

SOME CONCEPTS WITH WHICH YOU SHOULD ALREADY BE FAMILIAR

SCIENTIFIC METHOD (see Platt, 1964, in coursepack, for review of these concepts):

- Strong inference
- Hypothetico-deduction
- Parsimony (aka Occam's Razor)
- Value of multiple hypotheses
- Falsification ("science advances only by disproofs")

EVOLUTION AND GENETICS (Pianka chapters 1, 6, 7):

- Mechanisms of evolution (For each of these: what are they, and how important are they in explaining current patterns of biodiversity on the planet?)
 - mutation
 - gene flow
 - genetic drift
 - selection (natural and sexual)
- Types of selection: stabilizing, directional, disruptive

- Speciation: allopatric (= geographic) vs. sympatric (=ecological)
- Macroevolution vs. microevolution
- Fitness
- Homogametic vs. heterogametic sex
- Haploid vs. diploid
- Homologous chromosomes
- Genotype vs. phenotype
- Heterozygote advantage
- Heritability (heritable)

BIOGEOGRAPHY (Pianka chapter 2):

- "Classical biogeography"
- Plate tectonics
- Continental drift

ECOLOGICAL PRINCIPLES (Pianka chapter 4):

- Production
- Ecological succession
- Climax community
- Niche partitioning

I have given the following questions (among others) in a first-day "assessment quiz" to students interested in animal behavior. I don't expect you to hand in answers, but you should assess your own knowledge by trying to answer these:

- In humans, are females the homogametic sex, or the heterogametic sex? Explain.
- Define Occam's razor, and identify its importance in science.
- Give a real or plausible example of niche partitioning.
- What is macroevolution? How does it differ from microevolution?