

The Intriguing World of Carnivorous Plants

Plants that “eat” insects — few adaptations amaze young gardeners as thoroughly as those developed by carnivorous plants. Evolved to inhabit in boggy conditions, these fascinating plants gather their nutrients from other living organisms. They turned the tables, because it’s usually the other way around — insects and animals eating plants!



Carnivorous plants colonize a specific ecological niche: They grow in wetlands where soil nutrient levels are extremely low because of acidic conditions, high water content, and low oxygen levels, all of which all lead to very slow decomposition of organic matter — and therefore slow release of its nutrients.

So, unlike most terrestrial plants that take up nutrients from the soil via their roots, carnivorous plants evolved a different strategy. They capture insect and animal life forms, decompose the bodies, and then absorb the nutrients as they’re released.

The most common prey of carnivorous plants are small insects, including gnats, flies, bees, moths, beetles and ants; however, animals as large as frogs and small rodents have been found in their traps (though very rare). Will carnivorous plants devour humans? Don’t worry, scientists have yet to discover a plant species with the size to accomplish such a feat!

Luring Their Prey

Carnivorous plants use a variety of strategies to lure insects to their traps.

Color. Some use pigmentation patterns, which may only be visible to their prey’s ultraviolet vision. There may be guide hairs to direct the insect to the trap.

Scent. Some give off odors attractive to their prey, such as a honey scent or fungal odor.

Nectar. Usually found in flowers to lure insects to help with pollination, nectar produced by carnivorous plants allows prey one last sweet treat before it becomes entrapped.

The insects arrive with the promise of a tasty meal and soon realize they are the ones on the menu.

The Traps: From Simple to Sophisticated

Once the carnivorous plant has seduced its prey to come into contact, the next step is capturing it, and this is where some of the most interesting and incredible adaptations are found.

Common trapping techniques are pitfall traps, flypaper traps, snapping traps, and suction traps. The first two use adaptations that

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involve shape and sticky surfaces. The last two are particularly fascinating, because the presence of prey triggers the plant to take action — to move, quickly! — to ensnare the hapless creature.

Pitfall Traps. Plants have tube-shaped leaves which serve as pits of doom for insects. Once they enter, they cannot fly or crawl back out. Pitfall traps usually have slippery sides that are covered with downward facing hairs or growths. At the bottom of the tube the insect drowns. Examples include pitcher plants.

Flypaper Traps. Plants have sticky or gooey surfaces that keep insects from leaving. Examples include sundews and butterworts.

Snapping Traps. Plants have leaves that enclose prey when a trigger is activated. Examples include the Venus flytrap and waterwheel plant.

Suction Traps. Plants have a trap door mechanism that springs open when triggered and sucks the insect into sac-shaped parts then closes behind them. Example is a bladderwort.

Extracting the Nutrients

Once insects are trapped, the plants release enzymes to initiate the decomposition process. In addition to these enzymes, “digestion” of the insects may also occur through symbiotic relationships with other organisms. In some cases, bacteria may be present to help the plant break down the insect.

Other insects may also help with the prey’s demise. There are some insects that are immune to the traps of the carnivorous plants, and they scavenge the plant’s surface for the trapped insects. As these predator insects eat the smorgasbord laid out by the carnivorous plant, they leave behind their excrement. The carnivorous plants then break down and use the nutrients from the predator insect’s poop — rather than from the trapped insects directly.

Carnivorous Plants Around the World

There are approximately 650 different species of carnivorous plants worldwide and they can be found living in every state in the US and on every continent except Antarctica. In general they are slow growers and very particular about their growing conditions, requiring full sun, plenty of water, high humidity, and moderate to warm temperatures.

While carnivorous plants pose no danger to humans, humans pose grave threats to the survival of many carnivorous plant species, with some species in danger of becoming extinct.

- The wetlands habitat carnivorous plants require is shrinking due to land development for housing and farming. Since they are not easily transplanted into new environments, when their natural habitat is gone, their wild populations will also disappear. Carnivorous plants have the advantage in poor soils, but in areas with normal soil conditions, non-carnivorous plants (both native and invasive species) will out compete carnivorous for space and resources.

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- Over-collection of wild populations. Some individual and professional growers obtain their stock from the wild in spite of laws and regulations limiting and in some cases prohibiting collection.
- Pollution of habitats. In addition to the shrinking size of their habitats, pollution of the land and water by pesticides and fertilizers is further reducing carnivorous plant populations.

Protection of these unique plant species is vital to protect the natural biodiversity of the plant kingdom.

Growing Carnivorous Plants

Raising these plants outside of their native environment is tricky, and growing them in a classroom or other indoor location is especially challenging. They have different requirements than most houseplants or seedlings. If you decide to try to grow carnivorous plants in your classroom, don't be disappointed if they do not survive — even experts find it challenging.

That said, here are a few tips to get you started.

- Learn about the particular needs of the species you are growing. Books, websites, and experts from botanical gardens and nature preserves can be of great help.
- You'll need to select the proper soil, water, light, humidity, temperature, and fertilizer for the species.
- In the wild, most carnivorous plants grow in full sun. Indoors, you'll need to provide bright, supplemental light. A windowsill won't suffice.
- Keep in mind that carnivorous plants are native to wetlands. That means they require consistently moist — even wet! — soil. Most houseplants and seedlings prefer slightly moist soil and would drown in such wet soils.
- Regular tap water may contain substances, such as fluorine, that can be harmful to carnivorous plants. Use only purified or distilled water.
- The plants need high humidity — hard to achieve with central heating and air conditioning. Growing them in a terrarium is one way to increase and maintain a humid micro-environment for them.
- When purchasing carnivorous plants, do so only from a supplier that propagates the plants and does not poach them from the wild.

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