The Lists of Love Assignment Answer Key

1. For slow-moving, widely spread-out individuals, one of several systems might be an advantage: animals can be simultaneous hermaphrodites, guaranteeing that any other individual they eventually encounter will be a potential mate. They can be hermaphrodites that are able to self-fertilize, thus requiring no encounters with other individuals to reproduce. Similarly, they can be asexual. Alternately, they can have two separate sexes with males existing as sexual parasites, thus ensuring that once a male finds a female he is attached to her for life. Sexual parasitism might be more difficult in a slow-moving species; however, as the males might not be as likely to encounter females at all, they will need to have extremely highly developed senses for finding those females, either through smell, sight, or sensation (vibration, etc.). Developmentally, a complex life cycle with free-swimming larvae will probably be an advantage for this species, allowing the young to disperse to a degree that the slow-moving adults cannot.

2. If larger individuals can produce more young, a protandrous sex-changing system (from male to female) might be an advantage; this would allow the same individual to fertilize many eggs when small and to produce many eggs when large. Alternately, individuals can be simultaneous hermaphrodites that mate as males when young and as females when older (but in this case they will be wasting resources on having both sets of reproductive structures while only taking advantage of one). Or, these individuals can have two separate sexes with females exhibiting faster growth than males. If there is not much food to be had during the reproductive season, it makes more sense for these animals to produce lecithotrophic larvae that already have a food source provided for them.

3. Snails that have external fertilization will not need to worry about finding a mate within a reef community; their sperm may fertilize eggs external to their bodies in an aquatic environment. On the other hand, snails with internal fertilization will be able to produce fewer gametes, knowing that the gametes will not be wasted or eaten in the water, and also the snails will not have to worry about competing with the released gametes of other species. If there are very few snails of this species present, internal fertilization might be an advantage (although it will take longer to find mates), because it will guarantee that gametes will encounter each other. On the other hand, external fertilization saves time searching for a mate, and if the snails produced enough sperm and eggs, this will still result in young. If many other snail species are also present and also have external fertilization, the snails may risk competing with other gametes and might be better off with internal fertilization.

4. In this case, female-to-male (protogynous) sex change can be an advantage. Another advantage may be having two separate sexes with larger males than females. A complex life cycle will ensure that the young of this species are widely dispersed.

5. Species might exhibit poecilogony under conditions that change dramatically from year to year. In some years, if upwelling events (or other conditions) lead to a wealth of plankton, then adults can produce planktotrophic larvae. In other years, if shifts in currents or weather conditions lead to poor food sources, adults can produce lecithotrophic larvae.

6. Parasitic males might exist in a species where females are scarce or very widely distributed, or they might exist in cases where males can only swim for a certain distance or a certain period of time.