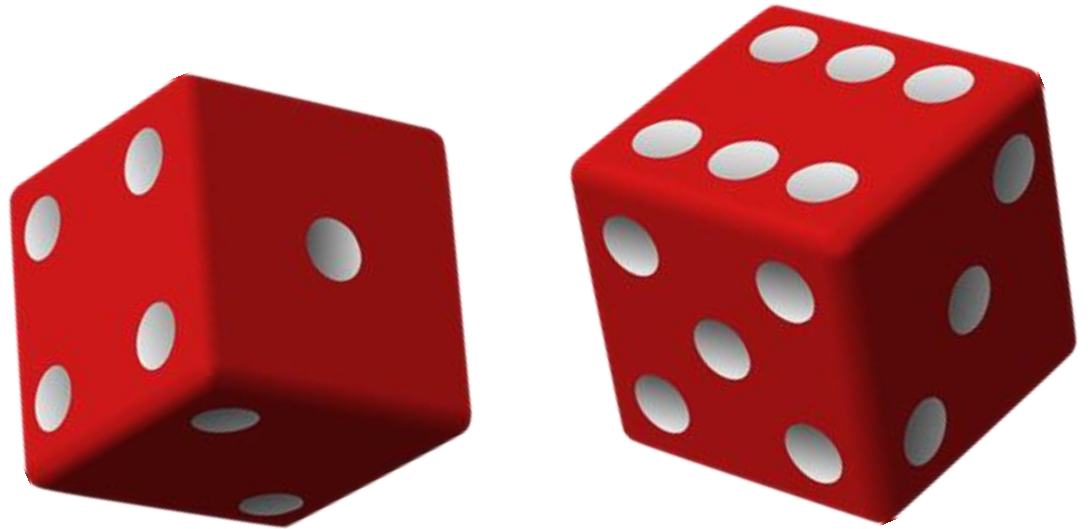
Natural Selection

- Adaptations: _____
-
- Small, incremental adaptations can lead to larger changes, culminating in complex structures



Genetic Drift

- - Death
 -
 - Not lower fitness



Speciation

-
- Environments differ
 - _____
- Genetic mutations arise by chance
- → new species

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Speciation

- Gene pool splits (_____)
- Physical characteristics differ (_____)
- _____
 - Post-zygotic: _____
 - Pre-zygotic: _____
 - Weak at first, grows stronger over time as speciation process continues

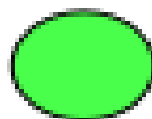
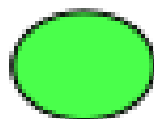
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Four Types of Speciation

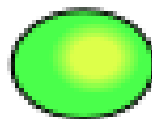
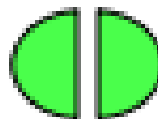
- _____
 -
 - Most common form of speciation in sexually reproducing organisms
- _____
 - Small groups separate from larger group
- _____
 -
- _____
 - No geographic separation

Allopatric Sympatric Parapatric Peripatric

Original
population



Initial step of
speciation



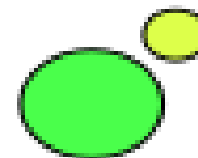
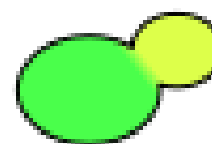
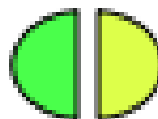
Barrier
formation

Genetic
change

New habitat
entered

New habitat
entered

Evolution of
reproductive
isolation



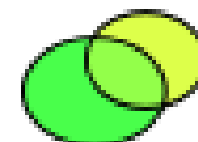
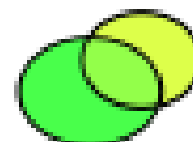
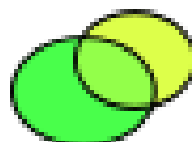
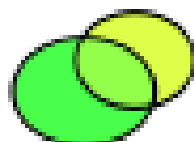
In isolation

Within the
population

In adjacent
habitat

In isolated
habitat

New distinct
species after
equilibration
of new ranges



Allopatric Speciation

- Allopatry: _____
- Physical barriers (can arise over long time periods)
 - Distance
 - _____
 - Water (river, ocean, etc.)
 - _____
 - Land (if marine)
 - _____
 - Road
 - Human civilization
 - _____



Allopatric Speciation

-
- Natural selection
 - Environments differ on either side of the barrier
 - _____
 - They become different over time with accumulated changes

