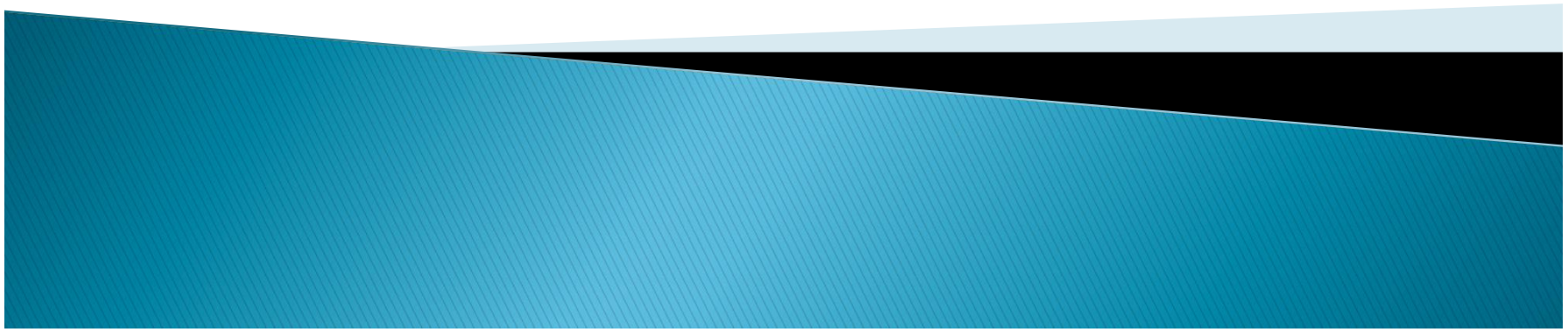
Tidal Communities

Animals and impacts



Marine ecosystems: Salt marshes

Grassy **salt marshes** cover intertidal areas with sandy or silty substrate in temperate regions. Tides flow into and out of channels called *tidal creeks.*

Marine ecosystems: Intertidal zones

- **Intertidal** or **littoral** ecosystems occur along rocky beaches. Tides cover organisms most of each day, and leave them exposed to air or bathed in tidepools part of the day.

