



*Dillon Damuth

Springtails (Subclass Collembola) and Isopods (Order Isopoda)

Introduction

The term “microfauna” essentially translates to “small or tiny animals”, and in terms of herpetoculture (the captive care and breeding of reptiles and amphibians), most often refers to any of a variety of small arthropods—namely the springtails and isopods—that serve several different important functions in the terrarium or enclosure. They are a natural, self-sustaining form of cleanup of any dead or decaying plant matter, feces, uneaten food, and other wastes, prevent the accumulation and buildup of nitrogen and carbon within the enclosure, and can serve as feeders for a variety of small reptiles and amphibians. Isopods and springtails are a quickly reproducing source of microfauna, and have become a contemporary source for feeders overall for a wider variety of animals than just dart frogs and mantellas.

Also known as the pill bugs, rollie pollies, or wood lice, isopods are a large order of arthropods (crustaceans) with rigid, segmented exoskeletons, a pair of antennae, seven pairs of joined limbs, and five pairs of joined appendages on the abdomen used in respiration. Most terrestrial isopods can be found in cool, moist microhabitats, and earn their name rollie pollies due to their defensive behavior of rolling into balls when disturbed. There are over 10,000 species of isopod species found worldwide, with about 5,000 terrestrial species. Some of the most common isopods used as microfauna include dwarf white isopods, purple isopods, dwarf gray or striped isopods, and giant orange isopods.

Springtails comprise of perhaps the largest of three modern, extant lineages of hexapods. They typically have six or fewer bodily and abdominal segments, tubular appendages with sticky vesicles, and abdominal spring-like tails called the furcula folded beneath the body that is used for jumping when they are disturbed. This is how springtails earn their common names. Most species of terrestrial springtails are found in cool, moist leaf litter and other decaying plant matter, and are one of the main biological agents in the control and dissemination of soil microorganisms. There are about 3,600 species of springtails found worldwide overall.

Taxonomy-Springtails:

Life: All living, physical, and animate entities

Domain: Eukaryota

Kingdom: Animalia

Phylum: Arthropoda

Subphylum: Hexapoda

Class: Entognatha

Subclass: Collembola

**Taxonomy subject to change and revision.*

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Taxonomy-Isopods:

Life: All living, physical, and animate entities

Domain: Eukaryota

Kingdom: Animalia

Phylum: Arthropoda

Subphylum: Crustacea

Class: Malacostracea

Superorder: Peracarida

Order: Isopoda

**Taxonomy subject to change and revision.*

Experience Level Required

Novice/Beginner to Moderate/Intermediate.

Size

As can be expected with microfauna, both springtails and isopods are usually quite small, with springtails typically being no more than 5 to 6 mm, or 0.25 inches in size, and most isopods used as microfauna being 0.3 to 1 inch.

Housing and Enclosure Plus Temperature, Lighting, and Humidity

Isopods are quite simple and inexpensive to house and culture, with plastic shoe boxes, waste bins, or other similar containers working well. Use a soldering iron, or otherwise punch holes on one end or side of the enclosure to create adequate airflow and ventilation, which therefore creates a humidity gradient. Line the enclosure with about 2 to 3 inches of substrate, such as ABG mixture (or other tropical garden mixture) and leaf litter with a ratio of about 3:1. Ensure that the mixture is moist, but not overly wet. For additional hides, food sources, and shelter, provide several layers of egg cartons, corrugated cardboard, or cork bark slabs. Isopods can be maintained at room temperature from 70 to 80 degrees F., but do not overheat or under-heat them. No further special lighting or heating is typically required for isopods.

As with isopods, springtails are also quite simple and inexpensive to house and culture, with plastic shoe boxes, waste bins, or other similar containers working well. Use a soldering iron, or otherwise punch holes on one end or side of the enclosure to create adequate airflow and ventilation, which therefore creates a humidity gradient. Several different substrates can work well for housing springtails, including charcoal or coconut fibers being the most commonly used. Be sure to wash the charcoal to remove excess dust, and add it to the enclosure at a depth of about 3 to 4 inches. Then add dechlorinated, or distilled water with a depth of around one inch. For additional hides, food sources, and shelter, provide several layers of egg cartons, corrugated cardboard, or cork bark slabs. Springtails can be maintained at room temperature from 70 to 80 degrees F., but do not overheat or under-heat them. No further special lighting or heating is typically required for springtails as well.

Feeding, Diet, and Nutrition

Depending on the species, isopods can range from being detritivorous (feeding on dead or decaying plant matter) to omnivorous, and with some being carnivorous or predatory. In captivity, isopods are quite simple to feed, and can be provided a variety of fresh fruit and vegetable scraps, dog and cat foods, mushrooms, and grain based products (but use caution as to not attract grain mites, which can adversely affect the productivity of the culture).

Springtails typically feed on fungal hyphae and spores, but some may also be detritivorous, feeding on decaying plant matter, animal remains, colloidal materials, minerals, and bacteria as well. In captivity, springtails are quite simple and inexpensive to feed as well. While opinions

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may vary greatly on captive springtail diets, uncooked white rice has been widely used, in addition to fresh or dried mushrooms, fish foods, dog and cat foods, fruit and vegetable scraps, and other grain based foods. Use some caution with grain based diets, as these may attract grain mites that can disrupt or destroy the culture. Springtails will not actually consume these foods themselves, but the mold and other fungi and their spores that grow on them. More specific dietary and supplementary product suggestions and recommendations for both isopods and springtails that can best suit one's needs, as well as those of one's animals can be given as well.

Handling

Both isopods and springtails tend to spend a majority of their time burrowed into the substrate of the enclosure or hiding within the furnishings. To move, transfer, or introduce them to another enclosure, simply gently shake or tap the furnishings over the new enclosure to expel any isopods or springtails. They can then either be added to the enclosure, or used to begin new cultures.

Also remember to be sure to practice basic cleanliness and hygiene associated with proper husbandry after touching or handling any animals or animal enclosures to prevent the possibility of contracting salmonellosis or any other zoonotic pathogens

Contact

Authored by Eric Roscoe. For any additional questions, comments, and/or concerns regarding this animal, group of animals, or this care sheet, please email and contact the Madison Area Herpetological Society at info@madisonherps.org

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