

# Land Snails



- Kindergarten - Animals 2 by 2
- 1st Grade - Plants and Animals

**What to do when they arrive.** Land snails are quite hardy and can survive for many days with little food or water. In your classroom, they will live in two clear terrariums with covers (the same type of basins as used for the hydroponic plants). Once the snails arrive, place moist paper towels on the floor of each terrarium and spray the interior walls with water. Distribute the snails into the terrariums and provide a few small pieces of carrot or other vegetable for them to eat. **Snails are strong! You may need to secure the cover with two large rubber bands stretched around the terrariums.**

**Background.** The land snail is one of nature's marvels. But many of its finer attributes go unrecognized because of its reputation as a garden raider. Because it takes a toll on our spinach, cabbage, and lettuce as it goes about its business of survival, we find ourselves in a conflict relationship. In the classroom, however, traditional animosities are put aside in the interest of learning more about the diversity of life. Land snails are gastropods, whose members also include aquatic snails (including marine snails) and slugs. The name means stomach-foot. This makes a degree of sense as the whole clan gets about by gliding on a muscular structure on the bottom of the abdomen, called the foot. The action that produces motion is a well-coordinated, wavelike contraction of muscles on the bottom of the foot that propels the gastropod smoothly forward over just about any surface. The action is not fast by human mobility standards, but you and your students will be amazed by how far snails can travel when your back is turned for what you think is just a moment. A determined snail can easily cover a meter in 5 minutes, so in the course of an evening a snail can travel the length of a football field and back. If the lid came off your terrarium in the evening, you can figure out how far and wide those snails might range in your classroom.

Land snails have several characteristics that make them easily identifiable. They have a single shell, usually coiled, that is a combination shield and humidior. The hard shell resists the efforts of predators and provides a haven during dry times. Snails are a moist gang, and if a snail cannot find a watering hole to renew its water supply, it will retreat to a protected nook, withdraw into its shell, and seal its shell to a solid surface. The snail will lapse into dormancy until rain, dew, or a garden sprinkler once again moistens the environment. This passive state, rather like hibernation but initiated by dry rather than cold, is called estivation.

One indication that snails have been active is the telltale slime trail. Garden snails produce a layer of mucus on which they slide. This makes it easy to track their movement, but also saddles them with a reputation for being yucky. Students may find this fact a bit repulsive at first, but will quickly forget it when they become absorbed in observations of these fascinating creatures. Most land snails have interesting projections on the fronts of their heads. Students will identify them as feelers or antennae. They will see two long ones on top of the head reaching up, and two smaller ones reaching down.

Technically they are tentacles, but "feeler" is a pretty good description of their function because they are touch sensitive. The two longer ones have light-sensitive organs at their tips, making them the snail's version of eyes, although their function is limited to light perception rather than image generation. The shorter tentacles feel, taste, and smell the environment in the never-ending search for food and water, and in constant vigilance against dangers.

The snail's mouth is on the bottom of the head right up by the short tentacles. Inside the mouth is a specialized eating tool, the radula. The radula is a muscular structure covered by thousands of tiny, sharp teeth. The snail eats by pressing the radula against a leaf or other desirable bit of vegetation and rasping it to scrape away small particles. This action can be seen if students feed a hungry snail some lettuce or apple.

Most other interesting snail structures are hidden inside the shell, but some can be observed with patience and perhaps a flashlight. Snails breathe by taking air into a visceral cavity that is richly supplied with blood vessels-the snail's version of a lung. When the snail extends from the shell, the access pore can be seen opening and closing just below the margin of the shell on one side. Also, the snail's heart can be seen pumping blood by placing a snail on the lens of a flashlight and carefully looking through the translucent shell.

The shell itself is an excellent piece of work. The colors and patterns are lovely, and the coil is a masterpiece of efficient construction. Snails grow by laying down new material around the edge of the roughly circular opening. By extending the length and diameter of the living quarters, the snail can grow and still retreat into its shell as needed. The shell is rich in calcium, so snails need a continual supply in their diet. In the classroom calcium is available from plain chalk or a piece of cuttlebone in the snail terrarium.

Most land snails are hermaphroditic, holding under one shell both male and female reproductive potential. However, snails must mate in order to fertilize each other's eggs. Eggs, the size of BBs, deposited in soil, will hatch in a few weeks into perfectly formed little snails, fully mobile, ready to ravage your garden.

The largest and friendliest land snail for the classroom is a European snail naturalized in the West.

**Maintenance.** In a natural habitat, land snails eat leaves, mushrooms, fruit, and many other kinds of plant material they find. In the classroom, they must be fed and their habitat must be cleaned.

**Here's the weekly care and feeding routine.**

- Clean the habitat once or twice a week. Gently remove the snails by sliding them off the walls of the terrarium. If they look messy, rinse them quickly under cool water. Spray the walls of the habitat and wipe them clean with paper towels. If you are using paper on the floor of the habitat, replace it with new paper towels.
- Feed the snails twice a week. Replace any old food with new food. Snails eat fruits and vegetables. Place pieces of chalk or cuttlebone in each habitat to provide calcium, which snails need for shell growth and repair.
- Spray the walls of the habitat with water two or three times a week.
- Always keep the cover securely on the habitat.
- If you don't keep the habitat moist or feed the snails, they will estivate for days or weeks at a time. This is not harmful to the snails and makes for a very low maintenance organism.

**What to do with them when the investigations are completed.** The question of what to do with the snails when the investigations are complete is a sensitive one and in part is determined by where and how you obtained the land snails. Potentially, the best solution is to keep them in the classroom, *You can also return them to the district science coordinator for distribution to other schools.*

**Care for the environment.** Land snails obtained from pet stores or biological supply houses should never be released into the wild. Snails can become unwanted pests, damaging the environment, local organisms, and food webs.