

Water Quality Query

OBJECTIVE

Students will investigate the quality of water in a stream, lake, creek, or pond by examining chemical, physical, and biological characteristics.

BACKGROUND

Inhabitants of kelp forests require clean water for healthy growth, just like aquatic animals and plants in freshwater systems. Good water quality supports a variety of animals and plants. Water polluted by chemicals or excessive organic matter supports fewer animals and plants. Severely polluted water may not even be able to support any life.

Biologists assess water quality in a number of ways: by visually documenting the surrounding physical environment, by chemically testing the water for specific pollutants, or biologically, by noting the plant and animal species present.

Healthy freshwater lakes and streams have the following characteristics: a pH around 7.0, clear water, dissolved

oxygen levels above 5.0 mg/L, a temperature lower than 20°C, nitrate concentrations below one part per million, and phosphate levels below 0.03 parts per million.

MATERIALS

- accessible stream, lake, creek, or pond
- copy of *Water Quality* funsheet
- pencils
- clipboard
- pH litmus paper (available from biological supply company)
- nitrate, phosphate, and dissolved oxygen testing kits (available from aquarium store or biological supply company)
- thermometer
- clear plastic cup
- rubber boots
- field guide/s (with local plants and animals)

ACTION

1. Distribute *Water Quality* funsheets and divide students into three groups.
2. Assign one group to examine physical characteristics, one to conduct chemical tests, and one to record plant and animal life.
3. Assign groups one section of the stream, lake, or pond. Ask students doing tests to avoid disturbing the shallow waters or stream banks. Record data on funsheets.
4. You may want to assess different sections of the stream, lake, or pond to see if water quality changes.

DEEPER DEPTHS

Use the internet to have students explore how water quality can affect a kelp forest ecosystem.

Water Quality

Characteristics	Comments/sketches
Physical parameters	
overall condition	
stream, lake, pond, or creek substrate	
land around stream, lake, or pond	
unusual smells	
Biological parameters	
in the water: plant life animal life	
on the land: plant life animal life	
Chemical parameters	
temperature	
pH	
clearness	
nitrate concentration	
phosphate concentration	
dissolved oxygen concentration	