Observing Nymphs

20 minutes for initial observations, 10 minutes after 3 days and again after 1 week

Objectives
- Students know the basic body parts of brine shrimp nymphs and their functions.
- Students observe and draw brine shrimp at various stages of development, from hatching to one week.

Student Resources
- 1.2 Observing Brine Shrimp, from Investigate 1
- 1.3 How Brine Shrimp Grow

Inquiry Focus
- Record Data

Materials
For each pair
1 cup, clear plastic
2 magnifiers

For the teacher
1 brine shrimp hatchery with hatched shrimp
- *construction paper, black
1 dropper
1 microscope depression slide, plastic
1 *microscope or video/microscope/projection system
- tape, transparent
*Not provided in kit

In Advance
- Cover most of the hatchery bottle with black paper, leaving a small area for light at the bottom. Most shrimp will be at the bottom after 30 minutes and will be easy to catch.
- Begin this Investigate when the eggs have begun to hatch in the brine shrimp hatchery (30–48 hours after setup).

1. Distribute materials.
Invert a clear plastic cup on the desk in front of each pair of students. Squirt a dropperful of brine shrimp water from the hatchery on top of each cup. Give each student a magnifier.
2. Students observe eggs and nymphs.
   Have students look to see if anything is moving in the drops of water on the cup. (Nymphs will be tiny specks.)
   Discuss what students observe. Have students use the small magnifier lens to observe the eggs and nymphs.
   Ask: **What can you see?** (eggs, baby shrimp, and water) **What do the eggs look like?** (circles, not moving)
   **Did any eggs hatch?** Tell students that the floating eggs are shells that have already hatched. When the baby first hatches, it hangs below the shell for a couple of hours while it finishes developing. Then it swims away from the shell. Ask: **What color are the babies?** (light brown or clear) **What do the babies look like?** (They are shaped like ice cream cones with things sticking out of the head.) **What do their movements look like?** (jerky, fast movements)
   **How do you think the babies move through the water?** (They move their legs.)

3. Display nymphs with a microscope.
   Put several nymphs in a small amount of water on a depression slide. Place the slide on the microscope under low magnification. If you are using a projection system, gather students around the television.

4. Distribute the Student Resource.
   Distribute student’s copies of Student Resource 1.2, *Observing Brine Shrimp*, from Investigate 1. Point out the box in which students have already drawn the eggs. Tell students they will observe how the shrimp babies grow and will draw what they look like.

5. Students record observations.
   Make a transparency of Student Resource 1.3, *How Brine Shrimp Grow*, and project it for the class. Point out the picture of the brine shrimp nymph. Ask: **Were the babies you saw the same shape?** (yes) Using the blank space on the transparency, model for students how to draw a V shape. Point out Box 2, *Just Hatched*, on the *Observing Brine Shrimp* Student Resource. Have students draw a V shape, and then model for them how to add a round “hat” on the V to make the nymph’s head. Ask: **What else should we add?** Point out the antennae on the *How Brine Shrimp Grow* Student Resource. Ask: **How many antennae do you see?** (2)
6. **Students observe other structures.**
   Have students add the antennae to their drawings. Point out the appendages. Ask: **How many legs does it have?** (two long legs that wave and four shorter legs on the body) **How does the shrimp use its legs to move through the water?** (It moves or waves them.) Ask: **Does it have a tail?** (yes) Point out the eye on the transparency. Ask: **How many eyes does the baby have?** (one) Model for students how they can add these features to their drawings on the Resource page. Use the dropper to return all live shrimp to the hatchery.

7. **Students observe shrimp after three days.**
   Have students look at the pictures they drew in Box 2 on their *Observing Brine Shrimp* Resource page. Hand out magnifiers and clear plastic cups, turned upside down. Squirt a dropperful of water from the brine shrimp hatchery on each cup, and ask students to observe the shrimp with the magnifier. Give students time to observe and draw what they see. Ask: **Are the shrimp bigger now?** (yes) Project the transparency *How Brine Shrimp Grow*, and ask students to point out which picture looks most like their own shrimp right now. Have students draw the larger shrimp in Box 3 on the *Observing Brine Shrimp* Resource page.

