

A NORTHWARD EXTENSION OF PINGUICULA PUMILA MICHX.

by
Jeannie Wilson
Hampton Mariners Museum
N.C. Museum of Natural History
Beaufort, NC 28516

This is a report of a northward siting for the dwarf butterwort, *Pinguicula pumila* Michx. in Carteret County, North Carolina.

On May 23, 1981, Ken Moore, superintendent of the North Carolina Botanical Garden, conducted a field trip to the Croatan National Forest, and had requested that I come along as a local botanist. It turned out to be a very rewarding day as I was pleasantly surprised to see *Pinguicula pumila*. Even though I make regular trips into the Croatan National Forest, I have seen the dwarf butterwort on only two previous occasions in 1977. On this earlier date, fewer than 5 plants were seen at each of two longleaf pine savannah and pocosin ecotones. Jim Snyder (1978) noted that the presence of *Pinguicula pumila* in the Croatan National Forest was a northward range extension. According to the *Manual of the Vascular Flora of the Carolinas*, *Pinguicula pumila* occurs only in Brunswick, New Hanover and Pender Counties to the south in North Carolina.

The typical habitat for *Pinguicula pumila* is wet soils of savannahs and low pinelands of the coastal plain. The range is from North Carolina to eastern Texas. Except in the gulf coast area, it is rare throughout its range.

The best time to look for *Pinguicula pumila* is when it flowers during April and May. The flowers make the plant more conspicuous because the leaves are rather indistinct unless one looks closely. It is not surprising that the plant is easily overlooked.

The group from the Botanical Garden observed about 25 flowering plants in an ecotonal area between a longleaf pine savannah and a pocosin. Several

plants were also located along the roadside ditch. I believe that the wildfire that swept through this area in June of 1980, accounted for the unusual number observed. Frequently, small herbaceous plants, particularly carnivorous plants, will regenerate quickly after a fire. In addition to *Pinguicula pumila*, *Dionaea muscipula*, *Drosera capillaris*, *Sarracenia flava* and *S. purpurea* were numerous and quite vigorous.

This longleaf pine savannah is a site that John Fussell and I wrote an inventory report for the N.C. Natural Heritage Program. We suggested in the management plan that the area be burned every few years to promote many herbaceous species that are dependent on fire. It appears that *Pinguicula pumila* is one of the plants that requires fire for continued survival.

If anyone has seen *Pinguicula pumila* recently, I would be interested in information on the approximate number of plants, location and habitat.

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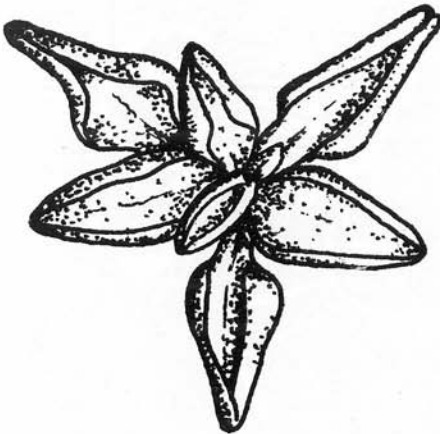
In both cases, active Golgi were found to be located only in those gland cells located at the outer apical areas of the glands. Radioautography revealed intense labeling over the Golgi apparatus, with little incorporation occurring elsewhere. Additionally, the time necessary to achieve good label incorporation was drastically reduced in labeled glands, indicating a marked increase in radio-precursor utilization.

This investigation has resulted in a body of data which firmly establishes morphological criteria characteristic of the various developmental stages. In addition, several new techniques were developed to facilitate study of these glands. The finding of the selective activation of the Golgi apparatus only in the outer apical digestive gland cells is most significant, and indicates a degree of specialization in this species not usually found in higher plants. These, and other findings, are discussed in the context of the universality of the secretory process which may be operative in all eukaryotic cells.

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Pinguicula pumila
Drawing by Ron Fleming