The Physical Context of Evolution-Anth 310 Lect. 4

- What drives evolutionary change?
- Conservative nature of evolution
- Biological context: competition and natural selection
- Physical environment

Darwin/Modern Synthesis

- Physical environment
- Natural selection

Red Queen Hypothesis

Leigh Van Valen

"The Red Queen has to run faster and faster in order to keep still where she is. That is exactly what you all are doing!"
Australia: marsupials

North & South America: 3 mya

India & Asia: 45 mya
Climate Change

Milankovitch Cycles

Climate/Evolution
- Turnover-pulse hypothesis
- Habitat theory

Elizabeth Vrba
Extinctions and Evolution

Discussion: Physical Context of Evolution

- What kind of fossil evidence would support the Red Queen hypothesis?
- How could the relative contributions of competition and climate change to speciation be tested?
- What is the most important component of the physical context of evolution?
- What changes in the physical environment might have been important in human evolution?

Extinction and Patterns of Evolution

- Why did Uniformitarianism become so powerful a force in late-nineteenth- and twentieth-century scientific thinking?
- How might mass extinction be explained as a consequence of natural selection?
- How does mass extinction influence the history of life?
- How can the hypothesis of asteroid impact be tested?