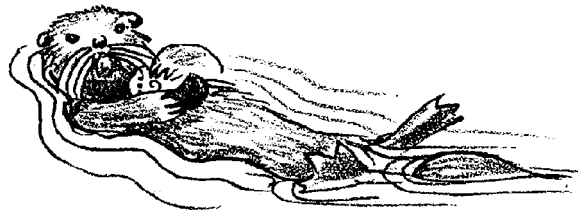


# MARINE SCIENCE: The World of Water

FOR SEA: Grades 9 to12 - Oceanography and Marine Biology

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### Unit IV: Ocean Waves and Life in the Surf Zone- Sandy Beaches and Kelp Forests

- 1. The Lifecycle of Ocean Waves ..... 897**  
 Students interpret first the pictures and then the text of this discussion of the patterns and causes of ocean waves.
- 2. Waves and the Sandy Seashore- An Exploration ..... 937**  
 This lab explores how waves shape beaches and how structures humans build alter beach formation.
- 3. Beach Sand: Littoral Sediments, Literary Sentiments ..... 949**  
 Students infer the origins of sand samples based on observable characteristics and then try to convey something about the science and the beauty of sand using haiku.
- 4. Burrowing and Burying- Life on the Sandy Shore ..... 961**  
 Students observe the internal and external anatomy of a clam and explore how these structures enable the animal to survive in a wave-swept, sandy habitat.
- 5. Shellfish and Paralytic Shellfish Poisoning..... 973**  
 This article summarizes the causes, detection and dangers of Paralytic Shellfish Poisoning in clams and other filter-feeding shellfish.
- 6. The Living Crab ..... 981**  
 Students observe a living crab and look for structures and behaviors that protect the crab, help it move and bury, enable it to find food and allow it to sense its environment.

- 7. Marine Ecology and the Kelp Forest..... 1001**  
Exploration of a kelp forest ecosystem growing along a wave-swept coast introduces basic concepts in ecology.
- 8. Observing Algae ..... 1023**  
Students look for differences and similarities between green, brown and red algae.
- 9. Practicing With Keys ..... 1031**  
Students learn how to use an identification key by keying out the identity of common objects.
- 10. Identification of Common Marine Plants of the West Coast .... 1041**  
This key allows identification of most algae in western coastal waters.
- 11. Pressing Algae..... 1065**  
Students press fresh algae specimens.
- 12. Sea Forest..... 1073**  
This reading explores the ecological and economic importance of marine algae.
- 13. “Farming Four Feet Under” - Three Level Guide ..... 1089**  
This reading examines effort to cultivate algae as a food source.