

Central Pennsylvania
Pocket Guides

Life on Milkweed



The Milkweed Ecosystem

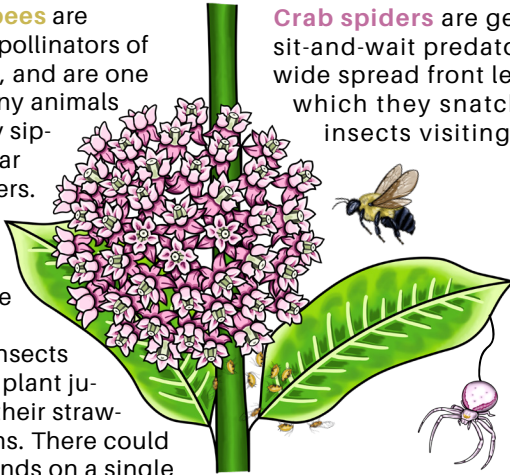
The monarch butterfly is just one of dozens of insects regularly frequenting milkweed to feed on its leaves, nectar, seeds and even roots! Each of these organisms is fighting to survive, and many have **coevolved**. This means they have spent thousands of years living together. By balancing their needs, they can all survive and thrive, both **predators** and their **prey**.

Though many things eat monarchs, this shared **evolutionary** history has prepared monarchs for this threat and reality of being eaten. Every species including monarchs has strategies that help them survive. This bustling **community** of insects on milkweed forms an intricate web connecting them all.

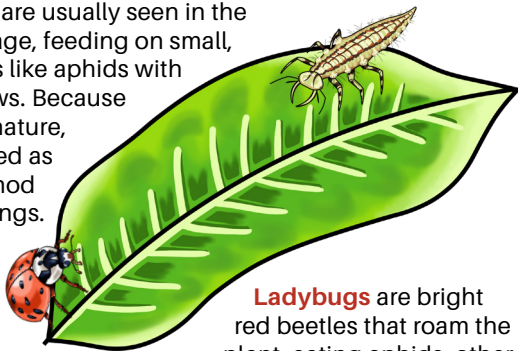
Bumble bees are essential pollinators of milkweed, and are one of the many animals that enjoy sipping nectar from flowers.

Crab spiders are generally sit-and-wait predators with wide spread front legs with which they snatch flying insects visiting plants.

Aphids are small and plentiful insects that drink plant juices with their straw-like mouths. There could be thousands on a single plant by the end of the summer.



Green Lacewings are usually seen in the larval (teenage) stage, feeding on small, soft-bodied insects like aphids with their pincer-like jaws. Because of their predatory nature, they have been used as a pest control method in agricultural settings.



Ladybugs are bright red beetles that roam the plant, eating aphids, other insect's eggs, and whatever else will fit in their ravenous jaws. There are multiple species you may find on your plants, though *Harmonia axyridis* is the most common.



Monarch caterpillars and adult butterflies are flashy and bright, feeding diurnally - or in the day time. Find caterpillars tucked among the leaves and adults flying between flowers.

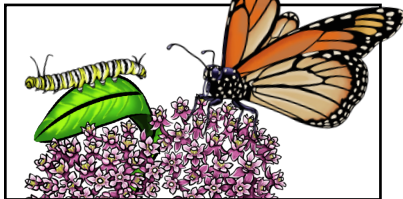
The **Red Milkweed Beetle** is a milkweed specialist. To find one, look and listen. They make a "PEET!" sound when you disturb them, and they chew "U" shaped chunks out of milkweed leaves.

Common Name

Scientific
Name

Monarch

Danaus plexippus



Diet

Description

Adult female butterflies lay their eggs on milkweed leaves, as it is the only plant monarch caterpillars can eat. Therefore, where milkweed goes, monarchs will follow. This has resulted in monarchs making annual thousands-mile migrations, spending the winters in Mexico, and summers in the United States and Canada. Once they are adults, monarch butterflies can sip on nectar from many species of plants. Fall-blooming flowers like goldenrods fuel the butterfly's migration south before the winter frost.

Survival Strategies



Toxicity: Monarchs have developed ways to not only tolerate the toxins in milkweed, but use these toxins to make themselves toxic as well. If a bird tries to eat a monarch, they will vomit it out. Lesson learned!



