

Young
Naturalists

Sounds like science fiction, but it's true!

PLANTS That Eat ANIMALS

BY LARRY WEBER

CLAUDIA ADAMS, DEMBINSKY PHOTO ASSOCIATES

Drosera rotundifolia
round-leaved sundew

A plant can eat an animal?

When you think about animal-eating plants, don't imagine a giant vine that could entangle your dog or a gargantuan tropical tree that could devour an unlucky explorer. Instead, these plants are typically small, and their prey are small insects. Hundreds of species of insectivorous plants (sometimes called carnivorous plants) live throughout the world; 13 species grow in Minnesota.

Why would a plant eat an animal? Most plants take up nutrients from the soil. But insect-eating plants grow in nutrient-poor soils, usually in swamps and bogs. To get nitrogen and other nutrients, they have developed ways of catching and eating nutritious insects.

To many people, the first insect-eating plant that comes to mind is the Venus' flytrap, which is native to the swamps of the southeastern United States, but is often grown as a houseplant. The plant's trap is its two leaves, which open like a clamshell. The moment an insect touches the triggers of the shiny leaves, the trap slams shut. Though less dramatic, Minnesota's insect-eating plants also use traps.

Minnesota's insectivorous plants fall into four groups: pitcher-plant (one species), sundew (four species), butterwort (one species), and bladderwort (seven species). The pitcher-plant captures its prey in a hollow leaf, which is like a pit. Sundew and butterwort plants trap insects with their sticky leaves. Bladderworts catch small insects in tiny bags with trap doors.

FLOWERS:

Pinguicula vulgaris, **butterwort**



GARY MESZAROS
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Utricularia cornuta, **horned bladderwort**



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Drosera intermedia, **spatulate-leaved sundew**



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SKIP MOODY, DEMBINSKY PHOTO ASSOCIATES

Sarracenia purpurea
pitcher-plant flowers

Pitcher-Plant

Minnesota's biggest insect-catching plant is the pitcher-plant (*Sarracenia purpurea*). It stands up to 2 feet tall. It grows mostly in bogs and swamps in northeastern and north-central Minnesota.

Each pitcher-plant has a long, smooth stalk with a single huge flower, which blooms in June and July. Large maroon petals surround an umbrella-shaped pistil.

Tube-shaped, hollow, 8-inch leaves around the stem look like pitchers. Each has a wide open mouth below a droopy hood. Beginning in May, the plant produces five or six new leaves, with one leaf opening about every 15 days. The leaves mature by the end of the summer and survive the winter and perhaps the next summer.

The leaf holds water. Around the hood and mouth, nectar glands attract insects. Once on the leaf, the creature crawls into the pitcher. Downward-pointed hairs and a slippery surface force it to keep going down until it reaches the water. Unable to climb out, it drowns.

The pitcher leaf is home to very small critters, including protozoans, nematodes, aquatic mites, and tiny freshwater crustaceans. Also living here are the larvae of three insect species: the flesh fly (*Blaesoxipha fletcheri*), the pitcher-plant mosquito (*Wyeomyia smithii*), and a midge (*Metriocnemus knabi*). Along with bacteria, these three species digest the captured insects, making their nutrients available to the plant. Supported by the pitcher's catch, the fly, mosquito, and midge grow up and fly away as adults. The adult insects lay eggs in new leaves. By early summer old leaves have lost their insect digesters.

DOUG LOCKE, DEMBINSKY PHOTO ASSOCIATES

pitcher-plant
leaves



SKIP MOODY, DEMBINSKY PHOTO ASSOCIATES

hairs

ROD PLANCK, DEMBINSKY PHOTO ASSOCIATES



water trap

Sundew

Also quite well-known is the small sundew. Four species grow in sphagnum bogs and along lakes of northeastern and north-central coniferous forests. The most common is the round-leaved sundew (*Drosera rotundifolia*).

From the top, a sundew looks like a reddish blob, about 2 to 4 inches wide. Its round, flat leaves, each on a little stalk, are red and hairy above and green below. A 4-inch-long stem rises from the rosette of leaves. Tiny white flowers bloom in July and August; they open only in the full sunlight of midday.

