CREEPY CRAWLY RIVER CRITTERS

COLLECT, OBSERVE, IDENTIFY AND DOCUMENT INFORMATION ABOUT AQUATIC MACROINVERTEBRATES

Sixth Grade Next Generation Science Standards Met:

LS1.B Growth & Development of Organisms
- MS-LS3-2

LS2.A Interdependent relationships in ecosystems
LS2.C Ecosystem dynamics, functioning, and resilience
LS4.C Adaptation
LS4.D Biodiversity and humans

Pre-Trip Information/Activities (to be used in classroom prior to trip):

- Build-A-Bug Activity
- Aquatic Macroinvertebrates Video
- Life Cycles: Metamorphosis NewsELA Article
- How Insects Breathe NewsELA Article

Materials:

- Two Buckets
- ~10 Nets
- Four observation bins
- Two small cups
- two-way scopes
- identification guides / charts
- documentation papers
- pencils/pencil sharpeners
- Turbidity tube
- pH strips
- thermometer

Objectives:

- Learn about food chains and food webs in our river
- Learn about river species
- Learn about water health and how it relates to living organisms

Set Up:

- Collect macroinvertebrates and place them in viewing tubs and scopes on tables, ensuring the scopes are taped shut. Try to obtain caddisflies and mayflies
- Set out identification guides/charts
- Fill buckets half full with water and position them by the river with the nets

Introduction:

- What is an Aquatic Macroinvertebrate? Let's break down those words. What does Aquatic mean? – Water – So we're looking for something that lives in the water. What does Macro mean? – Most children will describe the definition of Micro – Macro means big. Today we're not talking about something huge, nothing as big as these trees, but just something your eye can see on its own without the help of a tool such as a microscope. What is an invertebrate? A creature without a spine. Have students feel the vertebrate in their necks. Can you think of an animal that lives right here where we are that does not have a spine? Insects! So, we are looking for insects who live in the water that are big enough to see with our eyes.
- Not all aquatic macroinvertebrates can survive in an unhealthy river. In fact, if we cannot find certain insects in the river, we know our river is not doing well. Today before we look for aquatic macroinvertebrates we need to test our river to see if it will be able to be a home for these insects.
- Explain pH. Test the river and document it.
- Explain temperature. Take temp and document it.
- Explain turbidity. Test the water and document it.
- I'm going to split you into two groups. One group will go up to the tables with your teacher and observe the Aquatic Macroinvertebrates I have already collected for you in these bins. Please do not touch any of the critters or put your hands in the water, the oils and bacteria on our hands can be harmful to the insects. It is your job to identify the insects you are looking at with our identification charts. Choose two of your favorites and draw them on the worksheet you will receive. The other group will go with me to the river to search for these critters. Don't worry, we will switch half way through so everyone has a chance to do both.
- If you were an insect who lives in the San Joaquin River, who might want to eat you? Birds, frogs, other insects, etc. Where might you hide? – under rocks, under sand, in plants, etc.- That's where we're going to look for these critters today.

Activity:

1) Split students into two groups. Send half to tables.
2) Group at the tables observes already caught aquatic macroinvertebrates, identifies them and draws two.
3) Explain to the students at the river that they will work with a partner and need to take turns with the net. After each attempt to catch critters they must rinse their net, even if it appears there is nothing on it. Explain microorganisms.
4) Show students boundaries. (use of cones is optional)
5) Show the students at the river how to scrape along the plant life along the banks and in the sand, rocks and algae (depending on season) along the bottom.
6) Place findings in bucket.
7) Students switch.

Additional on-site activities:

River water pH, temperature and turbidity readings to compare to other field trip findings.

Discussion:

What did you find?
What do animals eat in the river?
Where do the aquatic macroinvertebrates fall in the river's food chain?
How do animals protect themselves from danger or other predators?
How do animals move in the river?
What kind of pollution can harm species in the river?

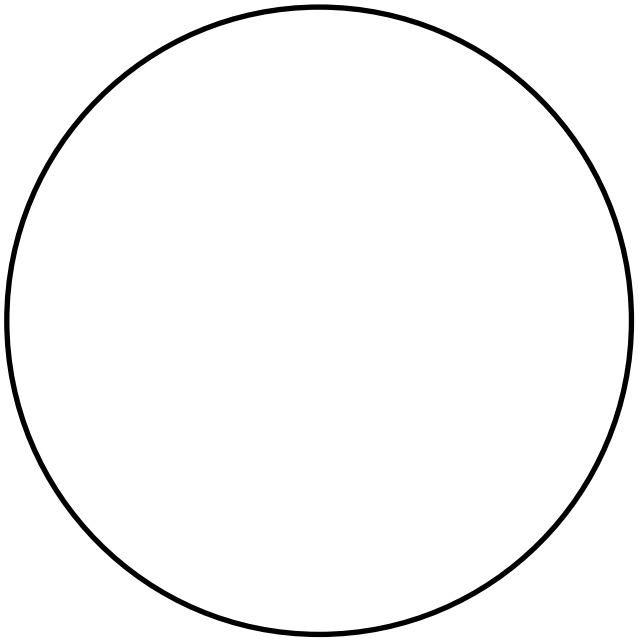
Post-Trip Information/Activities

- Have students research one of their aquatic macroinvertebrates and answer the following questions in an outline format that then can be used to write a paper (WHST.6-8.7, SEP-8).
    - What does your insect eat?
    - What eats your insect?
    - What is the habitat of your insect?
    - What is the lifecycle of your insect?
    - What are the natural and human dangers to your insect?