Allopatric Speciation

-
 - Reproductive isolation

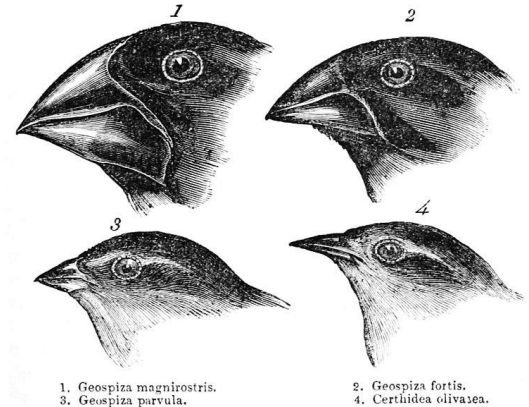
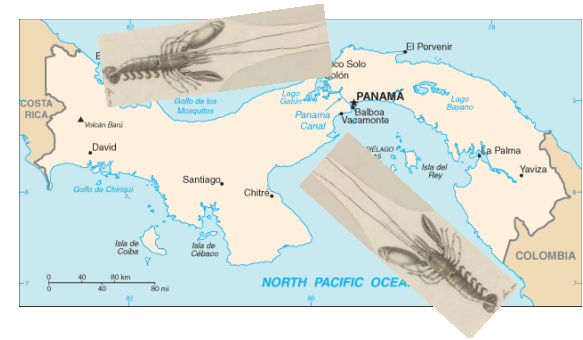


Allopatric Speciation

- Examples

-

- Darwin's finches separated by ocean between the islands of the Galápagos Archipelago. Different species on different islands, but descended from the same ancestral species.

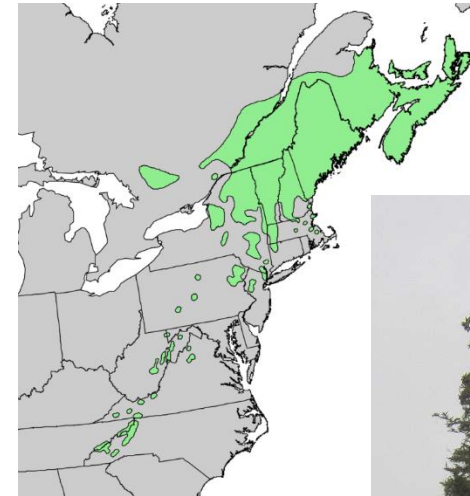


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Peripatric Speciation

- _____
- Different from allopatric in that one group is much smaller than the other

Black spruce



Red spruce



Parapatric Speciation

- _____
-
- Eventually, due to dissimilar habitats, this leads to differences that result in new species

Parapatric Speciation

- Can be caused by pollution
 - New species arise in polluted areas that border non-polluted areas containing their ancestors



.....

Sympatric Speciation

- _____
 - Not accepted by all scientists
-
- Possible mechanisms
 - _____
 - _____
 - E.g., shelter
 - _____
 - Polyploidy (more than 2 paired chromosome sets)

Sympatric Speciation

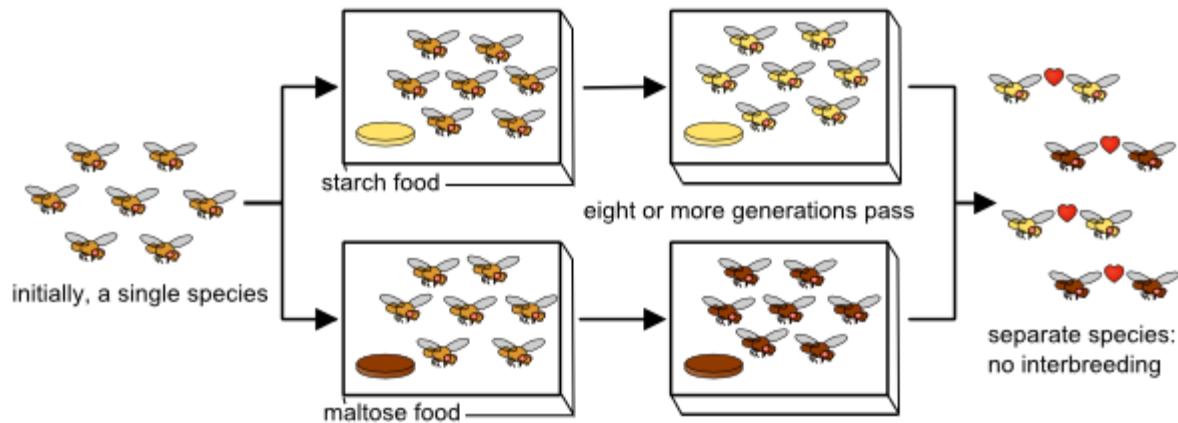
- Possible example: apple maggot
 - Original species laid eggs in hawthorn (related to apples)
 -
 -
 - Apple trees and hawthorn grow in the same place: _____
 - Not yet different species, but scientists hypothesize they are currently undergoing speciation



A Fifth Type: Artificial Speciation

- Humans create new species

-
-
-



Activity

- With a partner, come up with a story of a speciation event. You may use an existing organism or make up a totally new one.
-