



Used in: Animals Two by Two, Environments, Plants and Animals, Populations and Ecosystems

Sow bug – *Oniscus ascellus*, *Porcellio* sp.

Pill bug – *Armadillidium vulgare*

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Background. Iso is Greek for "similar or equal." Pod means "foot." Put them together and you have the isopod, an organism that has an equal number of feet or legs on both sides with all legs similar to one another. Isopods have 14 legs that all function the same. This distinguishes them from closely related organisms that have legs that are modified to perform different functions, such as walking, feeding, feeling, grasping, and so on.

The many different species of isopods around the world share certain characteristics. Isopods are crustaceans, distant kin of shrimps, crabs, and crayfish. Like all crustaceans, isopods have a segmented outer shell (seven overlapping plates) that provides a measure of protection from the environment and predators. Like their aquatic relatives, isopods get the oxygen they need to survive through gill-like structures located at the bases of their legs, rather than through lungs like most terrestrial organisms. That is why isopods must keep moist at all times—if they dry, they die.

Two kinds of isopods are of interest as classroom organisms. The genus *Armadillidium* (arm•uh•duh•LID•e•um) is known casually as the pill bug or roly-poly. It gets these names from its habit of rolling into a tight sphere when threatened or stressed. The pill bug has a highly domed shape, short legs, and inconspicuous antennae. When in its defensive rolled posture, it is hard for a predator to grip, and it is also more resistant to drying out.

Pill bugs move slowly and have a difficult time righting themselves if they roll onto their backs on a smooth surface. They range from light brown to dark gray or black. Often they have white, cream, or yellowish spots on their backs.

The largest individuals of this kind of isopod can be 1 cm long, but most are 7 or 8 mm.

The second isopod used extensively in classrooms, genus *Porcellio* (por•sel•E•oh), is commonly called the sow bug or wood louse. These names are potentially confusing because *Porcellio* don't show a particular affinity for swine, nor are they lice. They are relatively flat with legs that extend a little bit beyond the edge of the shell, and they have powerful antennae to sense their environment. They move rather quickly and will use their long antennae and little spikelike tail projections to right themselves if they happen to roll onto their backs. Sow bugs come in a surprising array of colors, including tan, orange, purple, and blue, as well as the usual battleship gray. Their size is similar to that of the pill bug.

In the wild, isopods are not usually seen out and about. They are members of that large category of animals known descriptively (not taxonomically) as cryptozoa, or hidden animals. They are most often found in layers of duff and leaf litter, under rocks or logs, or burrowed a short distance under the surface of the soil. The environment they seek is moist and dark, in or near dead and decomposing wood and other plant material. The former is their main source of food, accounting, perhaps, for their common name of wood lice. Isopods are not, however, above eating fresh strawberries and carrots, making them a minor pest in the garden.

Life cycle. There are both male and female isopods, but only another isopod can reliably tell them apart. After mating, the female lays several dozen eggs, which she carries in a compact white package on her underside between her legs. This package is a specialized brood pouch, the marsupium, in which the eggs develop for 3 or 4 weeks before hatching. A few days after hatching, a swarm of fully formed, minute isopods strike out into the world. They are nearly invisible at first but soon grow to a size that can be seen by the unaided eye. Like all crustaceans that carry a hard outer shell, isopods must shed their shells in order to grow. In the molting process the shell is cast off, and the new soft shell underneath expands before hardening. Interestingly, the whole shell is not shed at once; first the rear (posterior) shell segments are shed, and 2 or 3 days later the front (anterior) ones fall off.

What to do when they arrive. The shipping container contains damp paper to provide moisture. Upon arrival, mist paper slightly. Food should be removed if it shows any sign of mold and replaced with sliced carrot, potato, or apple. Pill bugs and sow bugs can be kept in the shipping container for a few days until ready to use in class. Moisten the paper towels as necessary.

If you are keeping them for a longer period of time, place them in a terrarium with rich, moist soil. Place moist paper towels in the container to provide humidity. Continue to add vegetables, replacing them as necessary to control mold. Keep container at room temperature in low light.

Classroom habitat. Isopods are excellent classroom animals—they exhibit interesting behaviors, they are small but not tiny, they don't bite, smell, fly, or jump, and they are easy to care for. Isopods can live in just about any vessel, from a recycled margarine tub to a 50-liter aquarium. If the container is smooth-sided, it doesn't even have to be covered, because isopods can't climb smooth surfaces at all. A layer of soil covered with some dead leaves, twigs, and bark is great, but isopods will be comfortable with some paper towels or newspaper laid on the soil. They do like to have some structure to crawl under.

Food and water. The most important thing to remember is that the soil must be kept moist at all times—not wet, but moist—so that the isopods don't dry out. A chunk of raw potato in the container with the isopods serves as a source of both food and moisture. Otherwise they will eat the decomposing leaves and twigs or the paper towels and newspaper.

What to do with them when the investigations are completed. If you don't want to maintain the isopods in a terrarium, see if another teacher would like to use them or return to the district science coordinator for distribution to other schools. Isopods should not be released into the environment unless they have been collected there.

FAQs

- How do you find isopods locally? As isopods prefer moist, dark areas, look for areas that are cool and shaded with lots of places to hide such as under rocks, rotting wood or plants. Stand behind the hiding place and lift or roll it toward you (backward). Use a cup to scoop up the isopods.
- Can isopods be found locally everywhere? Isopods have been found in most geographical areas.