



National Marine Sanctuaries



● National Marine Sanctuary

▲ Marine National Monument

Scale varies in this perspective.
Adapted from National Geographic maps.

America's Underwater Treasures



Habitat Characterization



- 1. What are the species you are looking for?**
- 2. What are the habitats and what do they look like?**
- 3. How do you estimate abundance?**





Habitats



Rocky Reef :

**Any area with rocky boulders,
granite, or pinnacles**



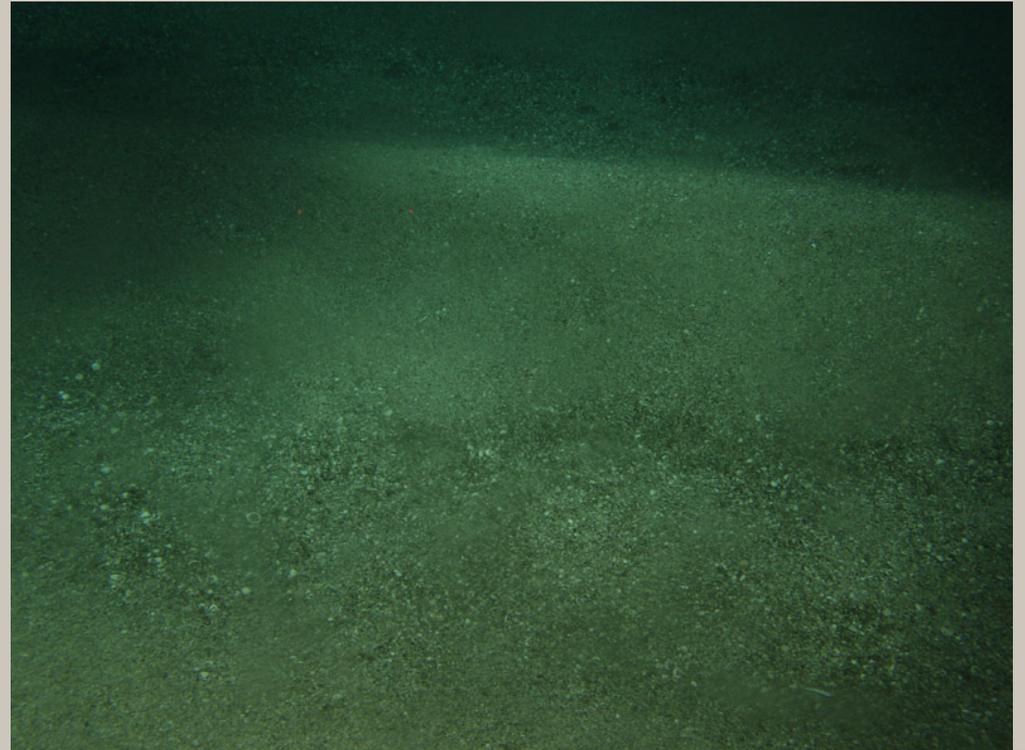


Habitats



Soft Bottom:

Any area that is lacking reef material, and consists of soft, sandy, or muddy substrate





Species Identification



**Characteristics
to look for:**

- o **Body Shape**
- o **Color**
- o **Behavior**
- o **Habitat**





Invertebrates



Sea Cucumber (*Parastichopus californicus*)

