

OCEA 101 Winter 2007 – Extra Credit Due March 14, 2007

This extra credit opportunity is designed to expose you to more detail about biological oceanography than we have time for in class. You may choose to do any one of the three extra credit assignments below.

1) Choose either the topic of (A) Ocean Diversity, (B) Pelagic Migrations, or (C) Whales and Whaling. You are welcome to read all of the papers, but should only turn in extra credit for one of those three topics.

2A) For the Diversity article:

Define what we mean by diversity. Do you think the oceans are more or less diverse than land? What new methods or techniques in oceanography have changed our understanding of diversity in the oceans? How have these discoveries also changed our understanding of how elements (carbon, nitrogen) cycle in the ocean?

2B) For the Migration articles:

What new technology has allowed us to directly study the way animals migrate? Based on the articles, explain how migration might benefit the animals in terms of their adaptation to the environment. What oceanographic cues do you think the animals are responding to? (make sure to include examples from both articles).

2C) Whales and Whaling:

Explain how Roman and Palumbi estimated the historical size of the whale populations before industrial whaling. From the PNAS article, describe what the long-term effects on the food-web structure of the North Pacific have been. Include in your answer a discussion of top-down versus bottom-up effects, trophic transfer, and the impacts of removing apex predators from the food chain. Finally, one major criticism of these papers is that there is no way to ecologically sustain the population sizes of whales that the authors suggest (pre-industrial whaling). Explain how you, as a marine scientist, would determine if it were even possible to support the whale populations in the context of a marine food web.

3) You should turn in an essay-type answer for whichever question you choose.

The papers are available on the class website, under the “discussions” section at the bottom of the page. These are also the papers referenced in the practice final exam from 2006.