

Science lecture #5: Coral-reef building organisms

Corals are colony animals that construct calcium carbonate skeletons. After generations these exo-skeletons become a layered stony deposit, this is how the coral reef is built. The space in and around the coral colony provide a habitat for fish. Reef building Coral have a special relationship with the algae Zooxanthellae, which live within the coral polyp endoderm tissue and provide sugars and carbon to the host animal. The cnidarian phyla, of which corals are a member, is know for nematocyst filled stinging cells that provide the coral and algae with protection. This relationship is called a symbiosis because both host and symbiont receive benefits from the arrangement.

Here are four Coral species seen commonly in Kaneohe bay:

Scientific Name	Common Name	Hawaiian Name
<i>Fungia scutaria</i>	Mushroom Coral	Ko'akohe
<i>Montipora capitata</i>	Rice Coral	
<i>Pocillopora damicornis</i>	Lace Coral	
<i>Porites compressa</i>	Finger Coral	

Reef building coral polyps live in colonies and reproduce in two ways asexual and sexual. Asexual reproduction is ongoing almost continually as coral polyps divided and build the colony. Sexual reproduction occurs less frequently and requires the timing of broadcast spawning events where multiple colonies of the same species of coral release eggs and sperm into the water column. Mass spawning events involve multiple species and while some nonviable unions might occur the ecological benefit may be a overflowing the dinner plate of larval polyp predators for that night and the weeks to follow as the larvae develop in the planktonic soup.

Most coral colonies don't have locomotion. But *Fungia scutaria* is a single polyp coral and can right itself in a storm or even drag itself over the reef. The Hawaiians call this species Ko'akohe and used it as an abrasive brush to polish their canoes. Some coral colonies become established when a branch of coral breaks off in a storm or is broken by an animal. This will not always result in a new colony, the polyps in the broken coral piece might die, but if the live they continue to build a colony genetically identical to the parent colony. *Pocillopora damicornis* displays an interesting trait where by the polyps leave their calices behind and float off to establish new colonies individually. This is a rare behavior and would be associated with a time of coral stress.