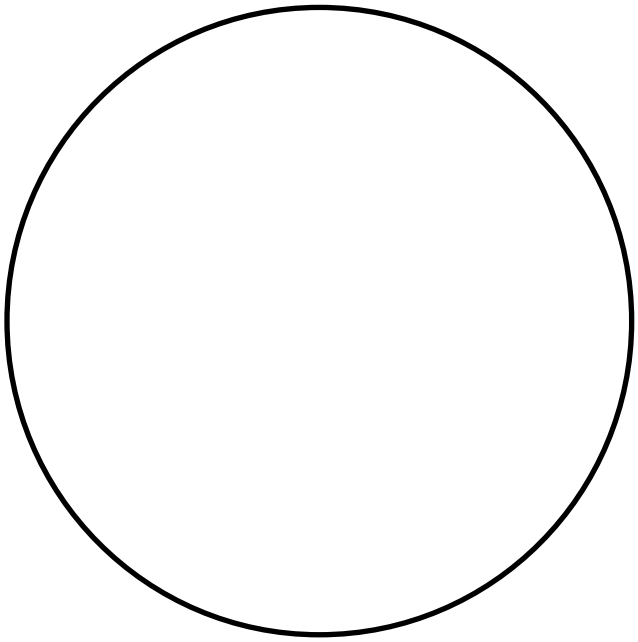
- Tally and graph the different kinds of insects your students identified utilizing different charting techniques (bar chart, pie chart). (CCC-1: Patterns, 6.SP.4, 6.SP.5).
    - Ex) Stonefly (5), Mayfly (3), Caddisfly (6) ….
    - Expand on the charting by identifying through further research if each insect is tolerant, sensitive or intolerant to pollution and chart these results
- https://www.youtube.com/watch?v=lSWzx5M-fP0
  http://kentschools.net/cooltechred/identification-key/macroinvertebrate-list/
    - Use the results to determine the overall health of our river

Aquatic Macroinvertebrates Documentation Sheet

Student Name _____



Name of Insect: _____



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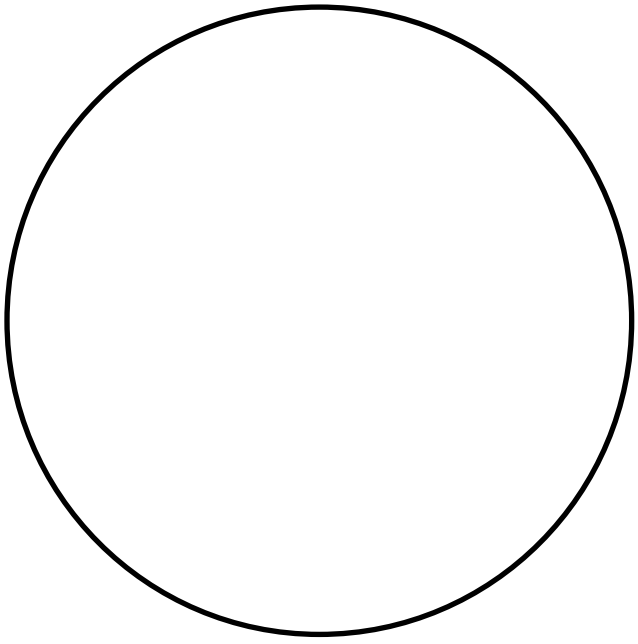

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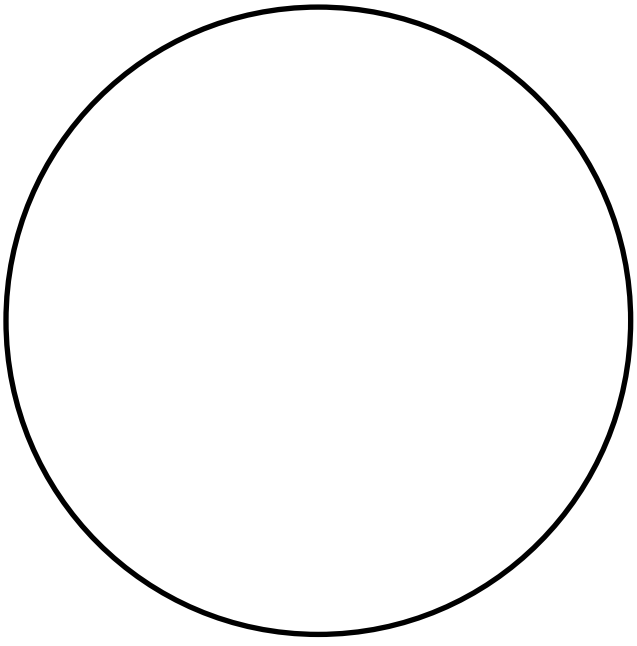

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