

Culturing Invertebrates as Food for Box Turtles

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Isopods (Sowbugs and Pillbugs)

Garden-variety sowbugs (*Porcellio laevis*) and pillbugs or roly-polies (*Armadillidium vulgare*) are isopods that are commonly fed to box turtles. They are particularly useful in feeding hatchlings and very young turtles due to their small size, palatability, high nutritional content, and opportunity they provide a turtle to hunt.

An advantage of sowbugs over pillbugs is that the former cannot ball up and are thus easier to handle and for turtles to catch. Sowbugs also tend to stay more on the surface of bedding than do pillbugs. Both sequester calcium in the exoskeleton and naturally have a positive calcium to phosphorus ratio. Mixing fine calcium carbonate into the bedding provides a ready source of calcium for these isopods.

Culturing Instructions

- [New England Herpetoculture Isopod Care](#)
- [Isopod Care and Culturing](#)
- [How to Care For Isopods](#). This video recommends feeding flake fish food. While isopods readily eat it, it can lead to infestations of mites. Alternative diets are discussed in the above links.

Commercial Bedding

These are good albeit expensive beddings if you do not want to make up your own bedding as explained in the above links. The author uses Josh's Frogs substrate and adds in oak leaves from The Defiant Forest. The products are sterile and thus come with no unwanted invertebrate hitchhikers.

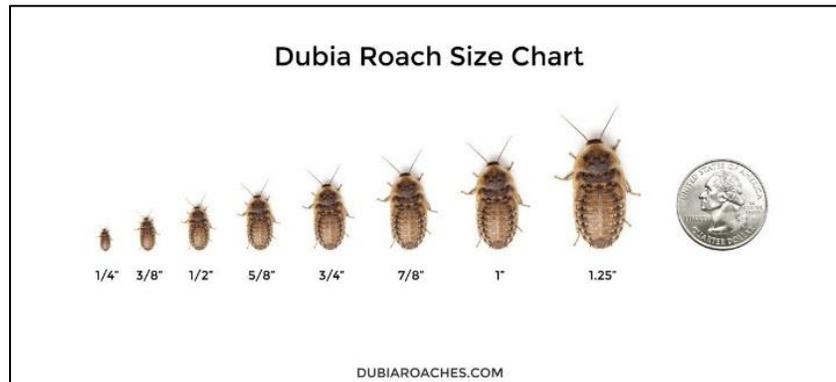
- [Josh's Frogs Isopod Substrate](#).
- [The Defiant Forest TDF Bio-Thrive for Millipedes& Isopods](#).

Commercial Diets

It is not necessary to go to this extreme to maintain a healthy, highly productive colony of sowbugs or pillbugs, but the below links are provided should you want to pamper your isopods.

- [Repashy Morning Wood](#)
- [Repashy Bug Burger](#)
- [The Defiant Forest](#) produces a variety of natural products for feeding isopods.

Dubia Roaches (*Blaptica dubia*)



Roaches are a nutritious food item for box turtles. However, they should be calcium-fortified before feed-out since roaches are naturally low in calcium and have an inverse calcium to phosphorus ratio. Dusting and/or gut loading can be done to increase the calcium level immediately before feed-out. The efficacy of dusting depends on the “right amount” of powder clinging to the insect just before it is about to be consumed. It is possible to under or over dust, but as long as roaches are not a major part of a turtle’s diet, dusting is likely a safe and effective approach.

Fluker’s makes a [High Calcium Dubia Roach Diet](#) that improves the calcium content of roaches through gut-loading. Little of the calcium is incorporated into the tissue of the roach, hence the roach must be consumed before the roach has time to excrete the mineral load.

Based upon the results of a study ([Finke et al., 2004](#), in Handouts) on gut-loading crickets (*Acheta domesticus*), it is likely that the calcium level in roaches would be highest when these insects are maintained on Fluker’s roach diet for at least 48 hrs with no other food offered and only wetted cotton swabs as a moisture source. Keeping the roaches within their optimal temperature range (described in the culturing instructions below) is likely to better ensure that they will eat well during this gut-loading period.

For more information on the nutrient content of Dubia Roaches, see [Cerrata et al. \(2021\)](#). A chart comparing Dubia roach nutrient content to other common feeder insects is available at [dubiaroaches.com](#).

Culturing Instructions (These companies sell quality Dubia Roaches)

[Breeding Dubia roaches: A Comprehensive Guide](#). This is a very detailed description of all aspects of caring for roaches, including the types of grocery-store foods appropriate for roaches.

[Josh’s Frogs Blaptica dubia Roaches](#). These care instructions include links to commercial diets and watering gel.

Mealworms (*Tenebrio molitor*)



Mealworms, the larval stage of a species of darkling beetle (*Tenebrio molitor*), are a good source of protein (20%) and fat (13%). [Mariod \(2020\)](#) provides further details on nutritional content. However, like nearly all insect larvae, mealworms have a poor calcium profile – low calcium content coupled with an inverse calcium to phosphorus ratio. [Fluker's High-Calcium Mealworm Diet](#) has been demonstrated to raise the calcium content and calcium to phosphorus ratio to an acceptable level in mealworms kept on the diet for 24-48 hrs ([Boykin et al., 2021](#), in Handouts). In this study, no other food was offered to the mealworms during the gut-loading period. The study did not provide a moisture source. As with any gut-loaded invertebrates, the mealworms should be eaten soon after being offered, since calcium is lost as the mealworms eliminate wastes.

Online Source of Mealworms

- [Amazon](#)
- [Fluker's](#)
- [Uncle Jim's Worm Farm](#)

Culturing Instructions

- [Breed Your Own Mealworms](#)
- [How To Raise Mealworms](#)
- Videos for larger scale production:
 - [How to Build a mealworm farm!](#)
 - [Separating Mealworm Beetles from Eggs](#)