

BIOE 440/521

Study questions for exam one

1. How many species are there currently on earth? What are some of the problems with estimating the number of species? What approach did Mora et al use?
2. Carefully define the three ways to be rare and explain why the distinction between sparse, endemic and specialist species is important to consider in conservation planning/action.
3. What form does the species-area curve usually take? What affects the slope/shape of the curve for a given data set? How have species-area relationships been used to estimate rates of extinction? What does this approach suggest about the number of species that will be lost as habitat is lost?
4. What methods did Pimm et al describe to estimate current extinction rates? Methods to estimate the normal 'background' extinction rate? How do conservative estimates of the current extinction rate compare to the background rate?
5. Explain human population growth using the equations from Cohen's paper, verbally, algebraically and graphically.
6. Define accuracy, precision and bias, and briefly explain how data collection should be designed to provide precision and to avoid bias, using an example.
7. Define Type I error (alpha), Type II error (beta), confidence and power and explain the relationships between them.
8. Explain the greenhouse effect of atmospheric CO₂, including a graphical explanation that shows how an increase in atmospheric CO₂ affects outgoing energy from the earth, and how this drives an increase in temperature.
9. Describe the methods and primary conclusions of one of the papers on ecological responses to climate change.