GEO130 SPRING 2006
FILM STUDY GUIDE
Title: *Blue Planet, Seas of Life Episode VIII: Coral Seas*

Synopsis: Tropical oceans are the deserts of the ocean world. There are exceptions. Equatorial upwelling is one, but he most colorful is the coral reef community where a diverse, fragile community exists in a threatened environment.

Coral reefs are colorful and diverse and a constant battleground.

The entire reef community depends on coral. Coral is a **COLONIAL** organism. That means individual coral **POLYPS** secrete **$CaCO_3$** (calcium carbonate) and all the polyps together build a support structure called the reef. All polyps are individual organisms that share the workload for building and maintaining the structure and also share in the advantages. Sounds like a condominium association.

The reef must exist in warm, but not too warm, water that is shallow and clear. Despite coral being animals they must have sunlight for photosynthesis, thus the need for clear water. Within each polyp are **zooxanthellae (algae which is a green plant) .** Photosynthesis by the algae provides food for the animal polyps. 98% of coral food is from algae. The coral polyp provides habitat for the algae and the algae in return provide food for the polyp. A mutually beneficial relationship like this is called a **symbiotic relationship**.The remainder of the food is **plankton** filtered from the water around the coral reef at night.

When coral loose a large percentage of their zooxanthellae because of a stress mechanism (three mechansims are thought to be water warming, loss of water clarity from pollution, increase of nitrate concentration causing phytoplankton blooms and loss of water clarity and other mechanisms) **bleaching** occurs.

Because the coral reef provides shelter and creates upwelling it is a highly productive but localized tropical community.

When coral overgrow neighboring coral they battle and digest one another alive. Just like in other animal environments they compete for resources.

Because of warming waters, crown-of-thorns starfish are becoming much more numerous and in some locations devastating some reefs.

Coral must synchronize mating activity with rising water temps of spring and moon phases – just after full moon when currents are weakest