

# Snails, Limpets and Chitons: Moving On

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## Key Concepts

1. Snails, limpets and chitons each crawl on rocks with a muscular foot to find food and more favorable conditions.
2. These mobile animals also adhere tightly to rocks to survive low tide and to deter predators.



## Background

Some of the most common animals in rocky shore habitats are the snails, limpets and chitons. Unlike barnacles, these animals are mobile. They each have a muscular foot that moves in contractions which appear as waves. The wave movement propels the animal forward a minute step at a time. The wave of contraction push-pulls the animal along.

The slime trail snails, limpets and chitons leave has unique chemical properties that alternately act as a glue then as a lubricant depending on the pressure placed on the slime by the animal. The stationary portion is held in place by the glue as the moving portion is easily moved over the lubricated surface.

## Materials

For each student or pair of students:

- 1 snail, limpet or chiton
- 1 glass jar with a lid
- sea water
- washable felt marker such as an overhead transparency pen
- 30 cm or so string
- millimeter ruler
- “Snails, Limpets and Chitons: Moving On” student pages

## Teaching Hints

“Snails, Limpets and Chitons: Moving On” gives your students a chance to observe movement in a living marine gastropod or the similar chitons. You can readily obtain periwinkles (*Littorina* species) or other snails, limpets or chitons from the intertidal zone or from biological supply houses. Be sure to follow all

collecting regulations for your area. If possible, have one or two extra animals available in case students have an animal that doesn't crawl in the time allotted for the lab. The students still can complete much of the exercise, but it will hold their interest longer if they have an animal that spends at least a little time moving.

## Key Words

**gastropod** - any member of a group of animals (class Gastropoda) comprising snails, whelks, sea slugs, etc.

**midline** - the median plane of the body of an animal

**mollusc** - any invertebrate of the phylum Mollusca typically having a calcareous shell that encloses a soft, unsegmented body including chitons, snails, bivalves, squid, and octopods

**mucus** - a viscous, slimy mixture secreted by glands and serving to protect and lubricate surfaces

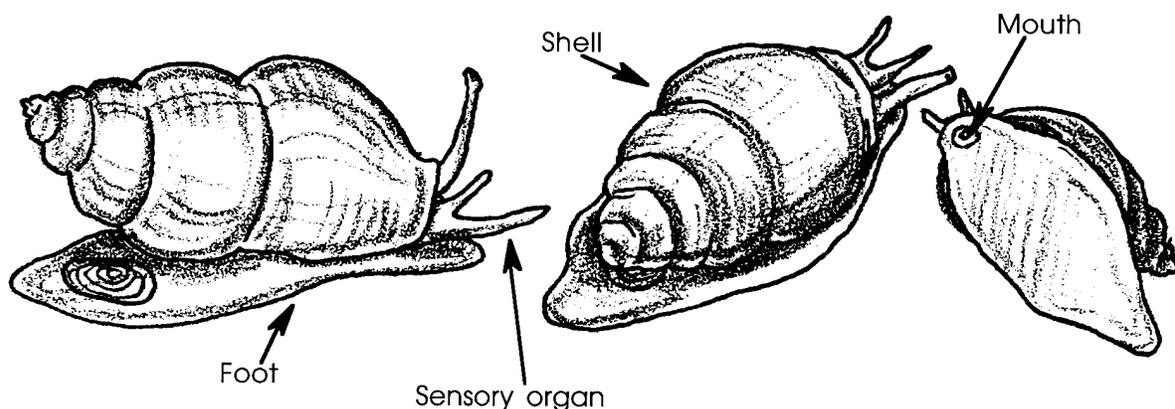
## Extensions

### 1. Flime (fake slime)

Create a crude model of the mucus snails, limpets and chitons use by creating a corn starch and water colloid. Mix enough water with corn starch to moisten the corn starch. Allow students to handle the mixture. They will find that, when they apply pressure, the mixture becomes more solid and when they release pressure, the mixture flows. Students are more likely to believe that the animals' mucus can both glue and lubricate if they experience this mixture and its very different properties depending on the amount of pressure applied.

## Answer Key

4.



- 5a., b., c., d. The animals' speeds will depend on experimental results.
- e. No, the slow rate of speed of the animals seems to indicate that they do not rely upon speed for protection. The most obvious means of protection is the shell.
6. & 7. Student drawings of their animal when it is still, crawling and turning will vary. Most gastropods and chitons move using contractions that look like waves traveling along the foot, so many student drawings and descriptions, if carefully done, will show the waves passing along the foot.