

Certainly you have seen low budget sci-fi thrillers where a huge plant runs amok, eating people and other animals in its path before it is brought under control in the end by the movie's hero and heroine. Or perhaps you've seen the play *Little Shop of Horrors*. While these theatrical producers have greatly exaggerated the ability of plants to eat animals, the premise is based on fact, and we have on Long Island nearly a dozen carnivorous plants belonging to three distinct groups to prove it.

But you can relax; neither you nor your pet is likely to become a statistic anytime soon. The overwhelming source of animal protein for these plants is derived from insects and other small invertebrates.

In general carnivorous plants employ one of five strategies to catch prey: pitfall traps, flypaper traps, suction traps, snap traps, and lobster-pot traps. The three groups of carnivorous plants native to Long Island—pitcher plants, sundews, and bladderworts—are examples of pitfall, flypaper, and suction traps, respectively.

The pitcher plant, also known as soldier's drinking cup, is a wetland-loving plant that belongs to a family containing eight species common to the southeastern United States (where its close cousin, the trumpets, occur). On Long Island it grows primarily in the acid bogs of the Pine Barrens dominated by sphagnum moss and leatherleaf.

Pitcher plant has several features that enable it to successfully trap prey. It all begins with the pitcher, the basis for the plant's name, a rosette of distinctive eight-inch pitcher-shaped leaves which collect rainwater. Near the top of the pitcher, at the point where it constricts, is a ring of nectar-exuding cells which serve as the main attraction for various insect species. Reaching for the nectar drops, insects can lose their footing in this zone and slip into the next zone dominated by hundreds of minute, downward pointing hairs. These hairs make it virtually impossible for insects that have flown or fallen in to walk upward along the pitcher's surface to freedom. After struggling for awhile, the hapless insect falls into the water and eventually drowns. The plant then exudes digestive juices from special cells in its leaves and digests the inner, soft parts of its prey. The chitinous exoskeleton,



22-1. Thread-leaved sundews, one of three native sundews found on Long Island, in bloom (L).

22-2. Looking into a pitcher plant (R).

all that is left, sinks to the bottom of the pitcher. Surprisingly, there is at least one mosquito and fly species each that lay their eggs in the water of the pitcher plant; the larvae that hatch produce a chemical to counter the plant's digestive enzymes, thus gaining immunity.

Blooming in late June or early July, the five-petaled flower of the pitcher plant is as distinctive as the leaves. Usually produced singly, it is large (two inches across), burgundy in color and grows on a smooth, leafless stalk, a foot or two high, that bends at the top so the flowers hangs pendently. Bumblebees are the main pollinating agents of the flowers.

Sundews employ a different tactic. As their name suggests, their leaves are covered with gland-tipped hairs that exude a sticky dewlike substance (the genus name, *Drosera*, means “dewy” in Greek). Insects caught by these hairs fight to escape, a strategy that often backfires since adjacent hairs sense movement and respond by helping to hold the struggling animal. The trapped animal is then broken down by digestive enzymes secreted by the glands.

Three species of sundews are found on Long Island: the round-leaved, spatulate (or intermediate-leaved), and the thread-leaved, the rarest of the group. They are easy to tell apart based on the shape of their leaves. Seven species are native to North America and approxi-

mately 136 species have been described worldwide, including one in South Africa, *Drosera regia*, possessing leaves that can be a meter long.

Sundews usually produce a single flowering stalk that emerges from the middle of a rosette of leaves. The stalk produces about six five-petaled flowers that only open in sunshine. In the thread-leaved sundew, the flowers are purple. They range from white to pink in the other two species.

Sundews prefer wet, sandy, acid habitats where the water table is close to the surface. Because of these specific habitat requirements, the three sundews have a restricted distribution on Long Island. They are most common along the edges of ponds and in open, sandy bog situations, often growing in association with cranberries, clubmosses, and a variety of wildflowers, sedges, and rushes.

