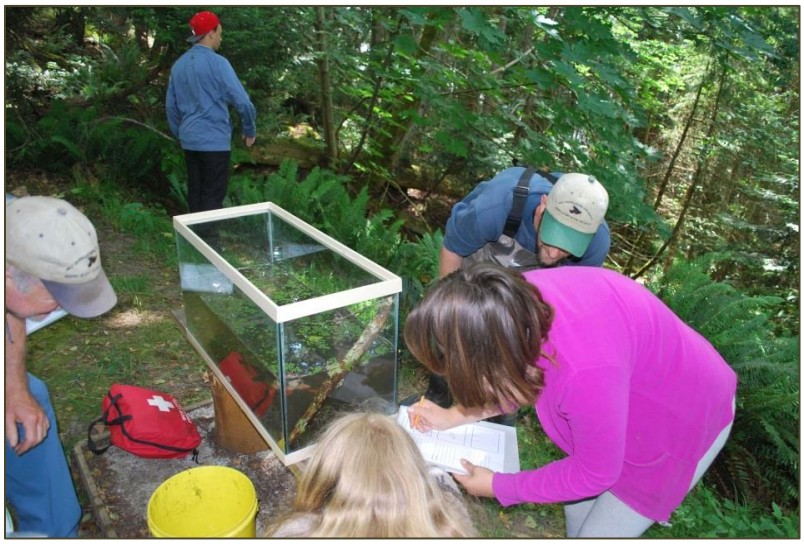
Pond Explorers



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Activity Name: Pond Explorers

Ages: 9-14

Activity Energy: Medium

Length of time: 2 hours

Number of Participants: 10 – 15

Indoor/Outdoor: Outdoor

Concept: This lesson will involve taking students on a trip to a pond to use microscopes to explore the pond environment and gain an appreciation for the diversity that can be found in freshwater ecosystems.

Materials Required: Aquarium (or bucket), net, identification books for aquatic insects and amphibians, hand lenses or microscopes.

Introduction: Ponds are highly productive ecosystems, and provide habitat to a wide range of organisms including plants, insects, amphibians, and plankton. This lesson will involve taking the students on a trip to a pond. Having something dry to sit on and choosing a shady location (to help with microscope viewing) are recommended. Bringing an aquarium along is also recommended, so that instructors can place interesting finds like frogs and tadpoles in the tank for all students to view. A large bucket also works, but is less conducive to having students view the pond life. Students can then select insects or take scoops of pond water from the tank/bucket, minimizing disturbance to the pond. Here are some ponds that are recommended in the Southern Gulf Islands and Southern Vancouver Island:

Mayne Island: There is a small pond at Henderson Community Park with abundant red-legged frogs.

Galiano Island: Beaver Swamp

Salt Spring Island: Blackburn Lake and associated wetlands

Pender Island: Roe Lake and Greenburn Lake both contain a diversity of assessable aquatic habitats.

Victoria: Swan Lake Nature Sanctuary

Methods:

1. Begin with a brief introduction to pond ecosystems and the types of organisms found there. This can include: amphibian biology and life cycles (see attached field guide), aquatic insect life cycles, the role of primary producers (plants and algae) in pond ecosystems. Some commonly found aquatic insects that are popular with kids are: dragonfly larvae, caddisfly larvae and aquatic beetles. Frogs and salamanders are also popular!
2. Review proper use of the microscopes, and have students practice using objects they find around them (see the resource titled: Introduction to Digital Microscopes).

3. While students are using the microscopes, fill the aquarium with pond water. Use a net to catch things like tadpoles, frogs and aquatic insects to show students. Interesting things can often be found by taking a scoop of pond sediment.
4. Have the students examine organisms and small containers of pond water under the microscope. Have them draw three different organisms.

Tips for Teachers:

- Explore the pond site prior to the lesson to assess any dangers that may exist such as steep sides and very deep mud. Make sure you have a plan to reduce risks and respond to emergency situations.
- If there is someone within your community who is an experienced naturalist and has knowledge of pond ecosystems, they can be an asset to identifying and explaining your discoveries.

Background facts and information:

- Dragonfly larvae have gills in their rectum, meaning they breathe through their butt! They also squirt water out of their back end, and can use jet propulsion to swim.
- Caddisfly larvae make cases using twigs, pebbles, reeds or leaves, held together with silk and saliva. Kind of like building your own home and then walking around with it!
- Tadpoles (frog larvae) breathe primarily through internal gills, whereas salamander larvae breathe through feathery external gills on the sides of their heads.
- Most adult amphibians breathe through skin, the lining of the mouth, and lungs. There are some species of lungless salamanders in BC (the Wandering, Western Red-Backed, and Ensatina Salamanders all lack lungs)

Possible Extensions:

- Create a classroom aquarium and raise Pacific Chorus Frogs (get expert advice to ensure success).

Literature Cited:

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