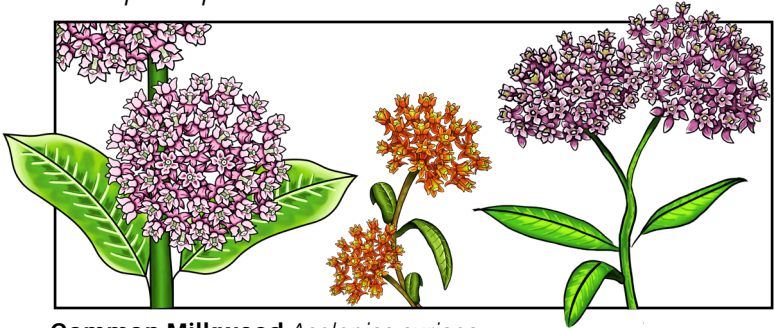
Warning Coloration: Bright orange and black wings warn predators before they even try to eat monarchs that they are toxic.

What is a survival strategy?

We live in an 'eat or be eaten' world. Plants and animals that successfully avoid being eaten pass their genes to their offspring. Over millions of years, species have evolved notable physical, behavioral, and chemical strategies to avoid predation. Think of these strategies as survival superpowers!

Milkweed

Asclepias species



Common Milkweed *Asclepias syriaca*

This species is the most common across the landscape. It is hearty and can grow in variable conditions. New sprouts will spread out from the largest stem, following the roots. It can grow over 5 feet tall, and has fist-size clusters of pink flowers that have a sweet smell.

Butterfly Milkweed *Asclepias tuberosa*

Popular with butterflies, this milkweed typically grows no taller than 2 feet tall. It thrives in full sun and typical garden conditions. The tuber-like root, for which its latin name comes from, is also known as pleurisy root and was once used medicinally.

Swamp Milkweed *Asclepias incarnata*

This milkweed is named for its typical growing conditions: swamps and bogs. But, it can grow in garden conditions with occasional watering. Like *A. syriaca*, swamp milkweed can grow to around 5 feet tall, but it has narrower, hairless leaves, and brighter pink, smaller clusters of flowers.

Survival Strategies



Toxicity: Milkweed leaves contain poisonous cardenolides that taste bad to most animals, discouraging them from feeding on the milkweed in the future.

Monarch

Danaus plexippus



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Survival Strategies



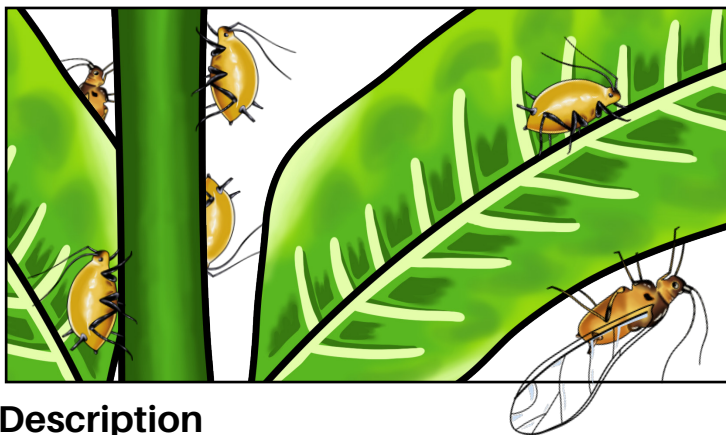
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Warning Coloration: Bright orange and black wings warn predators before they even try to eat monarchs that they are toxic.

Oleander Aphid

Aphis nerii



Description

Aphids are tiny, herbivorous insects, smaller than a lentil. Most aphids live in massive groups, drinking plant fluids with straw-like mouths. *Aphis nerii* is not native to North America and cannot tolerate cold winters. Because of this, they are found in the southern U.S. in the winter and migrate north over the course of the summer.

Survival Strategies



Toxicity: The monarch isn't the only animal that uses toxins from milkweed to their advantage. *Aphis nerii* is able to sequester the toxic cardenolide steroid in milkweeds, which makes them taste bad to predators.