Bladderworts, the largest and most diverse group of carnivorous plants with more than 200 known species, grow "below" the sundews in standing water along the shallow edges of the pond shore. There are half a dozen or so species native to Long Island, and all but one, which has purple blossoms, have distinctive bright yellow flowers. The flowers of all species have two prominent lips, an upper and a larger lower one which looks like the bottom lip of a pouting child. Bladderworts can be common in the proper habitat, and the blooming of hundreds or thousands of their flowers adds a showy splash of color to the pondshore.

Bladderworts feed upon small animals, primarily tiny aquatic crustaceans. Each plant contains dozens and sometimes hundreds of tiny bladders in the floating, filamentous leaves that hold the plant up. Each bladder has a trap door which opens inward in response to pressure or movement. If the pressure is caused by an animal, it is drawn in and digested. The genus name, *Utricularia*, means small bottle, referring to the entrapping bladders of this interesting group of plants.

The Venus fly-trap, perhaps the most well-known of the insectivorous plants, captures prey by very rapidly closing two pads which have interlocking marginal thorns. It is not native to Long Island, but is found in suitable wetland environments in southeastern North Carolina and coastal South Carolina.

Coastal Plain Pondshores

The bladderworts and sundews discussed here are part of a natural community which has recently been recognized by ecologists as something special: a coastal plain pondshore.

Many ponds on Long Island are fairly deep, having been formed in glacial basins with typically steep sides. In these ponds a rise or drop in the water table causes little change in the position of the pond shore. Not so with a coastal plain pond which is characteristically shallow; here a foot or two difference in elevation results in a significant change in the amount of shoreline area exposed or inundated. As a result, these shorelines have proven to be dynamic places with species composition changing from year to year, depending on water levels.

These pond shores have been identified as one of the most ecologically significant habitats on Long Island and in New York State. More than two dozen rare plants and animals have been found in these pond shore communities. Several are globally rare, such as quill-leaved arrowhead and drowned beak-rush. More common constituents of these communities, in addition to the carnivorous plants previously discussed, include golden hedge-hyssop, comb-leaved mermaid weed, marsh St Johnswort and rose coreopsis.

The pond shore environment is very fragile and is highly susceptible to trampling by hikers, horses, and the scourge and bane of natural areas, the ubiquitous All Terrain Vehicle. Robert Cushman Murphy County Park in Manorville has the greatest concentration of coastal plain ponds on Long Island.

Where: PITCHER PLANTS, SUNDEWS, and BLADDERWORTS are found in a variety of places on Long Island, but given the difference in habitat requirements between pitcher plants and the other two, they rarely grow together or in close proximity. Please note that these plants are protected by law and PICKING IS STRICTLY FORBIDDEN.

For PITCHER PLANTS:

Quogue Wildlife Refuge—some plants grow on the west side of the pond adjacent to the boardwalk that crosses over the pond. Cranberry Bog County Nature Preserve—pitcher plants grow in several areas in the park, particularly along the edges of the former cranberry bogs.

For SUNDEWS and BLADDERWORTS:

- Robert C. Murphy County Park—there are several areas in this park where these two groups of plants grow, either

by themselves or together, including: along the eastern edge of the cranberry bogs stretching south of River Road; along the edges of Fox and Sandy Ponds accessed off Line Road or • Old River Road. (Some of this area is owned by The Nature Conservancy, and you will need to gain permission; call the Long Island chapter at 516 367-3225); along the pond shores in the northern reaches of the Park including Sandy (not the same Sandy Pond as the one near Line Road), Peasy's, Woodchopper's, Round, and Horn Ponds.

- Cranberry Bog County Nature Preserve—both species occur along the edge of Swezey's Pond; sundews are also found in the low-lying woodland adjacent to the pond.

- Napeague State Park—sundews grow in the linear cranberry bogs situated in the southern part of the park, north of Montauk Highway.

When: PITCHER PLANTS: the pitcher-shaped leaves can be seen year round (when not covered by ice or snow); the flowers bloom from late June through early to mid-July.

SUNDEWS and BLADDERWORTS: sundew leaves are visible most of the year. Bladderworts are only recognizable when flowering. Both bloom in early to mid-July.