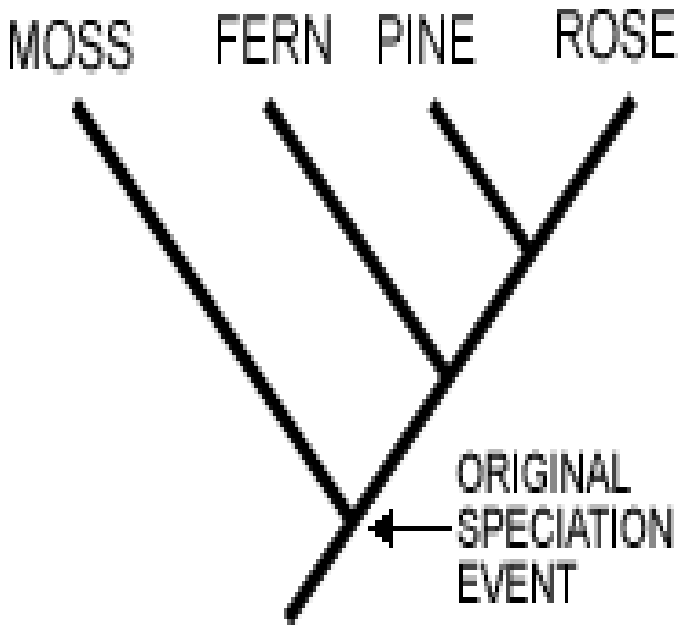
Biological Evolution

What is Biological Evolution

- The Change in the genetic characteristics of a population of organisms over time.
- But lots of things change over time. Trees lose leaves, Mt. ranges rise and fall, so are these examples of evolution.
- No, because they do not involve change by the inheritance of genes.

Trees not ladders

- Scientists used to think that the evolution of life was like a ladder.
- Wrong!!! It's like a tree, it has branches.
- The model used today is called a Phylogeny.



How does Evolution Occur

- Evolution occurs through changes in heritable characteristics.
- This is called Descent with Modification.

Descent with Modification

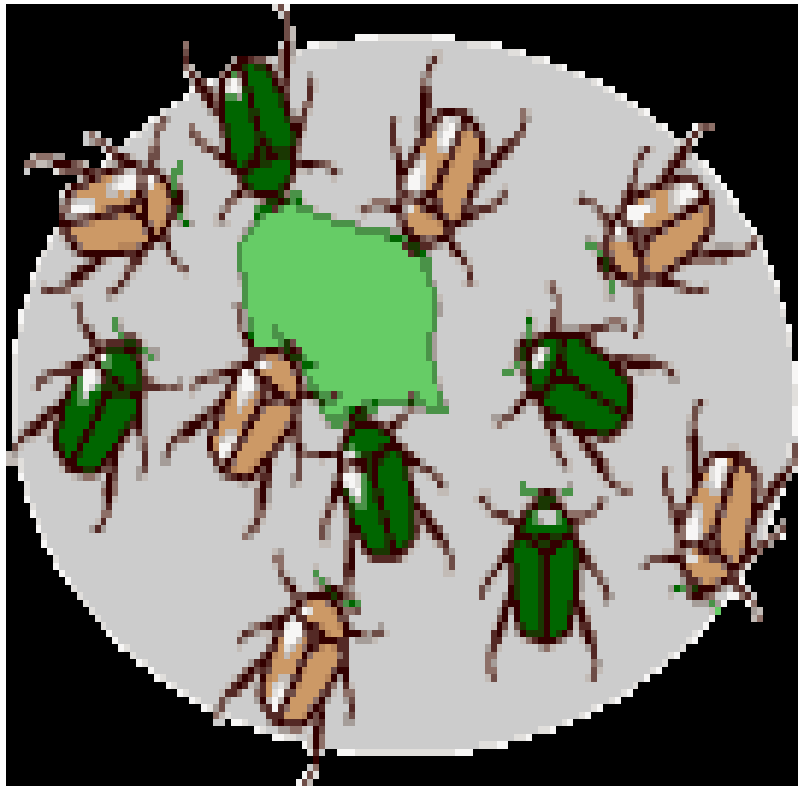
- the genetic differences that are heritable and passed on to the next generation;
- Evolution only occurs when there is a change in allele frequency within a population over time.

Example: Beetles on a diet

- Imagine a year or two of drought in which there are few plants that these beetles can eat.

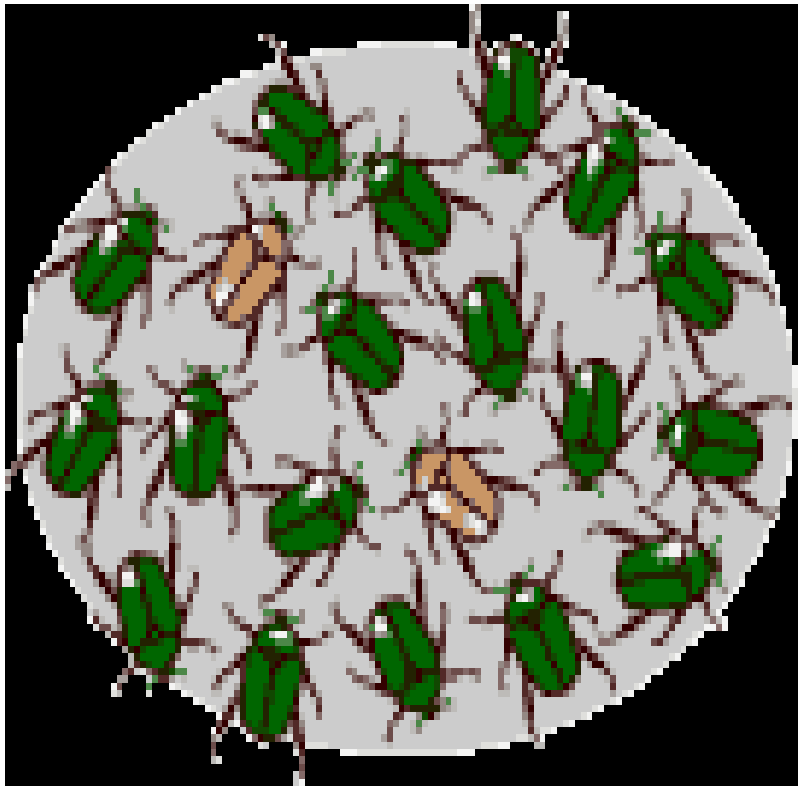
Smaller Beetles

- All the beetles have the same chances of survival and reproduction, but because of food restrictions, the beetles in the population are a little smaller than the preceding generation of beetles.



Beetles of a different color

- Most of the beetles in the population (say 90%) have the genes for bright green coloration and a few of them (10%) have a gene that makes them more brown.



The Change in Allele Frequency

- Some number of generations later, things have changed: brown beetles are more common than they used to be and make up 70% of the population.