

## INTRODUCTION

More than any other natural area, the bog seems to be an environment lost in time, a relict which has somehow survived unchanged from a colder era long ago. Its vegetation represents a unique assemblage of strange, apparently misplaced plants which stand out in vivid contrast to the flora of the surrounding forests. The plants themselves seem to be standing still and resisting change: black spruce and tamarack trees, normally found in cold Canadian wilderness forests, are rooted in unstable hummocks of sphagnum moss and may be 2 or 3 centuries old but less than 40 feet tall. While the upland forest surrounding a bog has passed through many changes since the end of the last glacial period over 13,000 years ago, the bog's flora stubbornly stands as a reminder of that icy chapter in our region's prehistoric past.

**Tannersville Cranberry Bog** is one of the most outstanding examples of a boreal -- or northern -- bog in Pennsylvania. It is designated as a National Natural Landmark because of its distinction as the southernmost low altitude boreal bog along the eastern seaboard.

Located five miles northwest of Stroudsburg and 900 feet above sea level, the Tannersville Cranberry Bog looks and feels amazingly similar to bogs found in the Canadian wilderness or several thousand feet up in the thin air of New York's Adirondack Mountains. Entering the bog after hiking through the surrounding oak forest is like traveling from Pennsylvania to Canada.



## WHAT IS A BOG?

There are several distinct features by which bogs differ from swamps, marshes, and other wetlands. Most boreal bogs were created during the

retreat of the last glacier, when huge chunks of ice and glacial debris littered the northern landscape. The ice blocks eventually melted to form "kettle lakes", usually with no inlet or outlet and relying mostly on precipitation for their source of water. Without the benefit of highly aerated waters from flowing streams, the lake contained very little oxygen and evolved into a bog as specialized plants slowly colonized the icy waters. (While called a bog, Tannersville is actually an acid "fen" because it receives some groundwater flow. Because the nutrients carried by the water are limited, the plant community is similar to that found in a true bog.)

Sphagnum moss ("peat moss") gradually crept out over the lake and formed a dense, floating mat right on top of the water. Sphagnum is famous for its ability to hold water (it can absorb 18 times its own weight), which explains its former use as absorbent bandages and its modern day use in gardening. Like a huge sponge, the sphagnum mat slowly evaporates lots of water during the summer, thus cooling the air over its habitat. Furthermore, the winter ice melts slowly beneath the insulation of its sphagnum carpet, and is often unmelted into June! This results in a wetland much cooler than the surrounding forests.

Sphagnum generates hydrogen ions making conditions acidic for other plants. As patches of sphagnum die they sink and slowly decay into peat (commonly dried and burned as a fuel in some northern countries) gradually filling in the lake over thousands of years and releasing tannic acid into the water. Lacking drainage, the lake turns darker as these acids become more concentrated and stain the water, much like a pot of water into which tea bags are continually added. The acidity restricts the species that can survive in the bog severely limiting even bacteria, the main agents of decay (and explaining the discoveries of perfectly preserved, 2000 year old "mummies" within some northern European bogs). Nutrients like nitrogen, calcium, and phosphorous remain locked up in the vegetation instead of being recycled back into the environment where other plants can use them. The result -- a cold, soggy, poorly-drained, acidic, moss-covered, oxygen-starved, and nutrient-deficient environment descended from a glacial depression -- in short, a bog!

## Bog Plants

### The Heaths

Evolving under such limiting conditions, the bog consists of specialized plants which can survive on low nutrient and oxygen budgets. A bog can be more easily recognized by its plants than by anything else. Foremost are members of the heath family, noted for their ability to thrive in inhospitable, infertile environments like bog, alpine summits, and the Arctic tundra.

Tannersville Cranberry Bog is dominated by shrubby thickets of heath plants: high bush blueberry, leatherleaf, cranberry, sheep lau-

rel, bog laurel, swamp azalea, and, on its outskirts, rhododendron. Two others, bog rosemary and Labrador tea, are among the state's rarer plants. Sedges and other plants typical of wetlands dominate the more nutrient-rich portions of Tannersville.

### Insect-Eating Plants

The insectivores are another group of bog plants which have adapted to cope with the bog's low nutrients. Two types -- pitcher and sundew plants -- are found in the more open, sunny areas of Tannersville Cranberry Bog.



Pitcher plant, with its large, tubular, red-veined leaves and tall, striking red flowers, is easy to recognize. Stiff, downward-pointing hairs coat the inside surface of the open pitchers, preventing the escape of insects which drown and are then digested in the plant's liquid reservoir.

Much smaller is the sundew plant, whose leaves are quarter-inch disks covered with sticky glandular tentacles. Lured to this glistening "nectar", a small insect becomes stuck and dies, and the sundew absorbs the nutrients resulting from its decomposition.

