

Waterwatch Australia National Technical Manual
Module 4 - Physical and Chemical Parameters
Waterwatch Australia Steering Committee
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Teachers' Resource Sheet – Temperature

Why is temperature important?

A lot of things in water vary with temperature. Temperature changes can affect the levels of oxygen, rates of photosynthesis and how aquatic animals live.

Oxygen

Water that is hot cannot carry much oxygen so only organisms that can live in low dissolved oxygen conditions can survive.

Photosynthesis

Warm conditions are ideal for photosynthesis, and will encourage plant growth. However, if too much plant growth occurs, there will be more plants using the oxygen up at night. Then the levels of oxygen will be too low to support other living things.

How aquatic animals live

All aquatic animals are adapted to live within a particular temperature range. If the temperature of the waters gets too low or too high this can affect the lifestyle of the animals. Changes in temperature could mean that some animals may not be able to breed.

What causes the temperature to change?

Water in a waterway can be heated by the following means:

- insufficient vegetation shading the waterway;
- inflow of hot water from industrial sites;
- inflow of water (from storm water drains) that has been heated as it flowed over hot land surfaces (like roads, roofs, or dark soils);
- sometimes bore water is very hot and if it flows into a creek or waterhole it can change the temperature of that water;
- large quantities of eroded soil in water can increase the temperature.

Creeks and rivers can become colder if cold water from the bottom of a dam is put into them. Severe storms can release hail and cold rain which can flow into creeks and rivers causing the temperature to decrease. Whether the temperature increases or decreases, it can be detrimental for the organisms in the water. Sometimes it is important to take temperature readings at a few locations to see if there are changes in the temperature.

How do we measure temperature?

Temperature can be measured using a thermometer. There are two main types of thermometers - the alcohol thermometer and the mercury thermometer. It is best to use an alcohol thermometer when measuring temperature during fieldwork because if it breaks, the alcohol is less dangerous to the environment than mercury. There is another type of thermometer which uses a metal probe and these are good to use as well.

The thermometer is read in degrees Celsius.

Questions

1. If all of the trees beside a creek were chopped down, what would happen to the temperature of the water in the creek? Why?
2. How can water temperature decrease?
3. What do you think the plant growth in a creek would be like if the weather was hot and there was little shade over the creek?