

THEME:	Creek Habitat and Salmon Enhancement
SCOPE & SEQUENCE UNIT:	Water Bugs & Others
OBJECTIVE:	Life in freshwater
ACTIVITY:	Discover aquatic invertebrates

Notes:	Inside or Outside
Teacher Prep.:	<p>If inside, prior to class go to a pond or creek and collect aquatic invertebrates for in-class session with students; prepare classroom for small groups of students to share invertebrate samples and sort together.</p> <p>If outside, organize materials and students into small groups</p> <p>WHAT WE DID: we used pond invertebrates in class for the first acquaintance with aquatic invertebrates. Curiosity from the students had them want to know what invertebrates lived in the creek they were studying, so a field investigation and sampling followed but it was not as intense nor were the invertebrates as varied or abundant.</p>
Time:	50 minutes (plus travel time if outside)

Skills:

- ◆ Collaboration, teamwork, leadership
- ◆ Ecological literacy

Objectives:

- ◆ To discover the diversity of life in freshwater
- ◆ To differentiate the various life forms in freshwater
- ◆ To identify some invertebrates that live in freshwater and their sensitivity to pollution

Vocabulary:

Invertebrate: animals without a spinal column or backbone. This includes insects, snails, spiders, crustaceans, etc. (Interestingly, only about 3% of animal species have a vertebral column (fish, amphibians, reptiles, birds and mammals). All the others are invertebrates.

Materials:

Have all materials in replicates for number of groups, try for at least 4.

IF INSIDE:

Trays for unsorted sample – 4

Petri dishes or little shallow dishes (shallow plastic containers), to sort like-specimens into – 10/group

Smaller vessels to hold individual specimen for up-close viewing (could be paper cups for pills, cut-off dickie cups, lids of juice bottles – 24-30)

Plastic spoons or forceps, small turkey basters – 30 total

Loupes (5 or 10X) – one/student

Aquatic invertebrate ID Chart or Key – one/group (see Resources)

Student page and pencil to draw one invertebrate and label

IF OUTSIDE:

Extra gear needed includes:

Dip nets (small aquarium nets)– for catching the invertebrates – have many as all students will want to try

Buckets with water – 4 (1 for each group) – to place the netted invertebrates into, quickly

Introductory Discussion:

(Summary of instructions for session)

With students arranged in groups, place one sorting tray on floor or desk of each group. Pour collection water with invertebrates into tray of each group. Direct students to first look at the sample of water in the sorting tray. Then as a team, gently and being respectful of the animal, remove the invertebrates from the tray sample, placing each “kind” of specimen into one of the petri dishes. Use the plastic spoons to remove invertebrates, or forceps, or, lastly the small turkey baster. Once the entire sample has been sorted each student should look closely at the various “kinds” of organisms. To do this, one of the specimens from each petri dish should be placed in a smaller vessel for close-up viewing. Students take turns looking at the various kinds of organisms from their sample. Use the guide sheet or dichotomous key to identify the organism. Record the names on a piece of paper. Write the names on the board to compile a class list (if inside, otherwise do this back in class). Students choose an invertebrate to draw on their student page, drawing as much detail as they observe. Label the drawing as to the kind of invertebrate. List also any notes about the organism – how it moves, what it eats, its sensitivity to pollution.

Return all invertebrates to water promptly and gently.

IF OUTSIDE AT A CREEK: gentle walk into the creek (go to riffles in river and be very caution as to flow), one student holds dip net in stream resting on bottom and facing upstream while other student stirs up bottom with foot or picks up rock and rubs its underside allowing downstream movement and into dip net;

pour contents into bucket with water in it; repeat several times, choose different places to sample. (One bucket per group.) Then proceed by gently pouring some of sample into sorting tray or merely extract invertebrates directly from bucket into sorting tray (which has water in it).

IF OUTSIDE AT A POND; use the dip net to dip into the water, dip into the water among the emergent plants, dip lightly into the bottom of the pond – empty contents into a bucket with water in it (gently turn the net inside out allowing organisms to escape into water). (One bucket per group.) Then proceed by gently pouring some of sample into sorting tray or merely extract invertebrates directly from bucket into sorting tray (which has water in it).

IF OUTSIDE AT A RIVER: ask a local river conservation group to assist your class in sampling for invertebrates. The organization will have the materials for river sampling (D-nets or kick nets), a strong caution towards safety by the river, and knowledgeable resource people.

Reflection Discussion:

Review the list of class discovery of invertebrates together. Discuss relative abundance of the different kinds of organisms. How does this relate to the water quality – is it clean, polluted, slightly polluted?

Student Page:

Aquatic Invertebrates

Resources:

Waterwatch Adelaide & Mount Lofty Ranges –
Aquatic Invertebrate Identification Charts – Junior (K-3) or Advanced, (4+)
<http://waterwatchadelaide.net.au/index.php?page=education-materials-4>
see also big drawings of invertebrates, A4 Aquatic Invertebrates

[Aquatic Invertebrate Key](#) – more advanced
Black & white, gives nomenclature, sensitivities
Adapted by Robert Sharp, 2011

Ducks Unlimited Canada Webfoot Project
<http://www.ducks.ca/education/>
the site offers a variety of teacher and student resources, many free resources

Taking it Further:

Use the teaching resources offered by Ducks Unlimited Canada or Adelaide Mount Lofty Ranges for more study of bugs, wetlands or water (see websites above).

Name: _____

Date: _____
(mm/dd/yyyy)

Aquatic Invertebrates

Draw a large sketch of your aquatic invertebrate showing as much detail as possible to help identify it. Label your invertebrate drawing. Add notes on its sensitivity to pollution, how it moves, and any other details you discover.