

## **Rusty Crayfish Unit: For 6<sup>th</sup>-8<sup>th</sup> grade students**

### **Overview**

There are over 350 species of crayfish (or crawdads) native to the United States. *Orconectes rusticus*, or the Rusty Crayfish, is considered to be *invasive* in some areas, despite being *native* in Ohio and Kentucky. Outside of their native range, these crayfish out-compete native crayfish and reduce *diversity* and *population* of aquatic plants, invertebrates, and some fish.

A possible *vector* for bringing invasive crayfish to new areas is through schools: Many schools raise crayfish purchased from scientific supply companies and then release them into the outdoors after the unit is complete. Although some supply companies label crayfish with a “do not release” tag, this is often overlooked. By educating our students and ourselves, we may hopefully prevent educational systems from being a vector by which Rusty Crayfish are introduced to Oregon.

### **Vocabulary for Unit**

*Adaptation*: A physical feature or behavior that helps a species survive

*Diversity*: A large variety (many types) of different species

*Invasive*: Taking over an area in such a way that impacts the overall health of an ecosystem

*Native*: Belonging to an area

*Non-native*: Not from the area in which it is found

*Opportunistic*: Taking advantage of a situation. Opportunistic feeders are those that eat what is available to them in a given area.

*Population*: Specific number of one type of species in a given area

*Vector*: A means of transport for non-native species from one area to another

### **Activities**

#### Native and Invasive? (15-30 minutes)

Typically we find that most invasive species are also non-native. Common examples are the Himalayan Blackberry, which comes from Eurasia, and English Ivy, which comes from England. So how is it that a native species found in the United States can be invasive in other parts of the country? Show students the distribution map:

[http://nas.er.usgs.gov/taxgroup/Crustaceans/maps/or\\_rusticus.gif](http://nas.er.usgs.gov/taxgroup/Crustaceans/maps/or_rusticus.gif)

Lead a discussion on the Rusty Crayfish, and discuss how a species can become invasive even in its native state (see Ohio and Indiana on the map).

Have students brainstorm things in a new habitat that may help the crayfish survive. What are some things missing that also might help it survive?

Students may come up with better food sources and better hiding spots for things in a new habitat, and predators and disease for things missing from a new habitat.

#### Building a Habitat (1-2 hours)

What are the things necessary for a crayfish to survive? Begin by discussing things that land animals need to survive, and then move to the crayfish. Brainstorm the different things the class will need to build homes for crayfish. Optional activities: build real habitats for real crayfish or have students draw or make a model of a suitable habitat.

Students should be able to come up with food and shelter easily enough. Through research, students can determine that crayfish are *opportunistic* feeders, so eat a wide variety of things. Crayfish will also need shelter, so what kind of shelters could we use (bricks, rocks, yogurt containers, etc.). Students may need a little more help with air and water. Of course, they are surrounded by water, but they still need it to survive. Do they need air? Yes, because they are an animal, but where does it come from? This is a good link with fish to talk about gills and how there is dissolved oxygen in the water.

### Don't Mess with Me! (1-2 hrs)

*Adaptations* help an animal survive. They can either be a physical feature, like a human thumb, or behavioral, like migrations or hibernation. What are the different adaptations of the crayfish? Have students do a detailed scientific drawing of a crayfish. Have students label different parts and explain how each individual body part helps the crayfish survive (i.e. what does the crayfish use it for?). In addition, students should describe some behavioral adaptations of the crayfish.

Some parts of special interest: Claws: used for grasping food, defending territory, and protection, Swimmerettes (at the bottom): used for swimming, and, in females, for holding eggs, Legs: for walking/swimming, Exoskeleton: to protect soft body parts, Antennae: for feeling, Tail: for swimming, Coloration: For camouflage. Some behavioral characteristics students might note are swimming backwards, hiding, and being territorial.

### Crayfish Inquiry (1 hr to several periods)

If you have access to some crayfish, this makes for an interesting, student-led activity. Have students write down what they already know about crayfish. Then, there should be a column for what they would like to learn about crayfish. Have students discuss their ideas in a small group or with the whole class. Students should decide if items in their "I want to learn..." category could be learned by Observation of live crayfish or by Research from a book or other source. Observation of crayfish can also include experiments, but must not harm the crayfish. Have students answer their questions by either observing or researching crayfish. Allow time for discussion of student findings and refinement of ideas as necessary.

Possible observations/experiments could be:

- Do crayfish prefer light or dark?
- Do crayfish prefer shelters or no shelters?
- Are crayfish more active in cold water or warm water?
- Are crayfish more active during the day or at night?

### Crayfish Fishin' (1 hour to half day if combined with other activities)

Okay, we know Crayfish aren't actually fish, but going searching for them is still fun. Go on a field trip to a local river or pond in your area and have your students try to find crayfish. The best way to fish for them is with a piece of string tied to a piece of hot dog. Have students use what they have learned to come up with tactics for catching crayfish. Will they be in shallow or deep water? Near the downed log, or out in the open?