



Homemade Sampling Gear: Building and Using a Weighted Thermometer

You can measure water temperature easily in shallow water or at the surface using a weather thermometer tied to a string. However, water temperature in deeper water generally differs from that of surface water. Measure the temperature of deep water and compare it to the temperature of shallower water. To take water temperature in deeper water, you will need to make a weighted thermometer.

Materials Needed:

1. Empty soda can
2. Sand or pebbles
3. Short piece of wire or string - 10 inches (25 cm) long
4. Laboratory thermometer housed in clear plastic sleeve with an open loop at one end (must be able to read temperatures as low as 32 F (0 C). To avoid possible water contamination, do not use a mercury thermometer - instead, use a thermometer filled with red liquid. Thermometers are available for under \$3 from NASCO, item #SB-19157 (800-558-9595).
5. Can opener
6. Long piece of sturdy string (depending on depth at which you plan to sample)
7. Waterproof markers, 2 different colors
8. Tape measure or yardstick

Building the Weighted Thermometer:

1. Put about one inch of sand or pebbles into the empty soda can so it will sink when submerged.
2. Make a small hole on the side of the can near the drinking hole where the can was originally opened.
3. Cut the bottom off the plastic thermometer sleeve to expose the bulb to the water.
4. Pass the short piece of string or wire through the loop of the thermometer and the plastic housing.
5. Place the thermometer in the can and tie or wire it securely to the can by passing the short piece of string or wire through the holes in the can, and through the thermometer housing.

6. Make three sets of small holes, equally spaced, around the top of the can with the can opener. This will allow you to create a tripod-like support to keep the can upright and balanced as it is lowered into the water.
7. Tie the long string securely to the can through the holes. Starting at the can, mark off the long string every foot and half foot with waterproof markers. For example, use red for the 1-foot intervals and blue for the half-foot intervals. This will help you to determine the depth at which the temperature is taken.

Using the Weighted Thermometer:

1. Lower the weighted thermometer into the water and let it remain there for five minutes, at the depth, which you wish to measure.
2. While waiting to bring the weighted thermometer out of the water, one of the club members can record the depth the temperature is being taken.
3. Bring the can to the surface quickly and read the thermometer. Make sure that the tip of the thermometer has been in the water in the can when you measure the temperature.
4. Record the temperature of the water.
5. Take the water temperature at several different depths and locations around the body of water you are measuring and record the temperatures.
6. Take the water temperature in the same locations and depths, at different times of the day. Note any changes.
7. Keep a record of water temperature data for comparison purposes throughout the year. How does the temperature change? How does this affect the fishing?
8. A great project or demonstration for 4-H might be to compile temperature data at certain depths over a period of a year. Make graphs of the temperature at each depth. Plot the depths at which fish were caught. Can you draw any conclusions about the fish's temperature preferences?