Biology 541 – Final Exam 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. Moreover, the exam covers all topics from the introduction of fisheries concepts to the last lecture and includes the last two papers of our discussions (McNeill and Fairweather 1996; McClanahan et al. 1996).

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 is fisheries biology? What are more recent trends in fisheries?
2. What is the definition of a stock?
3. What is stock assessment?
4. What is MSY, and why is it important? What are some of the reasons why it is useful, and what are problems with it in general and with its assumptions?
5. What are the different phases of a fishery, including those that concern overexploitation?
6. What is the role of a fisheries scientist?
7. What are recruitment overfishing and growth overfishing?
8. What does recruitment mean in a fisheries sense? Why is it so important to fisheries?
9. What defines a unit stock? What do feeding, spawning, and nursery grounds have to do with defining a stock?
10. Why are growth and age of fish important in fisheries biology?
11. What is the recruitment problem (stock-recruitment paradox)?
12. What are the two classic stock-recruitment models? Why are stock-recruitment models important?
13. What determines the magnitude of recruitment?
14. What is the difference between spatial and temporal density-dependence?
15. Understand the differences between density-dependence, density-independence, and inverse density-dependence.
16. What the Beverton-Holt and Ricker models of stock-recruitment? The Shepherd model?
17. What is a compensatory effect vs. a depensatory effect?
18. What determines population biomass?
19. What are yield-per-recruit models?
20. How is recruitment, considered constant in yield-per-recruitment models, incorporated when we know that recruitment is variable?
21. What are surplus production models?
22. When using surplus production models, what are the pros and cons of using constant biomass vs. constant proportion of biomass harvested?
23. What are the impacts of fishing to populations and communities?

24. Why are age and maturity, length and maturity, and other parameters show a negative relationship with fishing pressure whereas individual growth rate often shows a positive response?
25. How does fishing affect community structure and species composition?
26. What are the sources of fishing impacts on habitats?
27. What are the direct and indirect effects of fishing gear on habitats?
28. What is the difference between active and passive fishing gear? How can they both be harmful?
29. Why is bycatch important? What is high-grading?
30. How can fishing cause shifts in alternate "stable states", with regard to urchins, urchin predators, and herbivorous fishes? Think broadly about trophic relationships.
31. What are the multiple management objectives in a fishery?
32. What is the difference between TACs and IQs in fishery management?
33. What are catch controls vs. effort controls vs. technical measures?
34. Under what conditions would marine reserves be used effectively in fishery management?
35. What are the potential ways in which we could improve fisheries management?