

Effective Techniques for the Care,  
Reproduction & Utilization of the  
Terrestrial Isopod *Porcellio scaber*  
in Your Science Classroom

RON WAGLER

**ABSTRACT**

Terrestrial isopods (often referred to as sow bugs or pill bugs) are small, land-dwelling crustaceans. Because of their gentle nature, terrestrial isopods are excellent animals to have in a science classroom. There are many fun and effective classroom activities that utilize terrestrial isopods to teach science concepts, but there are multiple barriers to acquiring the large number of terrestrial isopods needed for classroom activities. Furthermore, when terrestrial isopods are brought into the classroom, the possibility exists that they will die inhumanely because finding good information on their proper care and reproduction can be difficult. Websites, books, and magazines frequently provide contradictory, inaccurate, incomplete, overly complex, and inhumane care information. To address these issues, this article explains how to set up a simple, low-maintenance, and inexpensive classroom enclosure for the terrestrial isopod species *Porcellio scaber*. These techniques, which I use in my classroom, produce large numbers of healthy captive-bred *P. scaber*. This article also presents examples of effective, hands-on classroom activities utilizing *P. scaber*.

**Key Words:** arthropod; captive breeding; crustacean; curriculum; *Porcellio scaber*; science education; terrestrial isopod.

**○ Introduction**

Terrestrial isopods (often referred to as sow bugs or pill bugs) are small, land-dwelling crustaceans. Because of their gentle nature, terrestrial isopods are excellent animals to have in a science classroom. There are many fun and effective classroom activities that utilize terrestrial isopods to teach science concepts, but purchasing the large number of terrestrial isopods needed for classroom activities can be expensive and some species of terrestrial isopods are not available when you want to purchase them and utilize them in your classroom activities. It can also be difficult to find large numbers of terrestrial isopods in nature, and bringing wild-caught arthropods into the classroom always poses a risk of transferring pathogens to other classroom arthropods.<sup>1</sup>

When terrestrial isopods are brought into the classroom, the possibility exists that they will die inhumanely because finding good information on their proper care and reproduction can be difficult.

Websites, books, and magazines frequently provide contradictory, inaccurate, incomplete, overly complex, and inhumane care information. This issue is further complicated because the care and reproduction information that is provided is often presented as if it applies to all terrestrial isopod species, but it often only works (if it works at all) with one or two particular terrestrial isopod species. Common examples of care information that leads to the premature death of terrestrial isopods kept in captivity include providing too much or too little ventilation, keeping the enclosure too dry or too wet, or feeding your terrestrial isopods just dry dogfood kibble, small pieces of fruit, and small pieces of vegetables. Needless to say, there is much confusion about the best way to get particular species of terrestrial isopods to live and reproduce in captivity.

To address these issues, this article explains how to set up a simple, low-maintenance, and inexpensive classroom enclosure for the terrestrial isopod species *Porcellio scaber*, one of the fastest-reproducing larger terrestrial isopod species kept in captivity (see Figure 1). These techniques, which I use in my classroom, produce large numbers of healthy captive-bred *P. scaber*. This species is commonly available in the United States and easily purchased. This species is also excellent for classroom activities because it behaves in known, predictable ways. There are other terrestrial isopod species you can purchase online, but these are often more expensive, are not frequently available, require more complex enclosures, require more maintenance, are not the best choice for classroom activities, and/or reproduce more slowly than *P. scaber*. This article also presents examples of effective, hands-on classroom activities utilizing *P. scaber*.

**○ Acquiring, Caring For & Reproducing *Porcellio scaber* in the Science Classroom**

*Porcellio scaber*<sup>2</sup> can be bought online. To find websites that sell this species, search online for “buy *Porcellio scaber*” or “buy sow bugs” (also see the Resources section at the end of this article). Make sure the terrestrial isopods you purchase are captive-bred and not wild-caught.



**Figure 1.** An adult *Porcellio scaber* (Creative Commons: [https://upload.wikimedia.org/wikipedia/commons/7/77/ Porcellio\\_scaber\\_%28AU%29-left\\_01.jpg](https://upload.wikimedia.org/wikipedia/commons/7/77/Porcellio_scaber_%28AU%29-left_01.jpg)).

