



**ON THE FRINGE**

**NATIVE PLANT SOCIETY OF NORTHEASTERN OHIO**

Founding Chapter of

THE OHIO NATIVE PLANT SOCIETY

Thomas A. Sampliner, Local President and Editor

2651 Kerwick Road

University Hts., Ohio 44118

(216) 321-3702

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**FROM THE EDITOR**

**At the State Level**

By separate mailing each of you will receive details of the previously announced annual dinner on Saturday, November 16th. Cocktail hour beginning at 5:30pm at the Cleveland Museum of Natural History.

This is the one time per year every member should attend an event as a show of support. Furthermore, your officers try to schedule a noteworthy - dynamic speaker. This year Dr. George Beatty promises to fulfill your expectation. He brings his own equipment for an audio and visual multi-media show of the highest caliber.

Photography buffs will be equally interested in the complex system he has created. Be there and bring guests! Once more, despite inflation we have held the line of ticket prices, \$10.00 per person for both dinner and show. Show only tickets are \$4.00.

Once the State journal commences in January, I will experiment with the frequency format and content of this journal.

In response to the State's request and duplicating what the other chapters have already approved, your board has voted to finance the new State journal, "Trillium" at \$4 per local member per year. That means less available locally for "On the Fringe". However, there is still a place for some money for a local newsletter of some sort. I will use my discretion as to how to best carry on with "On the Fringe". As always, your comments and suggestion are most welcome.

As you will see by the separate mailing, Dr. George Wilder of Cleveland State University has graciously stepped forward to accept the role of

local Vice President (Program Director). On behalf of the local members, we congratulate Bob Bartolotta on the fine job he did and for several years in that capacity.

Once again we have a December program. Thursday, December 5th at 7:30pm at the Chagrin Falls Library, Jack Selby will present his outstanding slides of rare plants on the Ohio Heritage Lists.

In January, we will look forward to the new program year under Dr. Wilder's direction.

It is expected that some constitutional amendments will be ready as an insertion into this issue for your consideration and vote. The amendments were needed for greater efficiency and modernization of your Society. Please take the time to read them and return your ballot.

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BOTANIZING AT CHEESEQUAKE  
or  
HOW I SPENT MY SUMMER NON-VACATION  
by  
JIM BURNS

**Introduction**

Imagine taking a dry oak-pine hillside from Jackson County, Ohio and placing it right next to the sandy swells and swales of the Toledo Oak Openings. Put a piece of a Portage County bog in the midst of it and throw in both saltwater and freshwater tidal marshes for a little variety. The result would be a profusion of interesting plants in a very small area, including dozens that are on Ohio's rare plant list, and many that do not occur in Ohio.

This particular juxtaposition of habitats does not occur in Ohio, but does occur in the vicinity of a place with the unlikely name of Cheesequake State Park on Raritan Bay, just south of Perth Amboy, New Jersey. While conducting some wetlands investigations in this area, I was able to botanize habitats that are startlingly similar to some of Ohio's best rare plant habitats, and to botanize other interesting habitats as well. Here these habitats all occur within a surprisingly small geographic area, in a part of New Jersey that is already heavily suburbanized and is being rapidly developed further still.

**Rare and Interesting Plants**

Some species on Ohio's rare plant list that can be found in oakpine forests in southern Ohio as well as at Cheesequake include stiff-leaf aster (Aster linariifolius), white thoroughwort (Eupatorium album), cow wheat (Melampyrum lineare), Canada

frostweed (Helianthemem canadense), Hairy pinweed (Lechea villosa), hyssop skullcap (Scutellaria integrifolia), sweet goldenrod (Solidago odora), blackjack oak (Quercus falcata), and pinxterflower (Rhododendron nudiflorum).

Ohio rare plants that inhabit sandy swells and swales in the Toledo Oak Openings and similar areas of Cheesequake include twig-rush (Cladium mariscoides), white beak-rush (Rhynchospora alba), Greene's rush (Juncus greenei), Atlantic blue-eyed-grass (Sisyrinchium atlanticum), yellow-eyed grass (Xyris caroliniana), cross-leaved milkwort (Polygala cruciata), lance-leaved violet (Viola lanceolata), old-field toadflax (Linaria candensis), and sweet-fern (Comptonia peregrina).

Northeast Ohio bog species that also inhabit wet sphagnous areas in Cheesequake include spathulate-leaved and round-leaved sundews (Drosera intermedia and D. rotundifolia), pitcher plant (Sarracenia purpurea), netted and Virginia chain ferns (Woodwardia areolata and W. virginica), crinkled hairgrass (Deschampsia flexuosa), pale straw sedge and long sedge (Carex albolutescens and C. folliculata), American water-pennywort (Hydrocotyle americana), Canadian St. John's-wort (Hypericum canadense), bayberry (Myrica pensylvanica), leatherleaf (Chamaedaphne calyculata), catberry (Nemopanthus mucronata), and large cranberry (Vaccinium macrocarpon).

