Important Questions and Learning Objectives

Define ecology
Define evolution
Explain why these disciplines are intimately and intricately linked to one another.

Explain the difference between proximate and ultimate explanations for ecological phenomena
Understand why both provide important contributions to our understanding of the natural world

Have a general understanding of the nature of science, including:

Science is a fallible enterprise: 1) scientists, being human beings, will make mistakes and 2) science always only gives us tentative results.
Science is a discipline that yields an understanding of reality given all available evidence.

One great value of science is that it provides us with methods by which we can arrive at justified beliefs
It is perhaps better to speak of scientific theories as being confirmed or disconfirmed, and these may each be to a greater or lesser degree.

The nature of confirmation: one important way in which theories are confirmed is by making successful predictions.
What undermines a theory is not a false prediction, but a better successor theory (i.e., one that does a better job of explaining the facts).

Predictions are not the sole test of a theory.
The most important test is the explanatory scope of a theory.

Hypotheses can be invalidated, or conversely it can gain credibility and stature, based on inference rather than observation.

Key Terms

Evolution proximate explanations
Ecology ultimate explanations
adaptations nature of science