REPRODUCTIVE STRATEGIES IN THE MARINE WORLD

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With the exception of humans, and our spayed and neutered pet friends, survival and passing on genes through reproduction are all encompassing for the remainder of the animal kingdom, the marine environment included. Marine organisms have a fascinating array of reproductive behavior patterns. They can be pelagic spawners, benthic spawners, nest spawners, or bearers of live young. They may be guarders, non-guarders, or brood hiders. Further they may have elaborate courtship or no courtship.

Take a goliath grouper for instance, adults generally show a strong site preference and move very little; however they are known to travel one hundred miles or more to reach spawning aggregation sites. Most of the known spawning aggregations are off of southwest Florida, but additional aggregations have been observed off of Florida’s central east coast. Researchers and volunteer dive groups have observed various goliath grouper color changes associated with spawning aggregations such as dark, bi-color, and white/gray color phases. They have also noted behaviors associated with goliath grouper spawning aggregations that include pairing or grouping, stacking, and/or barking/bellowing. Spawning occurs in late summer or early fall on dark nights (new moon particularly) between 10:00pm and 3:00am when eggs and sperm are released into the water column (pelagic spawning). Such spawning behavior is likely an adaptation to avoid egg predation.

Another fish with an interesting reproduction strategy is the gulf killifish, a fairly common baitfish. There are fifteen species of killifish found in Florida and although most are freshwater fish, the gulf killifish, as its name implies is a saltwater species. The majority of saltwater fish species reproduce through external fertilization. Killifish however reproduce through internal fertilization and then the female lays eggs. However she doesn’t just deposit them anywhere. She lays them in muddy sediment at the water’s edge during a flood tide. When the water recedes the eggs incubate in the mud until the next flood tide at which time they hatch. Interestingly, killifish in freshwater systems use a similar approach. They lay eggs in the mud within a small puddle of water. The puddle dries, the eggs incubate, and when the next rain rehydrates the ground, the eggs hatch.

Fish are not the only marine animals with interesting reproduction strategies, invertebrates (animals that lack a backbone) also exhibit unique strategies. Take

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tunicates for example. Tunicates are those gelatinous globs that are often found on mangrove roots, encrusting on seagrass blades or washed up on the beach looking like a softball sized blob of rubber. Tunicates are filter feeders, taking water in through one siphon, extracting particles then expelling the water through the second siphon. Most tunicates are hermaphrodites, meaning they possess both male and female sexual organs. They avoid self-fertilization by having the eggs and sperm mature at different times or by having the eggs and sperm reject each other. Tunicates reproduce by releasing sperm into the water column. The sperm then enters another tunicate through the siphon with incoming water, and the eggs are then fertilized.

Probably one of the most noteworthy reproduction strategies is that of the lowly barnacle. Barnacles are truly oddballs. They look more like a mollusk, but are instead a crustacean (related to shrimp and crabs). What is absolutely fascinating about barnacles is that although they’re cemented to structure and don’t move, they do reproduce through internal fertilization. How do they do it? Well it turns out, barnacles which are also hermaphrodites like the tunicates previously mentioned; possess the longest penis relative to their size in all the animal kingdom. Yep, they reach out and fertilize their neighbor, and when they’re done they discard the penis, growing a new one when they need to reproduce again.

So there you have it, a sneak peek into some interesting reproduction strategies employed by a few of our more remarkable marine species.

Sources:
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Marine Scene, Volume 50-2. written by John Stevely, Florida Sea Grant Agent, University of Florida-IFAS Manatee County Extension.