BEWARE THE SAVAGE SUNDEW

If you're an insect, that is. Also watch out for bladderworts and Montana's other carnivorous plants. **By Ellen Horowitz**

Though swarms of mosquitoes hovered around my head and whined in my ears, I had no choice but to keep going. I wanted to locate one of Montana's seldom-seen and little-known carnivores, and that required walking through this insect-infested meadow. With each carefully placed step, I scanned the spongy, sphagnum moss–covered ground. Then I saw it—a mat of dark red vegetation. Easing down onto my hands and knees, and peering closely, I could see glimmering crimson tentacles embracing the limp remains of mosquitoes.

I was face to face with a roundleaf sundew, one of Montana's carnivorous plants.

Most plants draw their nutrients from soil. Carnivorous plants obtain all or most of theirs by consuming insects, spiders, and other arthropods. Perhaps because they upend the natural order of things—in which animals are supposed to eat vegetation and not the other way around—carnivorous plants are fascinating to botanists and popular with collectors. So biologically sophisticated is the well-known Venus flytrap that Charles Darwin once described it as "the most wonderful plant in the world."

Most of the roughly 750 carnivorous plants worldwide grow only in tropical and subtropical climates. Yet a handful are native to colder regions as far north as Alaska. Montana is home to eight: three species of sundews, one species of butterwort, and four species of bladderworts. The bladderworts are aquatic plants, while the sundew and butterwort grow in nutrient-deficient environments such as bogs (a type of northern wetland covered in sphagnum moss) and fens (bogs with underground springs). The plants evolved to compensate for the lack of nutrients in the cold, acidic soil by eating small creatures—mostly insects and other invertebrates.

Montana is well known for its large carnivores—wolves, mountain lions, Canada lynx, and more—but only a handful of people (readers of this article now among them) are aware that tiny vegetative meat eaters also lurk in many parts of the state.

ROUNDLEAF SUNDEW
Drosera rotundifolia

SUNDEWS

The Venus flytrap—native only to North and South Carolina—might be the most famous carnivorous plant, but Montana's sundews are no less remarkable. Both plants belong to the Droxeraceae family, but that's where the similarity ends. Each employs a different ruse for capturing prey.

The most common of the state's three sundew species is the small, delicate roundleaf. Its leaves are the size of shirt collar buttons and attach to slender stems arranged in a rosette along the ground. From each leaf extend dozens of glistening, red tentacle-like appendages. Each tentacle supports a drop of a thick, clear, glue-like substance called mucilage. The drops sparkle in sunlight like morning dew, giving the plant its common name.

Lured by the vivid red color or the dew drops' sweet secretions, a mosquito or other small insect stopping here goes no farther.

ENGLISH SUNDEW
Drosera anglica

LEFT TO RIGHT: DEE LINNELL BLANK; JOHN WINNIE JR.

COMMON BLADDERWORT
Utricularia macrorhiza

Common bladderwort poking above the water surface of a small lake near Whitefish

The bug's frantic struggle to escape the sticky droplet proves futile. Long stalked glands—the tentacles—slowly roll inward, releasing more glue and securing the prey in the center of the leaf, which secretes acids that eventually decompose the prey. The insect suffocates in less than 15 minutes, but it may take several days for the leaf to absorb the bug juice nourishment. As the tentacles resume their upright stance, the insect's empty shell blows away, erasing evidence of the plant's previous deed. The ravenous beauty then awaits its next meal.

In Montana, sundews typically grow among mosses in mountain fens from the state's northwestern corner southeast to the Beartooth Plateau. Montana's two other sundews, the English and the linearleaf (or slenderleaf)—both listed as state species of concern—lure, capture, and digest their prey in much the same way.

BLADDERWORTS

All carnivorous plant species in Montana produce flowers, but the blossoms of bladderworts are the most conspicuous. Beginning in late June, stalks bearing bright yellow snapdragon-like flowers protrude 2 to 8 inches above the surface of shallow lakes, ponds, and backwater sloughs in major river drainages, marshes, and fens. Beneath the surface, bladderworts grow feathery branches and miniature bladder-shaped trapping mechanisms.