Like the pitcher-plant, the sundew uses its leaves to lure and trap prey. Many thin spines or hairs grow atop the leaves. The tip of each spine holds a drop of glue. Looking like dew or sweet-tasting nectar, these drops tantalize insects, especially mosquitoes, midges, gnats, flies, and other members of the Diptera order. When an insect lands on a drop, it gets stuck. As the victim struggles to get free, it brushes against other sticky spines, which bend over to help hold down the critter.

Hopelessly stuck, the insect finally gives up fighting. The spines ooze juices full of enzymes that dissolve and digest the insect. Often the entire leaf slowly folds around the meal. Within two days the sundew has absorbed the insect's nutritious fluids. Its deadly leaf opens, and leftover bits of insect exoskeleton float away in the breeze.

FRITZ POLKING, DEMBINSKY PHOTO ASSOCIATES



close-up of spines

damselfly in distress on spatulate-leaved sundew

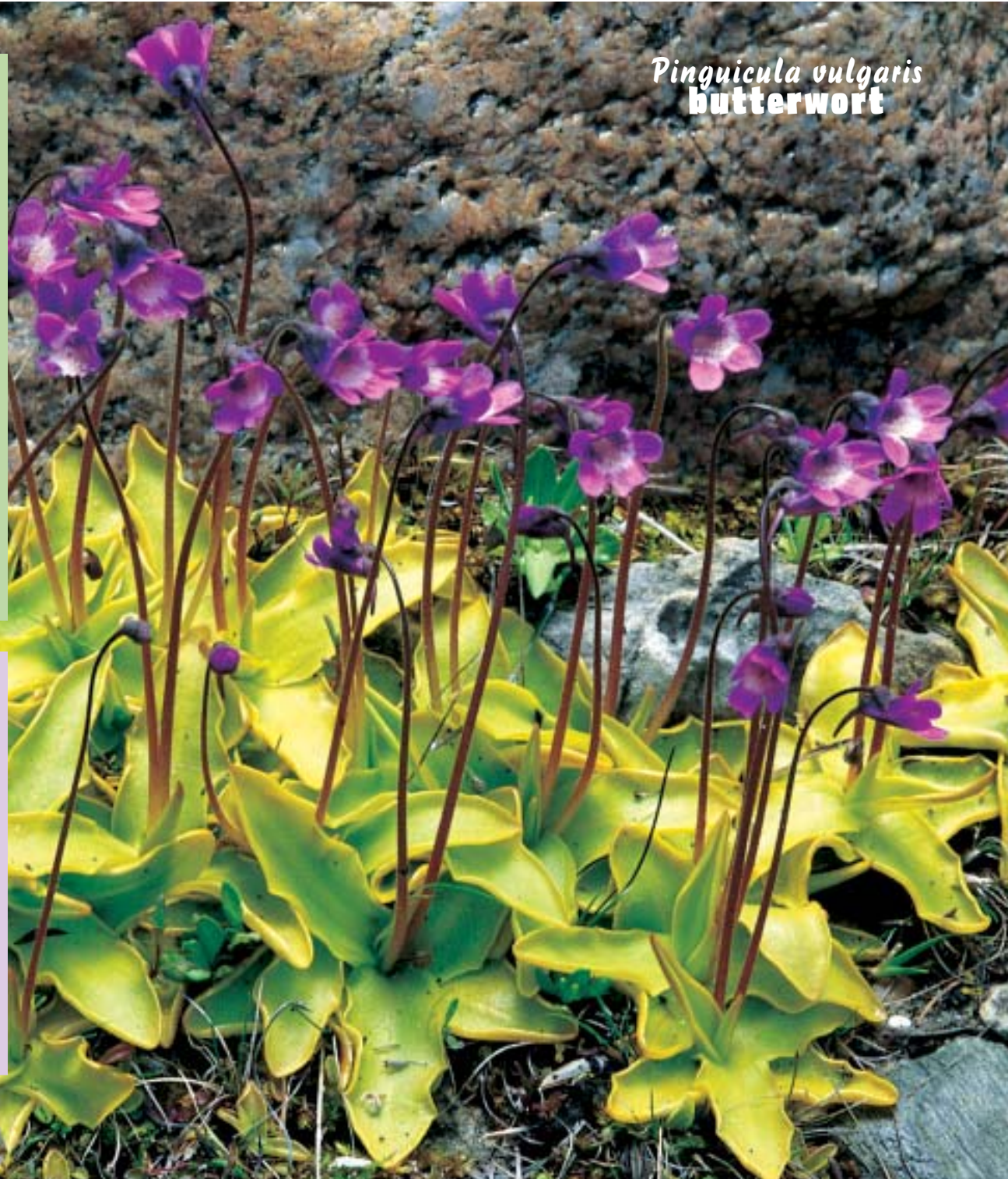
Butterwort

Butterwort (*Pinguicula vulgaris*) is actually the most uncommon of our bug-catching plants. In Minnesota, it lives only in rocky cracks along the North Shore of Lake Superior.

Also known as violet butterwort, it has a rich purple trumpet-shaped flower, which blooms in May and June.

Butterwort takes its name from leaves that look greasy, as if smeared with butter. Three to six leaves grow in a rosette on the ground. A close look reveals that the leaf has two kinds of glands. Raised mucilage glands produce sticky, buttery fluid. Sessile glands supply digestive fluids and absorb food. Together, the glands give off an odor that lures flies, aphids, and springtails onto the sticky trap. Once stuck, the insect's frantic struggle stimulates more gland action, and its fate is sealed. Slowly, the leaf edges curl up and the plant digests the insect.

Pinguicula vulgaris
