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

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**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.¹

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*² 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.
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 fallen leaves, put them in black plastic garbage bags in the full sun for 14 days. The heat from the sun will kill any organisms that have been presented. Please contact me by e-mail if you have further questions about the care or reproduction of this species.

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. 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!

○ Conclusion

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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
- “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

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

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