Questions for Section
– Mating Behavior and Hermaphroditism in Coral Reef Fishes-
Warner

1) Trivers proposed an idea that you are probably all familiar with. Eggs and sperm require different levels of investment. As a result what limits the reproduction potential of (a) males and (b) females?

2) What is the size-advantage model proposed by Ghiselin?

3) Explain how the expected fertility of males and females at different sizes is expected to influence the which strategy is utilized (a) no sex change (b) protandry (c) protogyny?

4) Which hermaphroditic strategy is favored by monogamy (like Anemonefish)? WHY?

5) Non-monogamous, dense aggregation of Dascyllus favor a different strategy from anemonefish. What is it? What is the reasoning for them evolving this strategy?

6) In blue-headed wrasse, as the size of the reef, and therefore size of the population, increases there is a trend toward a greater proportion of the population being territorial males. Why do you think this is?
Consider the extremes:
(a) small reef with few individuals- why is it better to be a territorial, primary male?

(b) large reef with large population-
a. Why does the proportion of primary males in the population increase?
b. Why are group-spawning males more common?
c. Why are group-spawners on prime female spawing habitat?
7) Simultaneous hermaphroditism might appear to be the best strategy. (1) Every other individual is a mate, (2) reproductive output is potentially MUCH higher than being a male or female.
   a) What is a factor that would favor simultaneous hermaphroditism?
   b) Why then is it relatively rare in shallow water fishes? (hint: think of simultaneous hermaphroditism as a strategy, in a perfect world, it will only persist if it is the BEST option)
   c) Why do you think that simultaneous hermaphroditism is common in deep-sea fishes?

8) How does the black-hamlet fish avoid the problem of “CHEATING” in a simultaneous hermaphrodite?

Section Questions
-Predator-induced Defense in a Marine Bryozoan-
C. Drew Harvell

1) What are the tradeoffs of the bryozoan discussed in this paper?

2) What evidence did he present supporting the idea that spines were produced for nudibranch deterrence?
3) What is your theory on why ONLY the periphery is defended? (Think about the whole system and other interactions- any theory is acceptable as long as you can logically explain your reasoning)

4) If spines are so effective in reducing grazing pressure, then why do you think they are a plastic trait? (Go further than just “they are costly”)

**Group Thought Question**

Lets consider the impacts of fishing pressure on three commercial species, each with a different hermaphroditic strategy. (Hint: consider how the strategy would influence the age/size structure of the population)

(a) simultaneous,
(b) protogynous
(c) protandrous

Which species will suffer the worst from heavy fishing pressure? WHY?

Which will likely survive best? WHY?

For each strategy, consider whether the size of maturity or the size of switching is more important in deciding the minimum fish size allowed to be caught.