Chapter 8
Temperate Coastal Seas

More than 90% of marine animals are benthic, living in close association with the seafloor, at the interface with the overlying water, dependent on the characteristics of each and the exchange of substances between the two.

Chapter Concepts Outline

8.1 SEAFLOOR CHARACTERISTICS
The composition of the sea bottom is determined by
- plankton, wastes, and detritus
- the activities of organisms that live there
- the energy in waves and currents in shallow water

8.2 ANIMAL–SEDIMENT RELATIONSHIPS
Benthic animals are either
- epifaunal, living on the sediment, or
- infaunal, living within the sediment.

Suspension filter feeders obtain their food from passing waters

8.3 LARVAL DISPERSAL

75% of slow-moving, sedentary, or attached animals extend their geographic range by broadcast spawning of eggs and sperm that will result in larvae that are temporarily planktonic (or meroplanktonic).

Bottom type, bottom texture, chemical attractants, current speeds, sounds, light, and presence of conspecific adults influence meroplanktonic larvae to settle on the seafloor and metamorphose into a juvenile form

8.4 INTERTIDAL COMMUNITIES
Daily fluctuations in tidal heights result in an intertidal, or littoral, zone forming on all shorelines, regardless of slope or texture.

This zone is inhabited by species of marine origin that experience physiological stress during periods of low tide.

Rocky Shores
- Distance from low water is correlated with variations in physical and biological stresses, resulting in distinct horizontal bands of zonation.
- The upper intertidal of rocky shorelines hosts organisms that suffer with frequent desiccation and punctuated food supplies.
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The middle intertidal is more densely populated with species more troubled by competition for food and space than physical limitations of the environment.

The lower intertidal hosts a much more diversified assemblage of plants and animals that are exposed to air for only a short period of time each day.

Sandy Beaches
- Sandy beaches and muddy shores are depositional environments characterized by deposits of unconsolidated sediments and accumulations of detritus.

Oiled Beaches
- Because oil is less dense than seawater, when it is spilled (intentionally or not), most of it ends up in intertidal zones.

8.5 SHALLOW SUBTIDAL COMMUNITIES
- Below the effects of waves and tides, kelp communities dominate in temperate areas.

Objectives

1. To characterize the general living conditions in the benthic environment in terms of physical and biologic features.
2. To characterize animal-sediment relationships, with special emphasis on feeding strategies.
3. To discuss dispersal mechanisms and strategies of intertidal animals.
4. To examine details of intertidal communities on rocky, sandy, and muddy shores.
5. To discuss the sources and effects of oil pollution in the sea.
6. To describe the general characteristics of temperate subtidal communities.
7. To compare and contrast species diversity and ecology of Pacific and Atlantic kelp beds.