

Carnivorous Plants

Presented by **Terre Golembiewski**
at the **2007 BCW Annual Meeting**

Report by *Theodore Cochrane*

The scientific program of the afternoon was illustrated with living plants and microscope preparations. There are approximately 600 carnivorous plant species in the world, living in such nutrient-poor habitats as northern sphagnum bogs, acidic sands of southeastern pine flatwoods and cypress savannas, and as epiphytes in tropical rainforests. They trap and kill animal prey, such as insects, protozoans, and spiders, from which they obtain nutrients. This ability, supplemented by their capacity to make energy stores by photosynthesis, makes them highly competitive in nutrient-poor habitats.



Ted Cochrane, Larry Leitner, and Barbara Cochrane examine carnivorous plants (Photo by Tom Underwood)

trapped insect struggles, the leaf secretes a mucus-like digestive substance. There are about 90 butterworts (*Pinguicula* spp.) in the world, six of which occur in the U.S., one of these in Wisconsin. The sticky surface of the rosette of leaves catches and digests small insects. Bladderworts (*Utricularia* spp.) are the most numerous of the carnivorous plants. There are 220 species in the world, 19 in the U.S., and eight in Wisconsin. The submerged leaves bear tiny bladders. Each bladder

has a flap of tissue covered with trigger hairs. When triggered by a swimming protozoan, the flap opens, the water pressure inside the bladder changes, and the insect is sucked inside. The flap closes again, trapping the insect, which is digested by enzymes and bacteria. There is just one species



Merel Black and Terre Golembiewski (Photo by Tom Underwood)

of the endangered Venus's flytrap (*Dionaea muscipula*), the native range of which is within 75 landward miles of Wilmington, N.C. Its method of trapping insects is very different. The leaves have stout, comb-like cilia along the edge and trigger hairs on the inner surface. When an insect touches two trigger hairs or one trigger hair twice, the two halves snap shut, trapping it. The struggles of the insect stimulate the leaf to secrete digestive enzymes.

About five genera of carnivorous plants are called pitcher plants. *Nepenthes* has about 100 species and occurs in the Old World tropics. *Darlingtonia californica* occurs in California and Oregon. All eight species of *Sarracenia* are restricted to the coastal states of the southeastern U.S. except for *S. purpurea*, which ranges north to Labrador and west to Manitoba. The leaves are pit-fall or lobster-type traps with hoods to prevent the pitcher from filling with water and waxy inner surfaces coated with downward-pointing hairs (*S. flava* will fill with rain water). The pitchers of some species have translucent "windows" on the back of the hood that aid in attracting insects, which fall into the hollow leaf. Captured insects are drowned and slowly digested by bacterial action and plant-secreted enzymes in a liquid soup. In addition some pitcher plants contain mutualistic insect larvae that feed on trapped prey and the excrement of which the plant also absorbs.