

Biology 541 – Exam #2 Review Questions / Topics

Note that items not covered on this list may be on the exam. In general, consider the questions as "guides" to specific topics that I consider important. So if a question asks for some examples of a particular topic, you should also **UNDERSTAND** the topic in addition to the examples.

Most of the questions in this review are straightforward. **DON'T ASSUME THAT THE FORMAT OF THESE QUESTIONS IS ALL THAT IS NEEDED FOR THE EXAM.** Be ready to **synthesize** information and think in broader terms.

1. What are the two types of competition, and what is necessary for competition to occur?
2. What methods can be used to test for competition between two species?
3. What is meant by allopatric and sympatric distributions?
4. What are the different "lines of evidence for interspecific competition? What are competitive displacement and competitive release, and how are they related?
5. What is character displacement?
6. Does resource partitioning always mean competition? Why or why not?
7. What is interactive vs. selective segregation in competition?
8. What is an example of mutualism in fishes?
9. How are predators classified?
10. What is an ontogenetic shift?
11. How do predation and competition interact in modifying the intensity of competition?
12. What are the direct and indirect effects of predators on prey populations?
13. What are the benefits and costs of schooling or aggregating behavior related to predation?
14. How is predation risk related to size ('bigger is better' hypothesis)?
15. What are the four responses of predators to prey population size? How can these responses cause population regulation?
16. What are the seven stages of predatory behavior?
17. What adaptations do prey have to escape predation?
18. How can cannibalism be beneficial in ecological time? How can it be adaptive?
19. How can predation risk be assessed? What are the different relationships between predation risk and prey density?
20. How do predator foraging rates change with habitat structure?
21. Why is the ecology of larval fishes important?
22. What is the tradeoff between precocial and altricial larvae? When would each be an advantage?
23. What are the hypotheses posed to explain variation in larval supply?
24. Within species, why can the body shapes of larvae be radically different from those of adults?
25. What are lentic and lotic freshwater systems? How are lakes stratified seasonally by temperature and nutrients?
26. What does stream order mean?

27. What two terms describe extremes in lake productivity and what are the characteristics of such lakes?
28. What is a trophic cascade, and how could it be used in management practices?
29. What are the hypotheses involving post-settlement processes to explain variability in size and distribution of benthic populations?
30. Contrast recruitment limitation vs. density-dependent mortality in their importance to determining the structure of reef fish populations.
31. What is meant by settlement and by post-settlement processes?
32. What are the general objectives in sampling fish populations and the problems in the assessment of fish population size?
33. What are the sampling gears and various methods used for estimating fish population size?
34. Know how to calculate population size based on mark-recapture methods of single and multiple sampling (I will provide formulas, but you need to know what the terms mean).
35. What are the assumptions of mark-recapture techniques?
36. What are various temporal (diel, tidal, seasonal) and spatial movements of fishes?
37. What is the “ideal free” distribution?
38. What terms are there for species that migrate only within oceans, only within freshwater, and between fresh water and oceans?
39. What is the importance for vertical migration (depth) in some species?
40. What are the hypotheses to explain community/assembly structure?
41. Know how to calculate species diversity and maximum species diversity.
42. What is the relationship between species richness and area and between species richness and habitat heterogeneity?
43. How can predation be related to the intermediate disturbance hypothesis?