Species extirpated from Ohio that still occur at Cheesequake include camphorweed (Pluchea camphorata) and maleberry (Lyonia ligustrina). Other interesting trees and shrubs that occur at Cheesequake that do not occur in Ohio include Atlantic white cedar (Chamaecyparis thyoides) swamp magnolia (Magnolia virginiana), sweet pepperbush (Clethra alnifolia), sheep laurel (Kalmia angustifolia), sweetgale (Myrica gale), swamp leucothoe (Leucothoe racemosa), and swamp azalea (Rhododendron viscosum).

## Ecological Setting

These varied habitats at Cheesequake surround an estuary, where freshwater draining from inland mixes with saltwater brought in with the rise of tides in Raritan Bay. This estuary is flanked on three sides by uplands on nearly pure sands of Cretaceous age. These uplands are often in the form of bluffs and steep slopes 50 to 100 feet high. These bluffs and slopes provide an extremely xeric habitat, especially when they face south to west. Unfortunately the sandy uplands are highly erodible when vegetation is removed, and where this has happened huge deltas of recently eroded sands have washed into the marsh.

The heart of the Cheesequake estuary is Cheesequake Creek, a tidal stream that rises and falls twice daily. The tidal range (difference between high and low tides) in the vicinity of the Park averages about 4 to 5 feet, but can reach another several feet at the highest tides (spring tides). The entire area is in a draining mode at low tide and the streams flow seaward with freshwater. Cheesequake Creek begins to slow, back up, and then reverses flow as the tide comes in and brings saltwater inland. Freshwater in the streams flowing into Cheesequake creek is subsequently backed up by the damming effect of this slowly rising influx of tidal water, causing a rise in stream levels. A zone of mixing of salt and freshwater occurs along the lower reaches of the streams. Tidal saltwater to brackish marshes develop in this zone, depending on the mix of saltwater to freshwater.

Farther upstream, freshwater is also backed up and forced to rise by the damming effect of the incoming tide on downstream water levels, but no saltwater reaches here. Tidal freshwater marshes develop in this zone. At some point upstream water levels are no longer affected by tidal influence. These zones of influence vary with tidal ranges and also with seasonal runoff.

Beyond the zone of influence of salt to brackish water occur freshwater marshes with many of the same plants that occur in Ohio marshes, such as cattails (Typha latifolia), spatterdock (Nuphar advena), bur-reed (Sparganium americanum), and arrowhead (Sagittaria latifolia).

Occasionally the upper ends of these freshwater marshes have shallow flats which grade into wet sandy meadows. It is likely that these areas become progressively drier as the summer advances, stream flow diminishes, and water levels drop. These areas provide habitat for various sedges and rushes, especially three-way sedge (Dulichium arundinaceum) and three-square bulrush (Scirpus americanus). Many of the plants that inhabit the sandy swells and swales of the Toledo Oak Openings also occur here.

These wet sandy meadows often have thick mats of Sphagnum moss on which grow many species normally associated with bogs, such as pitcher plants, sundews, and large cranberry. Low scrub-shrub vegetation usually borders the wet meadows and includes sweet-fern, sweet pepperbush, swamp azalea, leatherleaf, sheep laurel, maleberry, bayberry, sweetgale, and wamp leucothoe.

The upper end of the salt/brackish marsh, the Phragmites zone, is often rather abruptly bordered by wooded sandy uplands, without any freshwater marsh between. The transition between Phragmites and upland woods often takes the form of a band of swamp woods, wide to narrow, depending on the upland slope. These swamp woods consist of red maple (Acer rubrum), pin oak (Quercus palustris), black gum (Nyssa sylvatica), southern arrowwood (Viburnum dentatum), speckled alder (Alnus rugosa), sweet pepperbush, silky dogwood (Cornum amomum), and the dreaded poison sumac (Rhus vernix). The understory is often dominated by skunk cabbage (Symplocarpus foetidus) and cinnamon fern (Osmunda cinnamomea). The soil grades from black peaty muck to moist sand.