All four species (greater, lesser, northern, and flatleaf, the latter two state species of concern) are found in western Montana. The range of the greater bladderwort also extends into wet areas in the state's central

CLOCKWISE FROM LEFT: DEE LINNELL BLANK; DEE LINNELL BLANK; SHUTTERSTOCK

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DON'T TREAD ON THEM

Despite their ferocity to unsuspecting insects, carnivorous plants are delicate species that people can trample and kill. Seek out these plants for viewing, but do so cautiously. In fens and bogs, watch your step to be sure you're not crushing sundews underfoot. In Glacier National Park, where butterworts are found, it's better to view them through binoculars rather than stomp over mosses where the fragile plants grow. Spot their elegant lavender flowers in bloom, from about mid-July to late August, on wet, moss-covered roadside cliffs. Bladderworts, safe in the water, are the least susceptible to inadvertent trampling. ■

BUTTERWORT
Pinguicula vulgaris

and northeastern regions.

Instead of using a sticky secretion to capture prey, the bladderwort employs sophisticated vacuum-driven traps. The bladders range in size from this letter "O" to about ⅛ inch long. The sides remain compressed until a passing water flea, insect larvae, fish fry, or newly hatched tadpole brushes against a "trigger hair" at the mouth of the trap. The bladder then pops open, sucking in water and prey and snapping closed in a millisecond. There's no escape.

To consume larger prey such as baby tadpoles, the plant shuts the bladder door tightly around the animal's body before releasing digestive enzymes and digesting what's captured inside. The trap then resets. When another passerby trips a trigger hair, the door opens and the next portion of the tadpole is sucked in to be consumed. This continues until the prey is gone. The harmless-looking bladder then releases water, and the bladderwort awaits its next meal.

WHEN THE LEAVES UNFURL, SUMMER BREEZES WHISK AWAY THE VICTIMS' HOLLOW REMAINS, AND THE PLANT RESUMES ITS DECEPTIVELY INNOCENT APPEARANCE.

BUTTERWORT

Observing this final member of the state's carnivorous plant club requires a visit to Glacier National Park, the only place in Montana where butterworts have been found. Among subalpine mossy seeps and moss-covered ledges grow rosettes of 2-inch-long yellowish-green leaves. In July and August a stem emerges topped by a five-petal, funnel-shaped lavender flower.

The butterwort's genus name, *Pinguicula*, derives from the Latin *pinguis*, meaning "fat," and refers to the greasy (or buttery) feel of the leaves. "Wort" comes from the Old English word *wyrt* and simply means "plant." Thousands of minute glands cover the upper surface of the butterwort's slimy leaf, some producing the tacky mucilage and others secreting tissue-dissolving enzymes.

Like sundews, the butterwort lures a prey insect to its death. Mistaking the mucilage for water or nectar, gnats and other flies landing on a leaf become stuck. Slowly the leaf edges curl inward, forming a trough that pours more glue over the hapless victim and digestive secretions that dissolve it into insect stew. Consumption of the resulting nutrient-rich goo takes two to three days. When the leaves unfurl, summer breezes whisk away the victims' hollow remains, and the plant resumes its deceptively innocent appearance.

Part of the intrigue of searching for bladderworts, butterworts, and sundews is that they're botanical oddballs. They're a challenge to locate, but sighting one of these little-known carnivores doling out their version of plant kingdom justice always brings a smile to my bug-bitten face.

The sticky geranium, recently found to be semicarnivorous

LEFT TO RIGHT: DEE LINNELL BLANK; CAROL POLICH

MORE THAN PREVIOUSLY BELIEVED

Until publication of Charles Darwin's *Insectivorous Plants* in 1875, most botanists refused to believe that plants could eat animals. Now it appears that even more plant species exhibit carnivorous behavior than even Darwin himself imagined.

Research conducted at the University of Idaho shows that several plants with sticky hairs covering their leaves can trap insects and absorb and digest the nutrients to supplement those they draw from soil.

The sticky geranium is one. The beautiful purple-pink plants are a common sight in Montana grasslands during spring and early summer. Less obvious are the tiny glandular hairs covering the sticky geranium's leaves, which feel tacky to the touch. While the hairs defend the plant against any insect searching for a leafy meal—probably their main purpose—they also help turn some potential diners into dinner. A hungry insect alighting on a geranium leaf could suddenly find itself ensnared and slowly converted into food.

Because it derives most of its nutrients from soil, the sticky geranium isn't considered a fully carnivorous plant but it does offer another example of how some plants contend with the first law of nature: "Eat or be eaten."