### Orchids and Conifers

Other beautiful and fascinating bog plants at Tannersville include orchids -- grass-pink orchid, white-fringed orchid, rose pogonia, yellow lady slipper, and (formerly recorded but not seen in recent years) heart-leaf twayblade. There are also wild calla, cotton grass, poison sumac, the rare yellow-eyed grass and the very rare, diminutive dwarf mistletoe, which grows as a 2-centimeter

parasite on black spruce, causing its host's branches to sprout wild shoots called witches' brooms.

A considerable portion of Tannersville Cranberry Bog is covered with a boreal forest of black spruce and tamarack, two conifers normally found in Canada. Tamarack (or American larch) is the only deciduous northern conifer, losing its needles each October after they turn a brilliant golden-yellow. Rooted in unstable hummocks arising from the floating sphagnum mat, individual spruces and tamaracks actually sway back and forth in the breeze or if a person jumps up and down nearby, giving rise to the term "quaking bog". It is the presence of these two Canadian conifers, at the southern limit of their range, that makes a visit to the Tannersville Cranberry Bog such a unique boreal experience.

### Changes in the Bog

After 13,000 years the Tannersville Bog has undergone several stages of plant succession. The heaths and conifers have become so dense, they have crowded out several of the rare, sun-loving bog specialties like Labrador tea, golden club, hartford fern, and the orchids. This natural progression will result in the formation of a bog forest. Researchers are currently exploring the dynamics of these changes as well as methods to preserve some of these sun-loving plants that help make the Tannersville Cranberry bog so special.

### Bog Animals

Among the more exciting animals observed in the Tannersville Bog Preserve are black bear, river otter, snowshoe hare, coyote, gray fox, bobcat, wild turkey, barred owl,

and the endangered bog copper butterfly. Because of its cooler climate and Canadian forest, the Bog also attracts several northern birds as breeders: brown creeper, Nashville warbler, Canada warbler, and others.

### Preserving the Bog

A unique environment with many beautiful and unusual plants and animals, the Tannersville Cranberry Bog is certainly one of Pennsylvania's authentic natural treasures. Long valued as an outdoor "museum" and laboratory by scientists, professional botanists, and educators, in 1957 The Nature Conservancy acquired the first 62 1/2 acres for protection. The land was acquired a year after the Bog's vital role in water storage and flood protection were highlighted by the devastating hurricane of 1955: bridges below the Bog were left intact while most others in the region were destroyed.

Additional lands around the Bog were acquired by gifts and purchased by The Nature Conservancy over the years until today, the Preserve encompasses over 1000 acres in the midst of the state's fastest-growing region. A 1450-foot floating boardwalk has been constructed into the bog and trails have been blazed in the upland oak-hickory-pine forests surrounding the Bog for hiking, cross-country skiing, and nature study.

Through a local volunteer Stewardship Committee and the Kettle Creek Environmental Education Center, The Nature Conservancy is striving to preserve the integrity of the Bog, study its ecology, and educate the public about this priceless preserve.

The hiking trails in the Preserve's upland woods are open to the public, but because of its fragile nature, the Bog itself can only

be visited during walks regularly scheduled by the Kettle Creek Environmental Education Center, or with special permission from The Nature Conservancy.

For information contact:

**Monroe County Conservation District/  
Kettle Creek Environmental  
Education Center  
8050 Running Valley Road  
Stroudsburg, PA 18360  
(570) 629-3061  
www.mcconservation.org**  
or

**The Nature Conservancy  
Northeastern PA Office -  
Hauser Nature Center  
P.O. Box 55, 1567 Long Pond Rd.  
Long Pond, PA 18334  
(570) 643-7922  
www.nature.org**

This brochure was written by  
**John Serrao**

Revised 6/14



Protecting nature. Preserving life.™

## TANNERSVILLE CRANBERRY BOG

STUART M. STEIN  
MEMORIAL PRESERVE



Owned by  
**The Nature Conservancy  
and Pocono Township**  
Managed by  
**The Nature Conservancy**  
in cooperation with  
**Monroe County  
Conservation District**

**CONSERVANCY MEMBERSHIP**

**Yes! I want to help preserve Northeastern Pennsylvania's natural treasures, including the Tannersville Cranberry Bog. Enroll me as a member of The Nature Conservancy.**

Enclosed is my tax-deductible contribution of: \$ \_\_\_\_\_

\*Basic membership is \$25

Name \_\_\_\_\_

Address \_\_\_\_\_

City, State, Zip \_\_\_\_\_

Phone (H/O) \_\_\_\_\_ Email \_\_\_\_\_

**All members at basic level and up receive The nature Conservancy Magazine and our chapter newsletter. Please send your check to:**

**The Nature Conservancy  
15 E. Ridge Pike, Suite 100  
Conshohocken, PA 19428      APADA201501OUT**

**The Nature Conservancy is a private, non-profit conservation organization working around the world to protect ecologically important lands and waters for nature and people. Since 1951, The Nature Conservancy and its more than one million members have protected nearly 120 million acres worldwide and 5,000 river miles.**

**Please join us! Support our work at Tannersville Cranberry Bog and throughout the world by becoming a member of The Nature Conservancy. Simply complete the coupon and return it with your tax-deductible contribution.**