The upland woods may be divided into a mesic component, occurring on lower slopes and flatter areas, and a xeric component, occurring on the upper slopes. These components share many of the same species and the transition between the two is often very broad. The mesic component contains red oak (Quercus rubra), white oak (Q. alba), American beech (Fagus grandifolia), black gum, and gray birch (Betula populifolia). Understory species include sassafras (Sassafras albidum), flowering dogwood (Cornus florida), and spicebush (Lindera benzoin). The groundcover often consists of extensive patches of Canada mayflower (Maianthemum canadense), tree clubmoss (Lycopodium obscurum), and Japanese honeysuckle (Lonicera japonica). Occasional patches of pink lady's-slipper (Cypripedium acaule) grow in sunny openings and along edges.

The xeric component occurring on the sandy upper slopes has a semi-open canopy and is dominated mainly by pitch pine (Pinus rigida) and dry-site oaks, including black (Quercus velutina), blackjack (Q. marilandica), and chestnut oak (Q. prinus). Shagbark hickory is another important element of this component and American chestnut (Castanea dentata), now present only as stump sprouts, was probably an important element prior to the chestnut blight. The understory contains numerous species of the heath family, including highbush and lowbush blueberry (Vaccinium corymbosum and V. vacillans), deerberry (Vaccinium stamineum), huckleberry (Gaylussacia baccata), and mountain laurel (Kalmia latifolia). Common greenbrier (Smilax rotundifolia), nature's own barbed wire, climbs and trails over much of the understory vegetation. Literature from the State Park claims that this habitat is virtually indistinguishable from similar situations in the New Jersey Pine Barrens, centered about 75 miles to the southwest.



The Cheesequake estuary trends roughly southwest to northeast. The line of the surrounding uplands is very irregular, with many peninsulas and embayments. Thus, the surrounding slopes present many different aspects in a small space. The exposed south- to west-facing slopes are the most xeric. Natural openings in the woods and the edges of artificial openings such as roads provide habitat for many of the herbs also found in southern Ohio oak-pine woods. The presence of blackened stumps attests to the work of periodic fires in keeping this habitat semi-open.

Disturbed upland habitats present at Cheesequake include old sand pits, denuded uplands, an old landfill, an abandoned railroad line, and old roads now being used by dirt bikers. These habitats contain several native and alien species adapted to disturbance, including winged sumac (Rhus copallina), common ragweed (Ambrosia artemisiifolia), white and yellow sweet clovers (Melilotus alba and M. officinalis), brambles (Rubus spp.), tree-of-heaven (Ailanthus altissima), deertongue grass (Panicum clandestinum), and disturbed habitats at Cheesequake is the range of situations in which Phragmites will thrive, from wet to dry.

### Rare Plants and Their Habitats

The common factor that unites the wet meadows and xeric slopes of Cheesequake with similar habitats in the Oak Openings and southern Ohio is sand. The acidity of the sand at Cheesequake also allows the growth of Sphagnum, which creates patches of bog-like habitat.

The Oak Openings near Toledo formed on ancient dune and beach sands of the larger glacial antecedents of Lake Erie. The local topography here is referred to as swell-and-swale. In spring when the water table is high, the swales (and any artificial excavations) hold standing water, while the tops

of the swells, which may be only a foot or two above the water table, are dry. The resulting extreme conditions, from hydric to xeric in a few linear feet on a spatial scale provides habitats for a variety of plants in a small geographic area. As the water table slowly drops through the summer, more of the swales are exposed and dry out. A similar range of extreme conditions on a time scale, from hydric to xeric in a few months gives a competitive advantage to those plants that have evolved mechanisms and strategies to adapt to such a range. Many of these plants are rare or absent elsewhere.

The Sharon Conglomerate area in Jackson and Pike Counties and the Blackhand Sandstone area of Hocking and Fairfield Counties in southern Ohio contain xeric oak-pine woods similar to those at Cheesequake. The residual soils of conglomerate and sandstone bedrock are obviously very sandy. Rainfall landings on these slopes may infiltrate rapidly below the rooting zone of many plants. When the soils occur on south- to west-facing slopes, the resulting conditions can be extremely xeric. South-facing slopes are almost constantly exposed to the sun as it tracks east-to-west, and west-facing slopes are exposed to the drying effects of prevailing winds. Fire also occasionally sweeps through these areas, keeping the woods semi-open. Only plants adapted to extreme summer dryness can survive here.

Although Cheesequake has no kettle-hole bogs similar to those of northeastern Ohio, some bog conditions are simulated. Flats of wet, acidic sand favor the growth of mats of Sphagnum moss. The moss, in turn, produces more acids which limit the types of plants which will grow on it. The low nutrient content of the Sphagnum and wet acidic sand substrate gives a competitive advantage to

plants that have evolved unique ways of supplementing their nutrient uptake, such as the carnivorous habit of sundews and pitcher plants.