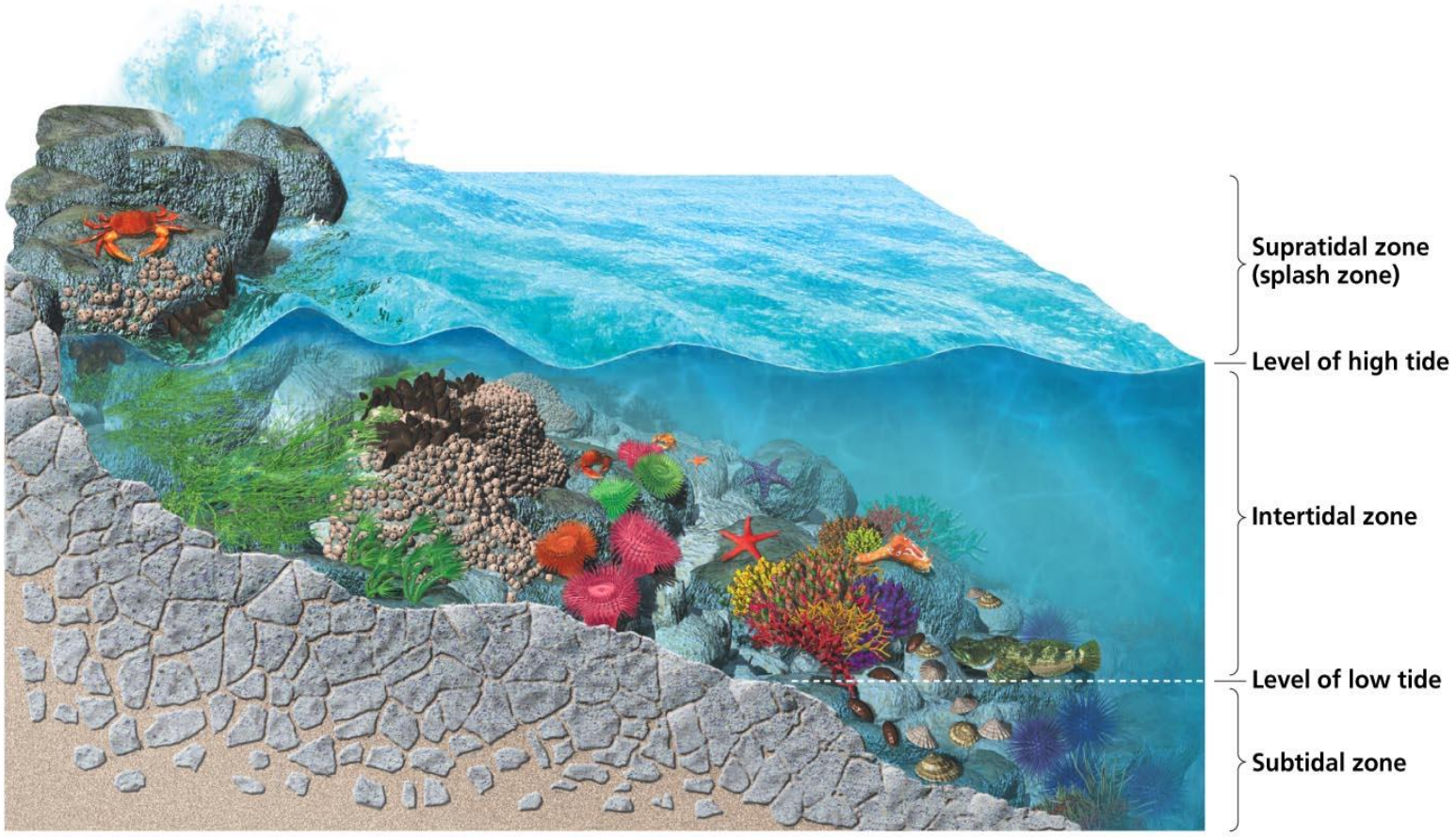
- High biodiversity: Seastar, crabs, sea urchins, algae, etc.

- Must endure extreme fluctuating conditions

(b) Tidepools at low tide

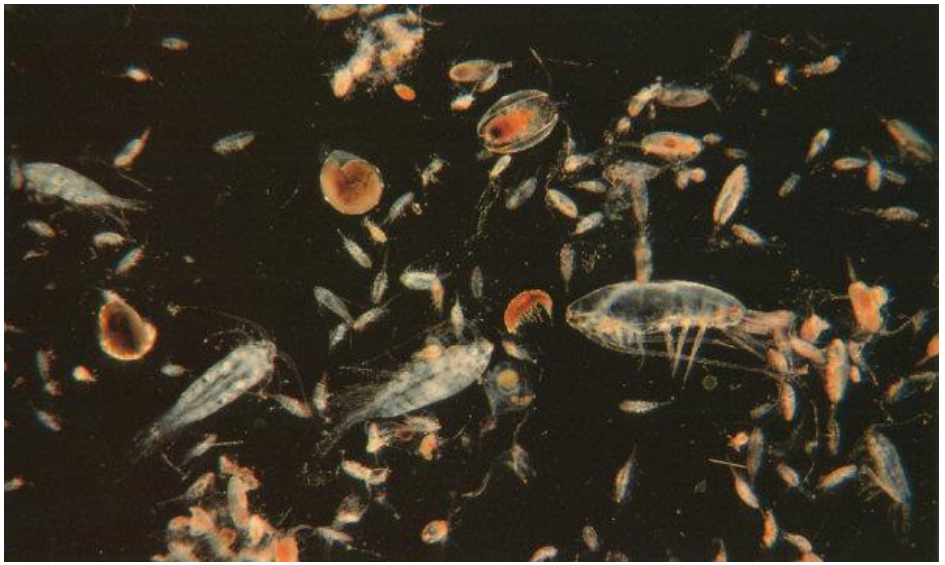
Marine ecosystems: Intertidal zones

Intertidal organisms adapt to certain levels, according to how much wave action and coverage by water they prefer.