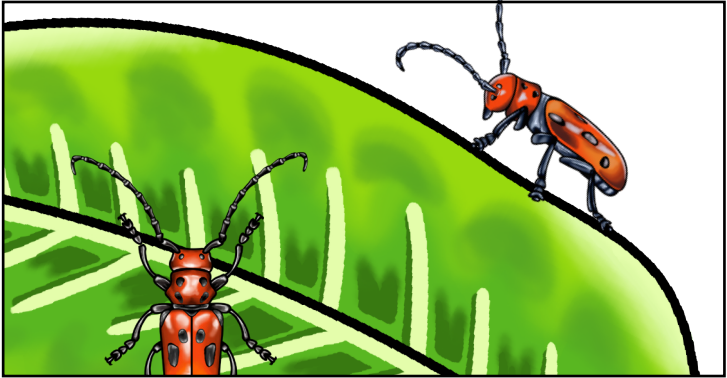
Warning Coloration: Their bright orange coloration acts like a traffic cone, warning predators of their toxicity.



Exponential Growth: A few dozen aphids can grow to a group of thousands in a matter of days. Despite being small and vulnerable, large numbers ensures that enough aphids will survive to reproduce.

Red Milkweed Beetle

Tetraopes tetrophthalmus



Description

"Peent!" is what you may hear if you find this longhorn beetle. They make this defensive sound by forcing air through small breathing holes in their sides called spiracles. They may see you coming, as their eyes split above and below the base of their long antennae, giving them top and bottom views. This species eats a characteristic "U" shaped notch out of the end of leaves. They spend their entire lives on the milkweed plant. In the spring and summer adults roam to feed and mate. In the winter, they are burrowed into the roots as larvae.

Survival Strategies



Toxicity: Are you noticing a pattern? This is another animal that uses milkweed toxins to ward off predators. This is a common "arms race" in insects and plants. How will milkweed evolve to combat all these insects chewing on it?



Warning Coloration: Rather than trying to blend in to avoid predation, these brightly-colored insects say "don't eat me!" with their red exoskeleton.

Ladybug

Harmonia axyridis



Description

You can find every life stage of ladybug on milkweed. Small pale yellow eggs hatch into spiny, alligator-like larvae. Then, a hunched pupae emerges to a half-domed adult beetle. The larvae and adults are predators, feeding on aphids and other soft bodied insects. Really, they will eat whatever they can fit in their jaws. There are a handful of species native to the North-east U.S., but you are most likely to see the non-native *Harmonia axyridis*. Keep an eye out for the native ladybugs: the parenthesis ladybeetle (*Hippodamia parenthesis*), the pink-spotted ladybeetle (*Coleomegilla maculata*), and the fourteen-spotted ladybug (*Propylea quatuordecimpunctata*) to name a few.

Survival Strategies



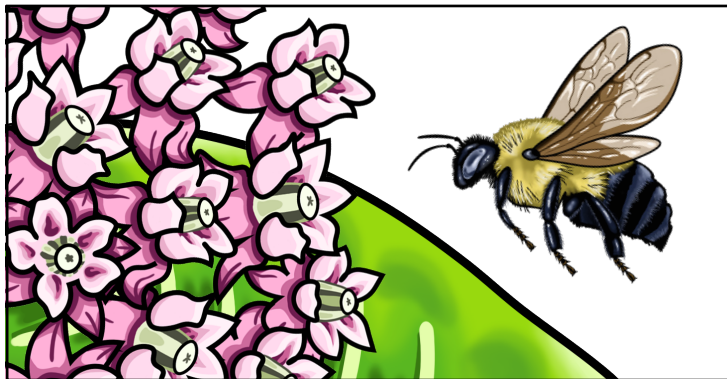
Predator: Adult ladybugs have powerful jaws to bite their prey as well as any threat.



Warning Coloration: Ladybugs make their own chemical defense, releasing a smelly and bad-tasting liquid if threatened. They are nice enough to warn potential predators with their bright red and black shell beforehand.

Two-spotted Bumble Bee

Bombus bimaculatus



Description

Bumble bees are important pollinators. Find them on flowers gathering pollen and nectar to take back to their hive. Bumble bees are social insects, living in colonies consisting of reproductive female queens, female workers, and male drones. Queens typically build their colonies underground in chipmunk burrows or cracks in walls. The two-spotted bumble bee can be distinguished from other bumble bee species by the two yellow spots on the back of its abdomen.

Survival Strategies



Fight back: A bumble bee stinger injects venom in an attacker, causing a painful welt. Only females have stingers, but they are smooth which allows them to sting repeatedly.



