Name: _____ Class: _____

Life in a Vernal Pool

By Lori Wollerman Nelson

In this text, Lori Wollerman Nelson discusses vernal pools. Vernal pools are temporary ponds that fill up in the spring and dry up in the summer. As you read, take notes on the life cycles of the different creatures in the vernal pool.

[1] Under the snow in a Massachusetts forest, a small flat patch lies in a clearing under the leafless trees. It doesn't look like a special place, but it is. This is a vernal pool, a woodland pond that fills with water in the spring, but dries out in summer. Right now it's asleep under its blanket of cold.

But under the ice, life is stirring.[1]

Winter

Unseen, in a puddle of cold water under the ice, beetles crawl between thick layers of leaves. They're joined by caddisfly larvae[2] in their strange houses of twigs. Marbled salamander nymphs[3] poke through the leaves, eating water bugs that brave the winter cold. Upside-down fairy shrimp, no longer than your fingernail, flick themselves through the water.

Spring

As the weather warms, water from spring rains and melting snow transforms[4] the muddy puddle into a shallow pond. Tiny eggs that spent the winter in the muddy muck begin to hatch, and soon the pond wriggles with mosquito larvae, beetles, and crayfish.

[5] Wood frogs have spent the winter frozen under leaves in the forest. Now they thaw and stretch their legs. Spotted salamanders crawl up from their underground tunnels. They are all getting ready to go to the pool to breed — tonight is their Big Night.

On rainy nights throughout the spring, different species of frogs and salamanders come to the pool to mate and lay eggs. Each species has its own Big Night, when rain and just the right temperature trigger the urge to go to the pool.

1. moving; active
2. the young form of an insect
3. the young form of a salamander or insect
4. **Transform** ***(verb):*** to go through a big change

Frogs and salamanders cross roads and crawl over the snow to get to their favorite pools. Why the rush? "They are in a race against the pool drying out, so they breed as early as possible" explains Matt Burne, a biologist who studies vernal pools.

Unlike permanent ponds, vernal pools dry out in the summer. This means fish can't live in them. And no fish makes vernal pools great places for amphibians[5] and insects to lay their eggs. But they have to be quick. As they gather to find mates, frogs sing and salamanders dance.

Male wood frogs float in the water and call. Their loud chuckles draw in females from all around. Under the water, male spotted salamanders dance and sway, courting[6] females with touch and smell.

[10] After laying their eggs in the pond, the adults return to the forest. All these eggs are a feast for hungry dragonfly nymphs, young marbled salamanders, and turtles. But plenty are left to hatch.

Summer

As the eggs begin to hatch, the small pool fills up with insect larvae, salamander nymphs, and wriggling black tadpoles.[7]

Summer is a time for eating. Tadpoles scrape algae off leaves and sticks. Water insects dine on old leaves. Tadpoles eat salamander eggs, and young salamanders eat the tadpoles. Salamanders aren't picky — they gulp down anything that fits in their mouths.

Once they get big enough, the tadpoles begin to change. They grow back legs, then front legs, and finally they lose their tails. Then it's time to hop out of the pond and start their new lives as frogs. They often all leave at once, bunches of tiny frogs hopping off into the woods.

This march of amphibians is an important link in the forest food web.[8] As Burne explains, "Those thousands of frogs that leave the pool get eaten by snakes, by mammals, by birds. Vernal pools take energy that came from leaves and spread it out into the forest on little amphibian legs."

[15] As summer heats up, the pool starts to dry out. Frogs and salamanders transform into land-dwelling adults and leave the pool. Some animals, like tiny fresh-water clams and beetles, burrow into the mud, where they'll hide until the pool fills again in the fall. Other creatures lay eggs and then die or fly away. Their eggs will hatch when the water returns. By the end of the summer, the vernal pool is just a squishy patch of mud. But the party's not quite over yet.

Autumn

Leaves on the trees turn orange, yellow, and red and cover the muddy pool, food for the next generation of insects and tadpoles.

5. cold-blooded animals that start their life cycle breathing under-water and as adults breathe air, such as frogs, toads, newts, and salamanders
6. to try to attract a mate
7. the young form of a frog, when it has a tale and doesn't yet have legs
8. a network of feeding relationships, in which one organism is eaten by another

But there's still time for one last dance. Now it's the marbled salamanders' turn to gather. Males dance, encouraging females to mate. There isn't any water to lay eggs in, so females make nests on the sides of the muddy pool, under logs, rocks, or moss. The mothers curl around their eggs, picking off bits of fungus and driving away hungry ants and termites.

Soon, autumn rains begin to refill the pool. As each salamander nest floods, the eggs hatch into the water and the mother leaves. The young salamanders have to fend[9] for themselves now. But they have a head start on other salamanders that hatch in the spring. The eggs of caddisflies and fairy shrimp, laid in the mud months ago, also hatch in the newly filled pool. Young caddisfly larvae build themselves houses out of twigs stuck together with silk. Beetle larvae crawl between layers of leaves. Other eggs don't hatch yet. They'll wait until spring.

Soon temperatures drop and snow begins to fall. The pond freezes over and sleeps under its blanket of cold. But under the ice, life is stirring.

9. to look after or provide for yourself

Text-Dependent Questions

Directions: For the following questions, choose the best answer or respond in complete sentences.

1. PART A: Which sentence describes the main idea of the text?
    A. Life in a vernal pool is difficult and only the toughest species of animals and insects can live there.
    B. Vernal pools aren't good environments to produce life because of the constant changes they go through.
    C. Vernal pools go through changes that are important to the life cycles of the organisms that live there.
    D. Like many bodies of water, vernal pools provide a stable environment where aquatic animals can live out their lives.

2. PART B: Which detail from the text best supports the answer to Part A?
    A. "'They are in a race against the pool drying out, so they breed as early as possible' explains Matt Burne, a biologist who studies vernal pools." (Paragraph 7)
    B. "Their loud chuckles draw in females from all around. Under the water, male spotted salamanders dance and sway, courting females with touch and smell." (Paragraph 9)
    C. "As Burne explains, 'Those thousands of frogs that leave the pool get eaten by snakes, by mammals, by birds.'" (Paragraph 14)
    D. "As summer heats up, the pool starts to dry out. Frogs and salamanders transform into land-dwelling adults and leave the pool." (Paragraph 15)

3. How is the information organized in the text?
    A. The author discusses life in the vernal pool one species at a time.
    B. The author describes how life in vernal pools has changed over the years.
    C. The author describes what happens in the vernal pool during different seasons.
    D. The author compares the benefits of life in the vernal pool with its challenges.

4. Which of the following needs to happen between the hatching of salamanders and frogs and when they leave the pool?
    A. They get strong enough to protect themselves.
    B. They leave behind their own eggs.
    C. They lose their tails and grow legs.
    D. They look for new homes in the forest.

5. How is life in the vernal pool related to life in the rest of the forest?

Discussion Questions

Directions: Brainstorm your answers to the following questions in the space provided. Be prepared to share your original ideas in a class discussion.

1. Have you ever seen a pond or vernal pool? If so, what types of animals did you find in it?

2. How does the text help you understand the importance of vernal pools? Some vernal pools are threatened by pollution and other human activity. How can you help protect vernal pools?