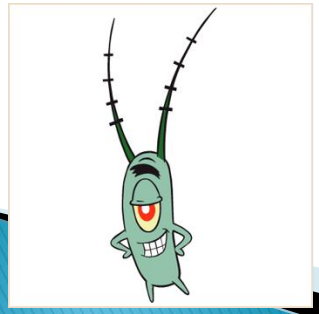


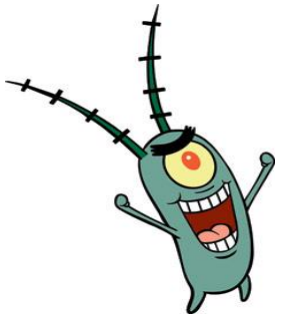
(a) Tidal zones

Plankton



- Phytoplankton
- Zooplankton





Adaptations to Wave Shock

- Sea Stars and Urchins
- Tube feet with suction cup ends

Adaptations to Wave Shock

- Blue Mussels (strong cables)

Adaptations to Wave Shock

- Crabs and Lobsters
- Wedge into rock spaces
- Hide under rocks

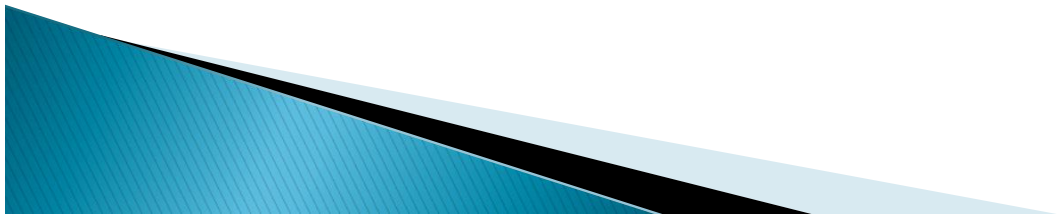
Adaptations to life on a rocky shore line

Adapting to Wave Shock

- Barnacles
- Cements shell to rock
- Snails
- Use a suction cup like foot

Levels of Organization

- There are four distinct levels of organization in the biotic sector of the environment:
- *The individual organism*
- *The population of that species*
- *The community of organisms that species exists within*
- *The ecosystem the community exists in along with the abiotic factors affecting those organisms*



The individual organism (species)

- Chlorostoma funebralis – the Black Turban Snail
- How is this animal adapted to its environment?

The population of Black Turban Snails

- How do these snails interact with each other?
- Competition?
- For what?

The community of orgnanisms that the Black Turban snails live in

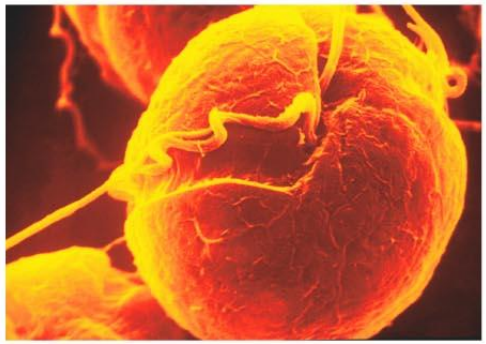
- How do these organism interact with each other?

The Flow of Energy and the Recycling of Nutrients

- All the living organisms in this rocky shoreline community require energy for survival.
- How is this energy acquired and how much is passed on?
- How do these organism obtain atoms and molecules for growth and repair?
- and how are these nutrients passed on?

Ocean pollution: Algal blooms

Excess nutrient runoff (as from fertilizers) can spur out-of-control growth of algae that kill fish and other organisms. These **harmful algal blooms** are also called **red tides** because some types color water red.