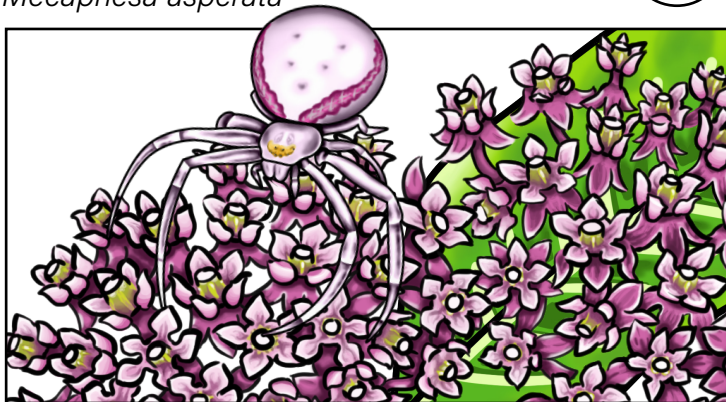
Cooperation: A bumble bee colony has hundreds of bees that work together. If some go out to forage and do not make it back, the colony will continue to survive.



Warning Coloration: A bee's yellow and black stripes warn potential predators that they can sting

Northern Crab Spider


Mecaphesa asperata




Description

Spiders are arachnids, more closely related to scorpions and ticks than insects. One type of spider you may find on milkweed is the crab spider, named for its crab-like appearance and behavior. These eight-legged carnivores can make silk, but do not spin webs. Rather, they sit and wait for their food to come to them. Having patience pays off when an unsuspecting fly or bee comes within reach of its front legs, which quickly snap around the prey. Once restrained, the crab spider will inflict a venomous bite and begin to feed. Like a crab, they can crawl side-to-side.

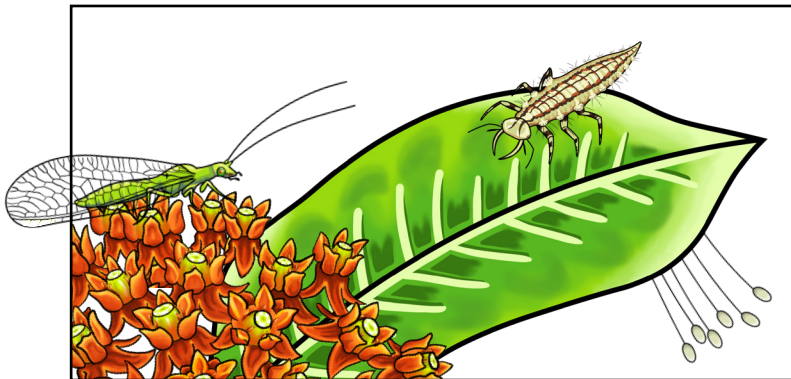
Survival Strategies

 **Predator:** With quick reflexes and long front legs, crab spiders can take down insects larger than themselves. Watch out!

 **Camouflage:** The crab spider hunts hidden in plain sight, modifying their color to blend in with the flower of the plants they occupy.

Green Lacewing

Chrysopa oculata



Description

The Green Lacewing is named for their beautifully netted adult wings. They are often released by humans as a biocontrol agent. This means they help gardeners by eating small soft-bodied insects like aphids, which can harm plants when there are many of them. You will more likely encounter the lacewing as larvae, crawling around the plant grazing for food. They are spiny and have large, pincer-like mouth parts for holding their prey. Lacewings lay their eggs on stils- hanging down from a stiff, hair-like thread that holds them out of reach of egg-eating predators.

Survival Strategies



Predator: Lacewings are aggressive hunters, eating any animal small and soft enough.



Nocturnal: Adults are active at dusk, night, and dawn. They have superior hearing, taking shelter upon hearing ultrasonic bat calls.

Glossary

Carnivore: a meat-eating plant or animal

Coevolution: the process in which two species influence each other's evolution from interacting over millions of years

Community: a population of two or more species in a geographic area

Evolution: the process in which a species in a population changes from heritable characteristics over many generations

Herbivore: a plant-eating plant or animal

Pollinator: an animal that moves pollen from flower to flower, usually from its feeding behavior

Predator: an animal that hunts other animal to eat

Prey: an animal that is hunted by another animal

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