



Crayfish Respiration

All animals need characteristics that help them meet their need to drink, eat, protect themselves and breathe. If the crayfish relies upon its hard shell for protection, then how is it able to take in oxygen from the water surrounding it? It can't just absorb oxygen from the air, as insects do. It must have an adaptation to pump oxygen in.

Oxygenated water enters the body of the crayfish at the base of the shell, or carapace. The crayfish absorbs the oxygen from the water using gills inside its body and shoots the excess water out of two points near its antennae. Because of its specially-adapted respiratory system, the crayfish can remain protected by its shell and breathe at the same time.

Objective

Demonstrate how a crayfish is adapted to breathe underwater.

Materials

- 1 live crayfish (available at most pet stores)
- a tray to hold the crayfish
- some water
- a medicine dropper
- some non-toxic red food coloring
- an adult helper

Safety Notice: All applicable laboratory safety rules must be followed. Students should not perform any experimental activity without the teacher's supervision and express permission. Students must follow safety guidelines and wear appropriate protective gear.

Procedure

1. Fill the tray with water. Then, place the crayfish inside the tray.
2. With the help of an adult, hold the crayfish upside down on the bottom of the tray. If the crayfish won't cooperate, sit the crayfish upright, with its belly facing you. Don't worry, this doesn't hurt the crayfish.
3. Fill the medicine dropper with red food coloring. Gently squeeze a drop of food coloring behind the last pair of crayfish legs on one side. Then squeeze another drop behind the last pair of legs on the other side. Place the crayfish right-side-up in the tray and watch what happens to the food coloring. You should see it follow a path.
4. Use the space at the bottom of this page to sketch and label a diagram showing the path of the food coloring from the tail to the head.

Conclusions

- Use your sketches and observations to describe, in your own words, respiration in crayfish. Compare this with another animal that lives in a freshwater ecosystem.

- What impact, if any, would polluted water have on a crayfish?
