

## The Lists of Love Assignment

**Instructions:** Your readings for Unit 3 have described some of the remarkable diversity of sexual systems and complexities of development exhibited by marine organisms. These readings have also discussed some of the proposed advantages of various sexual systems depending on the environment—social as well as physical—of the species involved. Now, explore this issue further by thinking more in-depth about what conditions or situations are most advantageous for different sexual systems or development types (e.g. complex life cycle or direct development).

For each of these questions, it's most important that you explain your reasoning rather than name a “right” answer. Remember, the tremendous diversity of marine life is itself a demonstration that there is no single right way to address the complexities of different environments and situations.

1. Adults of a certain species are relatively slow-moving and widely spread out. What sexual system and what developmental system might be most advantageous?
2. A certain species has a complex life cycle and lives in the Arctic, where food resources are scarce during its period of reproduction. Larger individuals are able to produce more eggs than smaller ones. What sexual system will be most advantageous? Will these animals be more likely to produce planktotrophic or lecithotrophic larvae?
3. A coral-reef community is composed of a multitude of species living together. For a snail species on this reef, what will be the advantages of external fertilization? What will be the advantages of internal fertilization? If you know how many snails of this species are present on the reef, will your answer change? If you know how many snails of other species are present on the reef, will your answer change?
4. In a certain species, males compete for females and must defend their territories from attack. Although adults are plentiful and quick-moving, they are highly loyal to their territories and rarely travel to other locations. What sexual system and developmental system might be most advantageous to them?



5. Describe a set of environmental conditions in which you expect to see a species exhibiting poecilogony.
6. You find a species of barnacle whose individuals have separate sexes, with much smaller males existing as “parasites” on females. What conditions might make this advantageous?