butterwort



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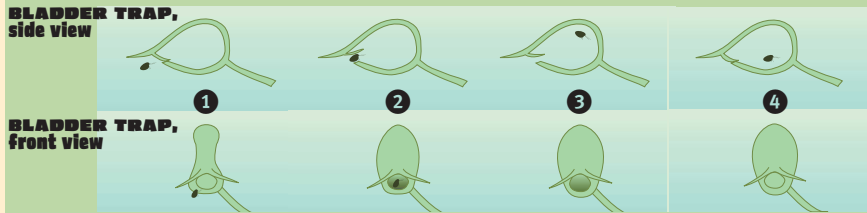
close-up

Bladderwort

Seven species of bladderworts have been found in Minnesota. Greater bladderwort (*Utricularia vulgaris*) grows throughout the state. The other species, including two rare ones, grow only in the north.

Look for greater bladderworts in ponds, lakes, and slow-moving streams, usually in water less than 2 feet deep. This rootless plant floats on or near the water surface. Plant branches grow 3 feet or longer with leafy stems. Stalks rise up to 8 inches above the water and hold a loose cluster of yellow flowers. Blooming between June and August, the ½-inch blossoms resemble snapdragons.

Underwater stems branch out and sprout many threadlike leaves. The leaves hold small, buoyant sacs, called *bladders*. Clear young bladders darken as they age. Only ¼-inch long, each bladder is really a tiny, hollow trap with a one-way door. If a tiny aquatic insect ❶ touches one of the bladder's four trigger hairs, the trapdoor opens ❷. Like a vacuum, the bladder quickly sucks in the insect ❸, and the door slams shut in a flash ❹—perhaps only 15-thousandths of a second!



Glands armed with enzymes digest and absorb the trapped prey. After an hour or two, the bladder is ready for another catch. ❶

Carnivorous Plants in State Parks

| | Pitcher-Plant | Sundew | Butterwort | Bladderwort |
|------------------|---------------|--------|------------|-------------|
| Itasca | X | X | | X |
| Lake Bemidji | X | X | | X |
| Mille Lacs | X | X | | X |
| Temperance River | | X | X | |
| Scenic | X | X | | X |

To find out more about these and other state parks, contact the DNR Information Center, listed on page 63.

E.R. DEGINGER, DEMBINSKY PHOTO ASSOCIATES



above-water flowers

BARBARA GERLACH, DEMBINSKY PHOTO ASSOCIATES

underwater bladders close-up