ACTIVITY

Investigating the “Crab” in Mole Crabs

OBJECTIVE: Students will understand how the anatomy of mole crabs illustrates the complementary nature of structure and function.

ACTIVITY TIME: 20–30 minutes

GRADE LEVEL: 6–8

LIMPEST WEB RESOURCES:

MATERIALS:
- Mole Crab Coloring Page and Answer Sheet
- Colored pencils, markers, or crayons

BACKGROUND: Mole crabs certainly don’t look (or act) like your typical crab. They lack pinchers, are egg-shaped, and move backwards. So, ARE mole crabs really crabs? What structures and features are different and why?

Because mole crabs are adapted to burrowing on sandy beaches, their body shape and structure is somewhat different than other crab-like crustaceans. Like true crabs, shrimps, and lobsters, mole crabs have ten legs and are classified as decapod crustaceans. However, mole crabs are more closely related to hermit crabs than they are to “true crabs.” Pacific mole crabs (family Hippidae) have an egg-shaped body, they have no claws on their first pair of legs, and they have a long telson that is wrapped under the body.

Unlike most other decapods, mole crabs cannot walk or crawl. Instead, they use their legs to dig into the sand or to swim. They have two pairs of antennae to gather food and oxygen. The smaller, primary antennae are used to funnel water down to the gills for respiration. The larger, plumose secondary antennae are used for filter-feeding. When the crab is not feeding, it tucks these antennae up under its carapace. Mole crabs have four big pairs of legs and a pair of modified paddles (called uropods) that it uses to swim. A fifth pair of tiny legs is tucked up under the carapace.

PROCEDURE:
- In preparation for the activity, make copies of the Mole Crab Coloring Page.
- Give students the LIMPEST Introductory Prezi and review mole crab anatomy prior to this activity.
- Ask students to complete the Mole Crab Coloring Page in-class or for homework.

SCIENTIFIC CLASSIFICATION
- Kingdom: Animalia
- Phylum: Arthropoda
- Subphylum: Crustacea
- Class: Malacostraca
- Order: Decapoda
- Infraorder: Anomura
- Family: Hippidae

Coloring Page Answer Key (for activity on next page):
1. 1-eye stalks; 2-primary antennae; 3-carapace; 4-telson; 5-uropods; 6-thoracic legs
2. The “claws” on true crabs are used for crushing and tearing of food. Mole crabs are filter-feeders and use their antennae to collect food; therefore claws are unnecessary.
3. Carapace-protection; primary antennae-filtering water to gills; uropods-paddles for swimming; thoracic legs-digging and swimming; secondary antennae-filtering plankton; gills—“breathing” oxygen from water.

STUDENT WORKSHEET

Mole Crab Coloring Page

Name

1. Label (and color) the mole crab drawing using some of the following terms: chelipeds, thoracic legs, eye stalks, uropods, carapace, abdomen, telson, primary antennae or secondary antennae.

2. If mole crabs are “crabs”, where are the big “claws”? On other types of crabs, the crushers and pinchers are located on the first pair of legs. But in mole crabs, these claws are absent. Why?

3. Match the body part with it's corresponding function:

   - **BODY PART**
     - Carapace
     - Primary (short) antennae
     - Uropods
     - Thoracic legs
     - Secondary (large) antennae
     - Gills

   - **FUNCTION**
     - Digging and swimming
     - “Breathing” oxygen from water
     - Paddles for swimming
     - Funneling water to gills
     - Protection
     - Filtering plankton from water

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