CREEPY CRAWLY RIVER CRITTERS

COLLECT, OBSERVE, IDENTIFY AND DOCUMENT INFORMATION ABOUT AQUATIC MACROINVERTEBRATES

Third Grade NGSS DCI Addressed:

LS2.C Ecosystem dynamics, functioning, and resilience
LS4.C Adaptation
- 3-LS4-2
- 3-LS4-3

LS4.D Biodiversity and humans
- 3-LS4-4

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

- Build-A-Bug Activity
- Aquatic Macroinvertebrates Video
- Life Cycles: Metamorphosis NewsELA Article (3rd grade)
- How Insects Breathe NewsELA Article (3rd grade)

Materials:

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

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.

- Who can raise a hand and tell me something you know about a food web? – the connection of plants and animals gaining energy by eating or absorbing energy from the sun – If you were an insect who lives in the San Joaquin River, who might want to eat you? Birds, frogs, other insects, etc. Are you low or high on the food chain/web? Where might you hide? – under rocks, under sand, in plants, etc.- That's where we're going to look for these critters today.
- I'm going to split you into two groups. One group will stay here at 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.

Activity:

1) Split students into two groups. Take half to the river.
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 the aquatic macroinvertebrates they found and write a story or paper about it (RI.3.2, RI.3.7). Include:
    - Characteristics of the habitat the macroinvertebrate lives in
    - Why the macroinvertebrate is well suited to live in that habitat (3-LS4-3)
    - The macroinvertebrates place in the food chain
    - The lifecycle of the macroinvertebrate (3-LS1-1)
    - What changes in the environment might affect the macroinvertebrate (CCC-2: Cause and Effect)
    - The natural and human dangers to the macroinvertebrate (SEP-7)

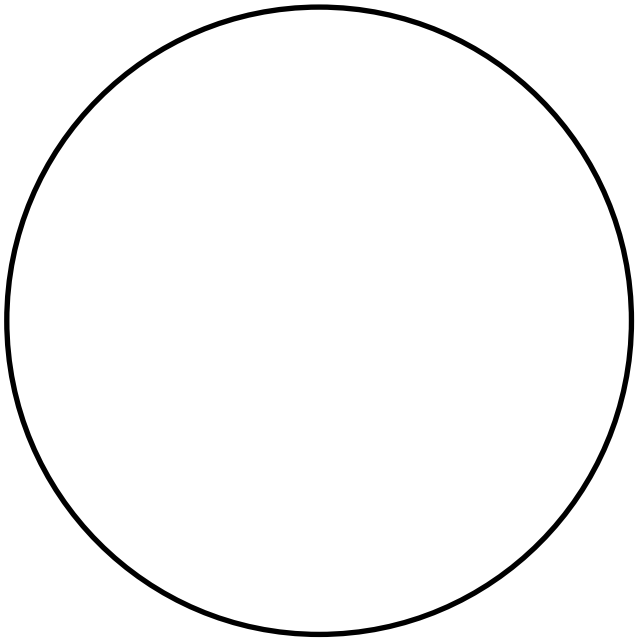
- Tally and graph the different kinds of insects your students identified utilizing different charting techniques (bar chart, pie chart) (3.MD.3: Represent and Interpret Data; FUSD Qtr. 1)
    - Ex) Stonefly (5), Mayfly (3), Caddisfly (6) ….