Salt marsh, dry exposed sandy slopes, and wet acidic sands and moss all present different extreme conditions to which only certain species of plants have become adapted. Such species are the specialists of the plant world. These plants thrive and dominate in these habitats because the "normal" generalist species of the area cannot tolerate such extremes. By evolving mechanisms and strategies to adapt to extreme habitats they have avoided competition from the generalist vegetation. Specialists don't adaptations are ineffective at best and may be extremely disadvantageous at worst. They are rapidly out-competed by the generalists under normal conditions. Thus rare plants are often lost from areas when natural succession or man-caused disturbance changes extreme conditions towards more normal ones.

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## NORTHERN CARNIVEROUS PLANTS

### Little Shops of Horror

By Tom Sampliner

They're not just coming, they're already here! In fact, they have been here since the last glaciers left some 12,000 years ago. I'm referring to those little shops of horror - The carnivorous plants native to our northern latitudes.

We have a variety to choose from. I'll start with one of my favorite, The Northern or Purple Pitcher Plant, Sarracenia purpurea. Listed as a threatened species in Ohio; This wide range plant seems to exhibit an intelligence by virtue of it's diet supplement scheme. One finds these plants across Canada, south to Florida and west to the Mississippi. For habitat, find your nearest bog or fen. In plain language, look for a wetland with soil skewed either to the acid or alkaline in composition. In such nutrient poor settings; The carnivorous plants such as Northern Pitcher Plant set up their little shops.

Vase like leaves exude a sweet, odoriferous, intoxicating nectar near the rim of the vase. Insects are attracted and begin a final fateful journey to a point inside the vase from which they cannot return. Inside the vase, downward pointing hairs act as swords or spears. The insect prey cannot march back upward against such an obstacle.

Even if they could, the slightly narcotic effect of the nectar keeps them disoriented. Below the layer of sharp hairs or bristles is a smooth surface upon which the prey eventually loses control and falls into the digestion pool that fills the lower portion of each vase. A wetting agent assures drowning while digestive enzymes complete the morbid task. The plant may then feast by absorption on it's prey.

Beginning in late May, a flower stalk arises high above the pitchers below. The colors of the flower and vase are as striking as those seen at Christmas time. The vases are usually green with blotches and veining of deep madder color. The flower petals have that same deep madder with the interior parts of the flower ranging from yellowish or lime green to green. In my experience, the farther north I go the more vivid the colors. To see those vid colors locally, vist your bog or fen in the fall. You won't believe the color display.

There are other pitchers found in the United States. However, none of these are found this far north.

Since they succeed in nutritionally poor, wet habitat, it is logical that other carnivorous plants are growing companions. A frequent companion would be one of the sundews.

Historical data in Ohio provides listings for two species; Drosera rotundifolia round-leaved Sundews and Drosera intermedia, Spathulate - leaved Sundews. The former is potentially threatened while the latter is endangered.

Growth pattern is a basal rosette. Near the base each species forms leaves of a very narrow linear type. Depending upon the species, the leaves either widen slightly remaining distinctly linear as in intermedia or form a much shorter rounder top portion as in rotundifolia. The surface of the leaves gives rise to what I would call hairs or bristles. The predominant long hairs have clear globules at the ends which are sticky. Short hairs in the leaves triggers the closing

action around the prey in a hug of death. Neatly trapped, the insect is digested by enzymes. I guess this is the real monster mash!

As in the pitcher plants, red and green are the colors of Sundews. The amount of madder red seems to vary greatly. Some current literature indicates the amount of sun may explain the amounts of red. There is also speculation that a population of either species, especially the pitchers, without any red may be unhealthy, suffering from being shaded out.

Well it's October - so I think I'll stop now and head on out to Eagle Creek and photograph some of these little devils. Dare I go alone or might they grab me; If I go on Halloween, will they trick or treat me?!

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Memberships are **DUE FOR RENEWAL** on JANUARY 1, 1991. Please continue to support your Society and renew at the **highest** possible category. Those of you who send us Sustaining and Patron memberships are enabling us to go on with our worthwhile projects. An active membership just about pays for the newsletter costs. However, economics aside, we need **EACH** of your memberships and each year we get stronger and better. The 1991 Program and Field Trips schedule will be worthwhile.

Please enroll me as a member of the Native Plant Society of Northeastern Ohio

- ( ) ACTIVE.....\$10.00            ( ) SUSTAINING.....\$25.00
- ( ) FAMILY.....\$15.00           ( ) PATRON.....\$50.00

Membership runs from January through December and is not pro-rated.

**Make checks payable to Native Plant Society of Northeastern Ohio, 17670 Farmington Road, W. Farmington, OH 44491**

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