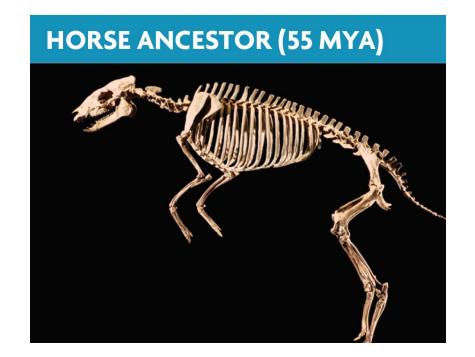
#### **KEY CONCEPT**

There were theories of biological and geologic change before Darwin.



#### Early scientists proposed ideas about evolution.

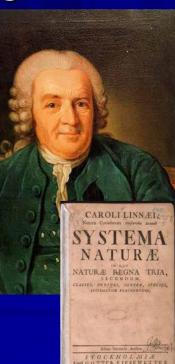
- Evolution is the biological change process by which descendants come to differ from their ancestors.
- A **species** is a group of organisms that can reproduce and have fertile offspring.



- There were many important naturalists in the 18th century.
  - Linnaeus: Developed a classification system for all types of organisms known at the time based upon their physical similarities.

#### **Carolus Linnaeus**

- Developed a classification system for the huge variety of living things he found
  - Wrote book Systema Naturae in 1735 to reveal his classification system
  - There are currently 1.9 million species that have been identified using his method
  - Linnaeus's system of classification reflects evolutionary relationships



- There were many important naturalists in the 18th century.
  - Buffon: Proposed that species shared ancestors and suggested that Earth is much older than6000 years.



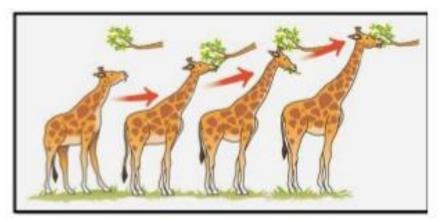
- There were many important naturalists in the 18th century.
  - Erasmus Darwin: Proposed that all organisms descended from a common ancestor, and that morecomplex forms of life arose from lesscomplex forms.
  - Grandfather of Charles Darwin



- There were many important naturalists in the 18th century.
  - Lamarck: Proposed that all organisms evolved toward perfection and complexity and that structures became larger or smaller with use or disuse.

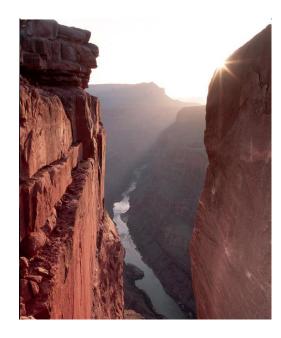


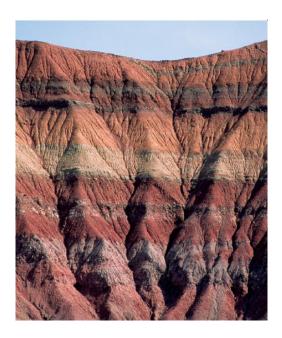
Lamarck's Theory: Giraffes inherited long necks from short necked ancestors who continually stretched their necks to reach food.



- Theories of geologic change set the stage for Darwin's theory.
  - There were three theories of geologic change.
    - catastrophism
    - gradualism
    - uniformitarianism







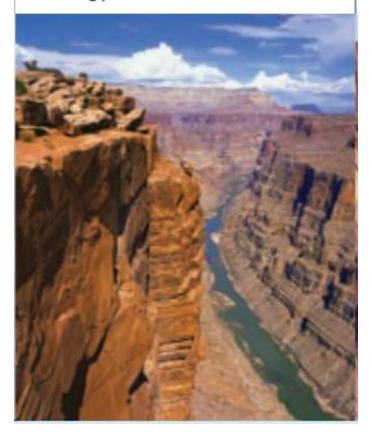
- Theories of geologic change set the stage for Darwin's theory. CATASTROPHISM
  - **Catastrophism** -Natural disasters such as floods and volcanic eruptions have shaped landforms and caused species to become extinct.

Volcanoes, floods, and earthquakes are examples of catastrophic events that were once believed responsible for mass extinctions and the formation of all landforms.



- Theories of geologic change set the stage for Darwin's theory.
  GRADUALISM
  - Gradualism -

Changes in landforms resulted from slow changes over a long period of time. Canyons carved by rivers show gradual change. Gradualism is the idea that changes on Earth occurred by small steps over long periods of time.

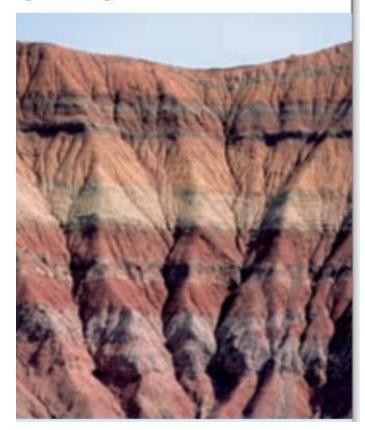


- Theories of geologic change set the stage for Darwin's theory.
  - Uniformitarianism

- The geologic processes that shape Earth are uniform through time.

#### UNIFORMITARIANISM

Rock strata demonstrate that geologic processes, which are still occurring today, add up over long periods of time to cause great change.



• **Uniformitarianism** is the prevailing theory of geologic change.



Every layer of rock was formed by the uniform laying down of sediment that still occurs today.