- Expand on the charting by identifying through further research if each insect is tolerant, sensitive or intolerant to pollution and chart these results (W.3.7, SEP-4, SEP-7).
  Aquatic Macroinvertebrates as Bio indicators Video
  Macroinvertebrate Identification List
  Macroinvertebrate Graphing

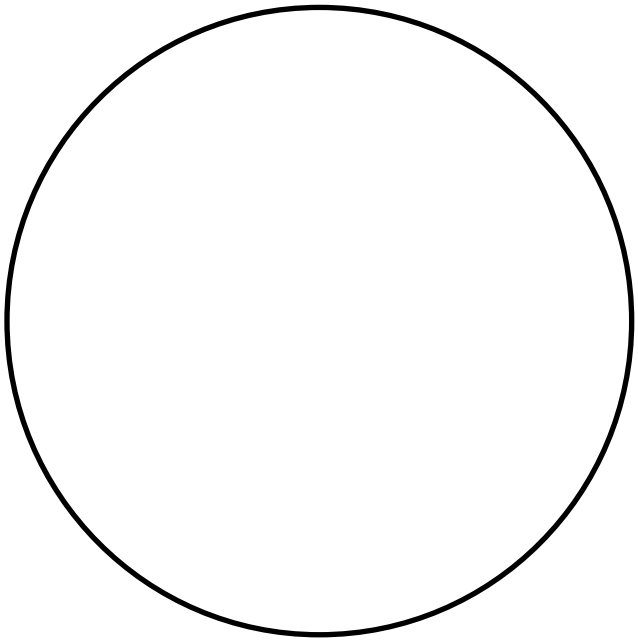
    - Use the results to determine the overall health of our river

Aquatic Macroinvertebrates Documentation Sheet

Student Name _____



Name of Insect: _____



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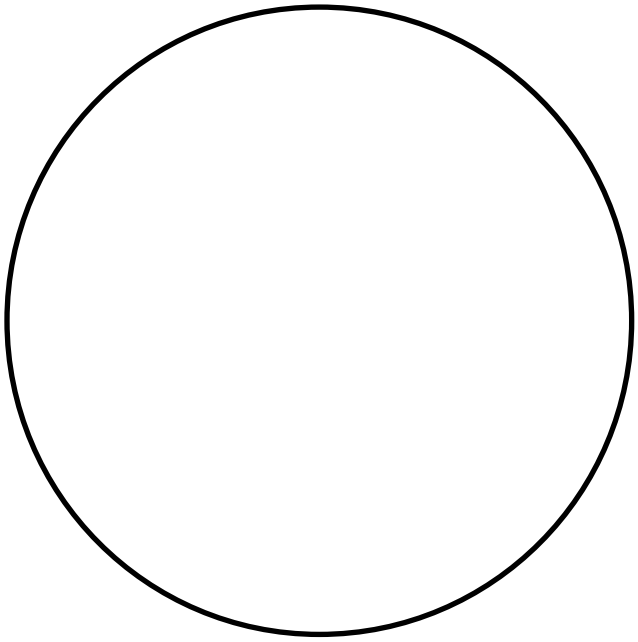

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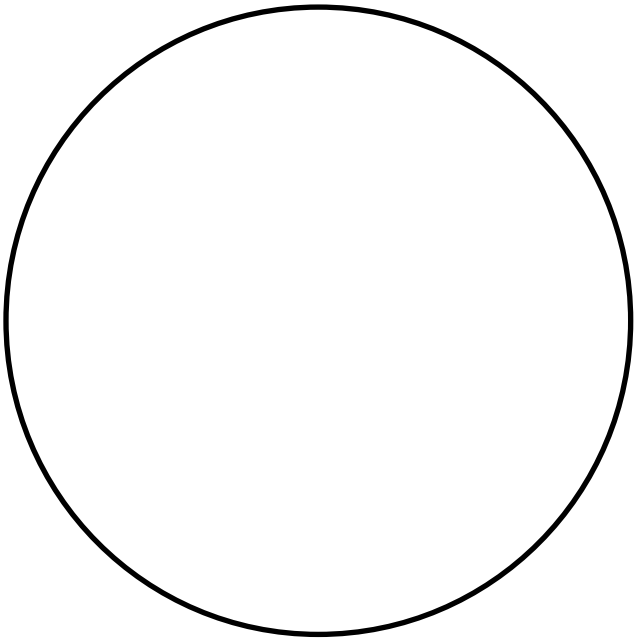

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