(a) Dinoflagellate (*Gymnodinium*)

(b) Red tide, Gulf of Carpentaria, Australia

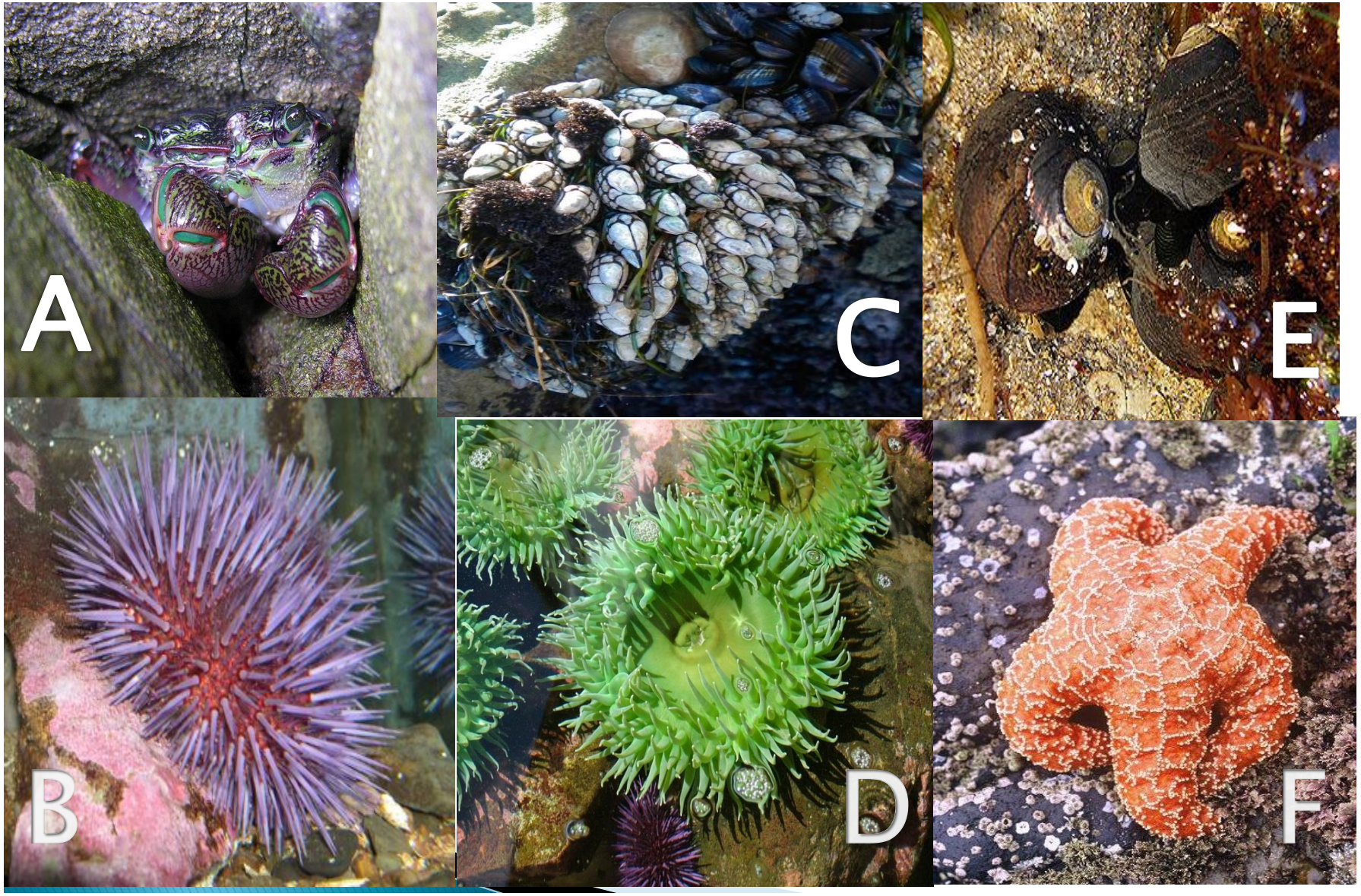
Human Impacts on Tidepools

- Intertidal species regulated by the California Department of Fish & Game include abalone, Kellet's whelks, spiny lobsters, mussels, octopuses, oysters, scallops, sea cucumbers, sea urchins, shrimps, and sculpins.
- Furthermore, in California and many other states, no live molluscs may be collected without a valid fishing license

Animals in tidepools are on a decline. Ilegal poaching/harm by humans is main cause.

A Rocky Shoreline Ecosystem

Animals on a typical CA rocky shore



Algae on a typical CA rocky shore