Purchase a starter colony of 12 *P. scaber* and have them arrive just after you have finished setting up your terrestrial isopod classroom enclosure. When they arrive, place the terrestrial isopods in your classroom enclosure.

To set up your classroom enclosure, begin by purchasing a plastic container with a plastic lid. Figure 2 presents the type of containers I prefer and use for all of my high-reproducing classroom enclosures. The container shown in Figure 2 (an under-bed storage container) measures 88.4 cm (34.8 in.) long by 42 cm (16.5 in.) wide by 15.24 cm (6 in.) high. These common inexpensive containers can be purchased online, at big box stores, and at home improvement stores. Attempt to buy this exact container, but if you cannot find this exact container make sure to purchase a similar container with a large floor space and reduced height. The large floor space allows for larger numbers of terrestrial isopods to live in the enclosure, which leads to greater reproduction in a shorter time. There is no need to drill holes in the lid of your enclosure. Containers of this type have lids that will not allow any of your terrestrial isopods to get out of the enclosure but will provide adequate ventilation for this species.

Begin by placing a 2.54 cm (1 in.) layer of moist coir (i.e., coconut fiber) on the floor of the entire enclosure (see Figure 2). Coir can be purchased online and at pet stores. A spray bottle filled with tap water can be used to moisten the coir. Make sure all of the coir is moist, not just the surface. The coir should be moist but not so wet that standing water accumulates on the surface of the coir. Now collect dead leaves from broadleaf trees (e.g., oak, aspen, maple, or ash) that have dropped their leaves in the fall. Collect dead leaves from trees that have not encountered herbicides or pesticides. After collecting the dead fallen leaves, put them in black plastic garbage bags in the full summer sun for 14 days. The heat from the sun will kill any organisms that could potentially harm your terrestrial isopods. After the leaves have been in the sun for 14 days, remove them from the black plastic garbage bag and place a 5.08 cm (2 in.) layer of dead leaves on the entire surface of the moist coir (see Figure 2). Use a spray bottle with tap water to moisten the dead leaves once they have been placed in the classroom enclosure. Make sure to moisten all the layers of leaves and not just the exposed surface of the leaves. These dead leaves are the food for your terrestrial isopods. Over time you will notice that the terrestrial isopods are eating the leaves. When the depth of the dead



**Figure 2.** The *Porcellio scaber* terrestrial isopod classroom enclosure (photograph by author). The 2.54 cm (1 in.) layer of moist coir (i.e., coconut fiber) is not visible here because it is covered by a 5.08 cm (2 in.) layer of dead broadleaf tree leaves.

leaves in the enclosure reaches 2.54 cm (1 in.), simply add more moist dead leaves so that the depth of the leaves is 5.08 cm (2 in.) again.

A low-maintenance enclosure such as this will allow you to check on your terrestrial isopods every two weeks, but it is best to err on the side of caution and check on them once a week to ensure that the enclosure's coir and leaves are still moist. If you notice the coir or leaves starting to dry out, simply use your spray bottle to remoisten them. The classroom enclosure should be kept between 65°F and 80°F. Never use any external heat source (e.g., heat pad or heat cable) or place the enclosure in direct sunlight to warm it up, both of which can potentially kill large numbers of your terrestrial isopods. This simple, inexpensive enclosure will produce large numbers of *P. scaber* for decades if maintained properly.<sup>3</sup> Always wash your hands with soap and water after holding the terrestrial isopods. It is not possible to cover all aspects of the care and reproduction of this species in this one article, but the essential aspects have been presented. Please contact me by e-mail if you have further questions about the care or reproduction of this species.

