# LESSON 5
# Marine Animal Life Cycles
### Kindergarten to Grade 3

## Objectives
- To identify stages in the life cycle of a crab.
- To identify larval stages of other marine animals.

## Materials
Crab moults, shells, pictures of crabs at different stages of the life cycle, pictures of other marine animals and their different life stages

## Concepts
- A life cycle includes several stages.
- The young of an animal might look entirely different from its adult form (metamorphosis similar to insects)
- To grow, a crab must grow a new covering inside its older shell, moult its hard older shell and then harden the new shell.

## Activities

**1. Crab puppet introduction to the crab's life cycle.** *(Perform monologue with crab puppet showing pictures of life cycle stages when appropriate.)*

**2. Crab Moulting**
**A.** Why is it good for a crab to have a hard outside shell or carapace?
*A. To protect themselves from predators who want to eat them, and to protect from drying out if they are in the intertidal at low tide.*

**B.** How do crabs grow bigger when they have a hard exoskeleton called a carapace?
*A. Our skin grows with us and our skeleton is on the inside. The crab is very different - Its skeleton is on the outside like armour. When a crab outgrows its shell, it must somehow leave it's old shell that is too small and form a new bigger shell. To do this, the crab has formed a very soft new shell inside its old shell and when it is ready to leave the old shell, a crack forms along the back of the shell and the top and bottom of the shell separate. It then backs out of the old shell with the new soft shell already covering it. Once out of the old shell, the crab blows itself up with water to increase its size, much like blowing up a balloon, and then finds a good place to hide for a few days, like under a rock, until its shell hardens. The moult or shell it leaves behind has gills left in it and looks from the outside like a complete crab. The crab then goes about its business of finding food to eat and grow fresh new gills and start filling its larger shell.*

**C.** Pass around crab shells and show moults.

**3. Crab life cycle stages**
**A.** Teach the crab life cycle stages by having students act out each stage: egg, zoea, megalops, juvenile crab, adult crab.

**B.** What does metamorphosis mean?
*A: Metamorphosis is a process by which an animal changes form as it grows. The adults of the species look entirely different from the young. Just like butterflies or dragonflies change from egg to larva to pupa to adult, many sea creatures like crabs have different life stages and metamorphose from one to the next.*

**B.** What do crabs eat at each stage of their life cycle?
- Egg – develop with a yolk sac and do not eat.
- Larva – eat plankton, capturing it with the spiny end of the abdomen and with bristles on "arms".
- Adult - crushes barnacles with claws, eats dead animals, tears apart seaweed, etc.

**C.** How does a crab move at each stage?
- Egg – carried around under its mother's belly (abdomen)

- Zoea larva – carried around by currents and also moves over short distances with "arms"
- Megalops larva – carried around by currents and can swim and crawl with "legs"
- Juvenile – walks along the bottom with its legs
- Adult – walks along the bottom with its legs

**D.** Give students handout with pictures of each life stage of a crab. *(Can use "Crab Life Cycle" on page 120 of Once Upon a Seashore: A Curriculum for Grades K-6)*
Have students put pictures of crab life cycle stages in order of development: egg, zoea larva, megalops larva, newly settled juvenile crab, adult crab.

**E.** Have you noticed crabs carrying eggs? What time of the year was it?
*A: spring/summer*

**F.** How does the baby crab change?
*A: It grows and changes shape many times, then is heavy enough to settle to the bottom and begin its life as an adult.*

**G.** How do crabs protect themselves as larva? As juveniles? As adults?
*Larva – have spikes on their body that makes them more difficult to eat!*
*Juveniles – hide under rocks, in crevices and under seaweed*
*Adults – hide same as juveniles, use claws to protect from predators*

### 4. Crab varieties

**A.** There are many different kinds of crabs living in our waters. Show pictures of some common crabs found in the intertidal.

**B.** Students can make a crab by dipping their palm in paint and then pressing their palm on paper to make the body. Then add legs by dipping their pinky fingers in paint and adding them to the palm body. Claws are made by dipping the thumb and forefinger into paint and stamping the paper at the front of the body.

## Conclusion

- Review the life cycle stages of a crab.
- Look at the larval and adult stages of other creatures that are temporarily part of the zooplankton community.

## Extension

### 1. Hermit Crabs

**A.** How are they different than other crabs we have talked about?
*A: They do not make their own shell. Instead, they find empty shells to use as their homes. Show pictures of hermit crabs and other types of crabs.*

**B.** How do hermit crabs protect themselves?
*A. Read Is This a House for Hermit Crab? By Megan McDonald. Discuss how a hermit crab must find a shell to protect itself and how they use their large claw as a door.*

### 2. Crab Vision

**A.** To see the way a crab sees, pass around some compound eye glasses. Have students look through them. Talk about why crabs would have the same kind of eyes as insects.

**B.** Why are crabs' eyes on stalks?
*A: To be able to see while they are buried in the sand.*

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Adapted with permission from: Once Upon a Seashore: A Curriculum for Grades K-6 by Gloria Snively. This resource is available from www.kingfisherpress.ca or by fax at (250) 642-6902.