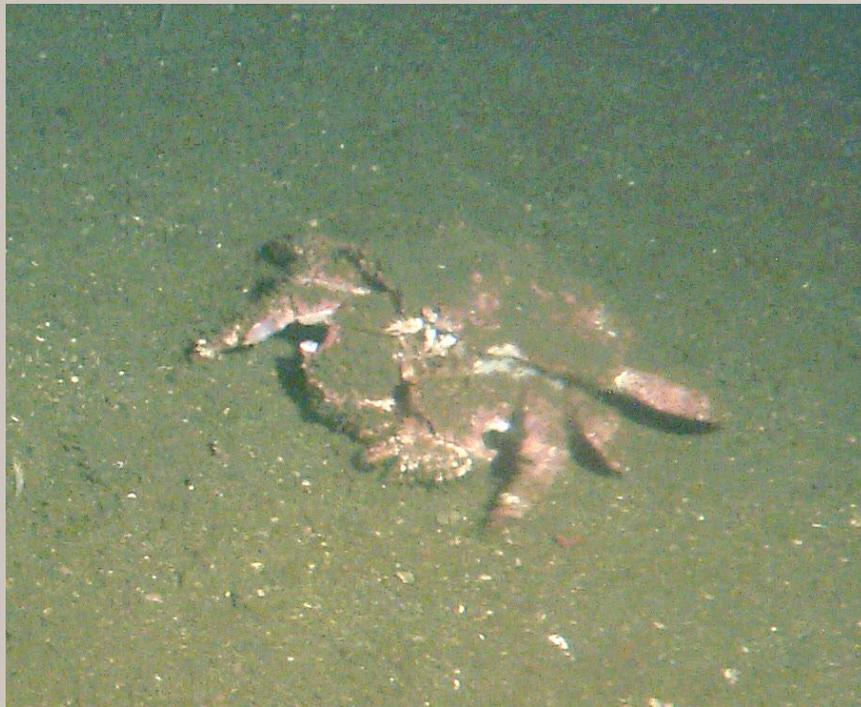




Invertebrates



Box Crab (*Lopholithodes foraminatus*)



- **Slow moving**
- **Usually seen over soft bottom habitat**

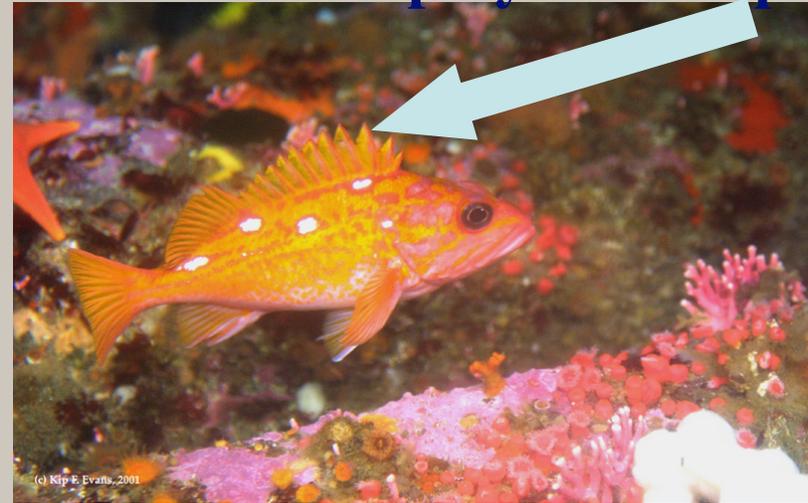


Fish



Rockfish (*Sebastes sp.*)

spiky dorsal spines



Big eyes

Big lips



Fish



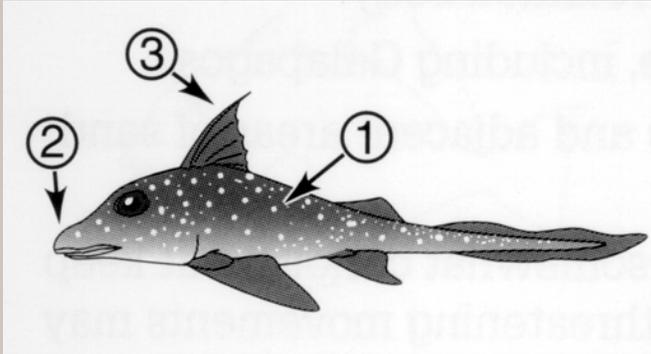
Juvenile rockfish



(c) Kip F. Evans, 2001



Fish



Ratfish (*Hydrolagus colliei*)

- o “wing-like” fins
- o watch for shadows on the bottom





How to rate the abundance



Single 1

Few 2-10

Many 10-500

Abundant 500 and more....



Abundance



Single 1



Many 10-100



Few 2-10



Abundant >500





Lasers= 20 cm apart





What is it?





What is it?





What is it?





Characterizing habitat

- Gain information about the ecosystem and its inhabitants



Monitoring

- Tracking changes over time





NATIONAL MARINE
SANCTUARIES TM