

# Milkweed Bug

- 2nd Grade - Insects and Plants



## What to do when they arrive.

- **Eggs** are shipped on a wad of floss. If you are unable to begin the investigation when the eggs arrive, they may be kept in the container at cool room temperatures or refrigerated for short periods; otherwise they will hatch within one week. If the eggs have hatched upon arrival, add a few sunflower seeds and hatched nymphs to the vials for distribution to the students.
- Keep **adult males and females** in separate containers. A 1/2-liter container with small air holes can be used for a few days. Add a few sunflower seeds and a moist paper towel wick for moisture. To keep adult milkweed bugs for a longer period of time, place in milkweed bug habitats with sunflower seed packets, water fountain, twigs, and floss for eggs.

Milkweed bugs are true bugs; beetles, moths, flies, and butterflies are not. Bugs have the usual complement of structures that they share with just about all other insects: six legs, three body parts (head, thorax, and abdomen), and two antennae. True bugs (order Hemiptera) do not have mouths for biting and chewing food—they have a tubelike beak for sucking fluids. The milkweed bug in nature sucks nutrients from milkweed seeds, but those in the classroom have been bred to feed exclusively on sunflower seeds.

Another characteristic of bugs generally and milkweed bugs specifically is the stages they go through from hatching to maturity. Bugs go through simple metamorphosis. The insect emerges from an egg looking like a tiny version of the adult, with slight differences in body proportions and incompletely developed wings. The immature bugs are called nymphs. Newly hatched nymphs are analogous to the larvae of insects that go through complete metamorphosis, in that their prime directive is to eat and grow. As with all insects, in order to grow the nymphs must molt periodically. Just after molting the bug is creamy yellow with bright red legs and antennae. Within a few hours the body turns dark orange, and the legs and antennae resume their usual black color. The crispy little molts can be seen in the milkweed bug habitat about a week after the bugs hatch. Students may think their milkweed bugs are dying or that spiders and ants have invaded the habitat. It may take a while for students to figure out what the molts really are.

**Life cycle.** Milkweed bugs advance through five nymphal stages (instars) as they mature. Each molt produces a larger nymph that is more completely developed. As the bugs grow, the dark wings appear on the backs of the bugs as black spots. Other black markings start to appear and eventually develop into the characteristic patterns of black and orange by which the adults of the two sexes can be identified. The last molt reveals the adult. There is no pupal resting stage as in insects that undergo complete metamorphosis—the large nymph simply molts, and away walks the adult.

Milkweed bugs continue to feed as adults, inserting their long beaks into sunflower seeds to suck out oils and other nutrients. Mating is easily observed, as the two mating bugs remain attached end to end for an extended time. It is possible to distinguish female and male adults by body markings. Look on the ventral (belly) side of the bugs. The tip of the abdomen is black, followed by a solid orange segment (with tiny black dots at the edges). If the next two segments following the orange band have solid black bands, the bug is a male. However, if the segment following the orange band is orange in the middle, making it look like it has two large black spots on the sides, followed by a segment with a solid black band, the bug is female. (See the Milkweed Bug Male and Female poster.) Males tend to be smaller than females. Look for mating bugs to identify males and females—there will always be one of each in such pairings.

Several days to 2 weeks after mating, the female lays a cluster of 50 or more yellow eggs (which turn orange fairly quickly) in a wad of cotton. The eggs can be removed to a new culture container or left in the habitat to continue the life cycle.

**Milkweed bug habitat.** Culturing milkweed bugs is fairly easy. The bugs require no soil or green plant material. Just about any container is suitable for a habitat. Because milkweed bugs can walk on any surface, including smooth plastic, glass, metal, wet surfaces, and all textured surfaces, the habitat must be closed tightly, and the ventilation holes must be tiny so the first instar nymphs can't escape.

*We suggest a plastic zip bag for the habitat container. Use a pin to poke a hundred holes in the bag, and install a water container in the bottom.* To add interest, put a branch in the bag and attach a bundle of raw, shelled sunflower seeds and a cotton ball to the branch. Hang the bag from a paper clip next to a wall out of direct sunlight.

**Maintenance.** Maintenance is minimal. Keep an eye on the water level, and when it gets low after 3–4 weeks, add water and perhaps replace the wick. A new bundle of 20 to 30 sunflower seeds each month should be adequate for a modest culture of 25 bugs. The culture may start to look a little messy after a month as little brown spots of waste appear on the walls of the bag and the molts start to accumulate. Transfer the branch, water fountain, and bugs to a new bag to renew the aesthetic appeal of the culture.

**Ordering milkweed bug eggs.** Milkweed bug eggs must be ordered from a biological supply company. Specify at the time of order when you want the eggs delivered. See the Materials folio for more information about obtaining insects. Conduct Part 1 as soon as the eggs arrive—they will hatch in a week or less after you receive them. Color is an indicator of maturity. If the eggs are pale to school-bus yellow, it will be a few days until they hatch. If the eggs are pumpkin-orange to red, they will hatch in the next couple of days.

**What to do with them when the investigations are completed.** Keep and care for the milkweed bugs in your class or give them to another teacher. *You can also return them to the district science coordinator for distribution to other schools.*

**Care for the environment.** At some point you may want to end the cycle. It is very important to never release organisms into an environment they were not collected from. In addition, the insects and milkweed bugs would most likely perish quickly if released. To humanely end these organism's life cycle, place the organisms in a bag in the freezer overnight; discard the bag in the trash the next day.