

ES 10 Study Guide 2 for Nicole Crane's lectures: NOTE: This is a guide only. DO NOT let it substitute for reading or studying your notes. READ the chapters in the book – you will do MUCH better on the test if you do.

Ecology, ecosystems, population dynamics

- What are some characteristics that all living things share
- What are two types of cells and some differences (eukaryotes and prokaryotes)?
- What are the two major reproductive strategies (sexual and asexual), and what are some advantages and problems with each?
- Abiotic and biotic factors – know examples of these and how they might affect an organism or an ecosystem
- Classification (KPCOFGS) Know the order
- What are the three domains and the 5 kingdoms?
- What are some tools we use to classify organisms (genetics, embryology, homology and morphology (structures such as arms/hands etc.), fossils...?)
- Keystone species – what is it and what is its role?
- What is a species 'tolerance limit', and how can that affect species distribution and response to change?
- Where is the bulk of the energy in a trophic pyramid (which trophic level) stored?
- Trophic levels – producers, consumers, etc. Understand the different levels, what we call (eg. primary consumers etc.) organisms at each level and how energy flows (and is lost) at each level (about 90% lost at each level! Why?)
- Why are there often few apex predators (tertiary consumers)?
- What is the role of decomposers?
- Niche – what is it? How many species occupy one? Why?
- What is the competitive exclusion principle (two species in a niche will result in competition!)? What is resource/niche partitioning?
- What are some causes and effects of competition between species?
- What are some factors that influence populations?
- What is carrying capacity?
- Symbiosis – what is it? (mutualism, parasitism and commensalism)
- What is biomagnification?
- What is eutrophication?
- How are dead zones formed?
- Be able to give an example of how entire ecosystems can shift and change with the change in a top predator (the killer whales/otter/kelp forest example and the wolves in Yellowstone) or even with a change in a lower trophic level organism. We talked about the mutualistic zooxanthellae (small algae) that live inside coral animals. When they leave due to stress, the corals can die. When corals die, the reef can be overtaken by algae and turn a coral reef into an algal reef.
- What is primary productivity? What is an example of an ecosystem that has high primary productivity?
- What is adaptation?

- What is Natural Selection? Be able to give an example of Natural Selection leading to an adaptation. What are some of the major facts and inferences of Darwin's theory?
- What is a genetic bottleneck? Why is it important?
- Why is the *rate* of change of certain abiotic factors (such as temperature) important?
- What does r and K selected mean in terms of reproductive output and strategies?
- What is a biome, and what defines it (temperature and rainfall), and what describes it (plant communities)