## ○ Conclusion

Once your terrestrial isopods start reproducing, you can begin to utilize them in your science classroom. Two *Science Scope* articles, “The Wonders of Terrestrial Isopods” and “Exploring Terrestrial Isopods: How Terrestrial Isopods’ Behavior Can Influence Survival and Reproduction” (see the Resources section at the end of this article), provide a large number of effective classroom activities utilizing *Porcellio scaber* and information about terrestrial isopod biology.<sup>4</sup> Both articles provide teachers with detailed instructions on how to implement these activities in their classrooms. These activities are also aligned with the *Next Generation Science Standards* (NGSS Lead States, 2013). I have used these fun and enjoyable activities with my students for over a decade and have published a peer-reviewed book chapter verifying their effectiveness (Wagler, 2018). I am confident that these hands-on activities will provide you with many opportunities to engage your students and get them excited to learn about the amazing world of terrestrial isopods!

“I chose this program over others because it offered classes that were pertinent to my needs. I was able to immediately apply what I was learning to my career.”

Cayman Adams, Graduate



## Fully Online Biology, MS University of Nebraska at Kearney

- Non-Thesis Structure
- Flexibility in Coursework
- Low Student to Faculty Ratio

Application deadline for Summer Sessions is April 10.

► [online.nebraska.edu](https://online.nebraska.edu)

UNIVERSITY OF  
**Nebraska**  
Online

KEARNEY | LINCOLN | OMAHA | MEDICAL CENTER

## Resources

To buy captive-bred terrestrial isopods, visit these websites:

- Arachnoboards, <https://arachnoboards.com> (see For Sale section)
- Bugs In Cyberspace.com, <http://www.bugsincyberspace.com>

For classroom activities utilizing *Porcellio scaber*, visit these websites:

- “The Wonders of Terrestrial Isopods,” [https://www.nsta.org/store/product\\_detail.aspx?id=10.2505/4/ss13\\_037\\_02\\_59](https://www.nsta.org/store/product_detail.aspx?id=10.2505/4/ss13_037_02_59)
- “Exploring Terrestrial Isopods: How Terrestrial Isopods’ Behavior Can Influence Survival and Reproduction,” [https://www.nsta.org/store/product\\_detail.aspx?id=10.2505/4/ss17\\_040\\_09\\_46](https://www.nsta.org/store/product_detail.aspx?id=10.2505/4/ss17_040_09_46)

## Notes

1. Furthermore, when you collect terrestrial isopods in nature, if you are not knowledgeable about how to identify species, the possibility exists that you will collect and house more than one species in the same enclosure. When you house different species together, one species will eventually outcompete the others and you will be left with one species. Ultimately, you may end up with a species that will not reproduce in the high numbers you need for classroom activities in the classroom enclosure presented in this article.
2. *Porcellio scaber* has been selectively bred for different exoskeleton colors such as orange or white with black spots. Any of these color variations are appropriate as a starter colony for your classroom enclosure.
3. Placing pieces of cork bark in the enclosure is often recommended, so that the terrestrial isopods will have a place to hide. Other common recommendations include using complex substrates (instead of just coir) that are composed of aspen shavings, sphagnum moss, decaying hardwood, ground cuttlebone, charcoal, and other components; or feeding terrestrial isopods dry dogfood kibble, small pieces of fruit, and small pieces of vegetables. Doing these things will overcomplicate your care regimen, greatly increasing the time required to care for your terrestrial isopods and increasing the costs associated with having these animals in your classroom. None of these care techniques are essential to the health and reproductive rate of *P. scaber*.
4. The terrestrial isopod care instructions presented in these two articles should not be used on *P. scaber* because these instructions are overly complex, more expensive, and more time-consuming than the care instructions presented in the present article.

## References

- NGSS Lead States (2013). *Next Generation Science Standards: For States, by States*. Washington, DC: National Academies Press.
- Wagler, R. (2018). Using a service-learning project to overcome the fear of arthropods and instill an awareness of the sixth mass extinction in future teachers and elementary school children. In G.M. Nunez & A.L. Gonzalez (Eds.), *Community Engagement and High Impact Practices in Higher Education* (pp. 43–52). Dubuque, IA: Kendall Hunt.

DR. RON WAGLER is an Associate Professor of Science Education at the University of Texas at El Paso and the Founder and Director of the Living Arthropod and Environmental Education Laboratory, El Paso, TX 79968; e-mail: [rrwagler2@utep.edu](mailto:rrwagler2@utep.edu); website: <http://volt.utep.edu/ronwagler/>.