8. **Students observe shrimp after one week.**
   Have students observe the shrimp again one week after they have hatched with the magnifier. Project the transparency *How Brine Shrimp Grow*. Discuss the changes in size and shape. Have students record their observations in Box 4 on the *Observing Brine Shrimp* Resource page. Ask: **How did the shrimp change in a week?** (They grew bigger, their legs got longer, and they have another eye.)

**Assessment**
Ask: **Name two parts you saw on the shrimp, and tell what those parts are used for.** (eyes for seeing, legs for moving, antennae for feeling, tail for moving)
Raising Adult Brine Shrimp

20 minutes

Pairs

Objectives
- Students observe the basic structures of adult brine shrimp and relate structure to function.
- Students draw adult brine shrimp.
- Students compare the features of adult brine shrimp with brine shrimp nymphs.

Materials

For each pair
1 cup, clear plastic, empty
1 cup, clear plastic, with salt water and adult brine shrimp
2 magnifiers

For the teacher
1 aquarium, rectangular
1 aquarium lid, rectangular
1 pkg brewer’s yeast, dry
1 *microscope or video/microscope projection system
*Not provided in kit

Student Resources

1.2 Observing Brine Shrimp, from Investigate 3
1.3 How Brine Shrimp Grow transparency, from Investigate 3

In Advance
- Buy the smallest group of adult brine shrimp available at a pet store.
- Cut the tip off the dropper to widen the opening for catching adult shrimp.
- For each pair of students, pour some salt water and adult brine shrimp into a clear plastic cup.

Student Resources

1.2 Observing Brine Shrimp

1.3 How Brine Shrimp Grow

In Advance
- Buy the smallest group of adult brine shrimp available at a pet store.
- Cut the tip off the dropper to widen the opening for catching adult shrimp.
- For each pair of students, pour some salt water and adult brine shrimp into a clear plastic cup.
Raising Adult Brine Shrimp (continued)

1. **Students observe adult shrimp without magnifiers.** Distribute cups containing salt water and adult brine shrimp to students. Have them observe the adult brine shrimp without magnifiers. Ask: **How do they move? Do you see any eyes? Do you see the tail? What else do you see?**

2. **Students observe adult shrimp with magnifiers.** Place an empty, inverted cup in front of each student pair. Give each student a magnifier. Use the dropper with the end cut off to catch an adult brine shrimp from the students’ cup of salt water and place it on the inverted cup. Have students use the magnifier to observe the shrimp. Tell them that females have an egg case at the base of the tail and that males may have large “grabbers” on their heads. Tell students to note the eyes, which stick out from the head, and the 20–30 pairs of swimming legs. Tell students that the legs beat 200 times per minute and filter food particles from the water for the shrimp to eat.

3. **Students record observations.** Project the transparency of Student Resource 1.3, *How Brine Shrimp Grow,* and point out the pictures of the male and female adult brine shrimp. Have students find the eyes, tail, legs, grabbers, and egg case in the picture. Distribute students’ copies of Student Resource 1.2, *Observing Brine Shrimp.* Have students draw a male and a female adult shrimp in Box 5. Encourage students to look at their shrimp and the transparency pictures to include all the parts.

4. **Compare nymphs and adults.** Have students look at the pictures they drew of the baby shrimp, the shrimp as they grew, and the adult shrimp. Discuss the differences between the babies and the adults.

**Assessment**

Ask: **What are three things that change when a baby brine shrimp grows into an adult?** *(one eye becomes two, gets bigger, antennae turn to grabbers on male, female gets an egg sac, legs look different and do different things)*

---

**Teaching Tips**

**Step 2:** This step can be done with adult shrimp on a depression slide and a microscope or projection system. Adult females are larger than males and have egg cases at the base of the tail. Females lay eggs every 5 days if food is available. The “grabbers” on the male’s head are used to hold onto a female during mating.

**Step 4:** Feed adult brine shrimp a pinch of dry yeast every 3 or 4 days. Brine shrimp prefer a temperature of 70 to 80°F. If it is cold in your room at night, you may want to put a lamp nearby with an incandescent bulb. Save the adult brine shrimp to be used as fish food in Section 2.