

Five mass extinctions have occurred since life began on Earth. Are humans causing the next mass extinction? And what does evolutionary theory predict for the world we will leave to our descendants?

1. Evolution and extinction are in balance.
  - a. Normal extinction.
    - 1) 95% to 99% of species that ever lived have gone extinct.
    - 2) Appearances of new forms are bound to the disappearance of old forms.
  - b. Mass extinction.
    - 1) There have been 5 mass extinctions.
    - 2) Now, we may be causing another one.
2. Mass extinctions have wiped out large quantities of species during life's history.
  - a. Permian Mass Extinction: 1 of 10 species died.
    - 1) 250 million years ago.
    - 2) Permian creatures disappeared; they are absent in the Triassic.
    - 3) Causes could have been many: atmospheric changes, ecosystems collapsed.
  - b. Triassic survivors evolve in the post-extinction environment.
    - 1) Survivors include the dinosaurs and mammals.
    - 2) Within 20 million years, dinosaurs become large and dominant.
      - a) Mammals remained small, nearly invisible, nocturnal.
  - c. Dinosaurs fell during a mass extinction 65 million years ago.
    - 1) K-T boundary (Cretaceous-Tertiary).
    - 2) Mammals became diverse and dominant, including the primates.
3. Current extinction
  - a. Habitat destruction... people are everywhere!
    - 1) Number one cause of extinction.
    - 2) Tropical rainforest in Thailand; extinction in the most pristine places.
  - b. Exotic introductions into non-native habitats.
    - 1) Hawaiian paradise is under siege.
      - a) Island habitats are especially susceptible
    - 2) Activities of humans increase biological invasions.

