



ONAPA NEWS

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Ohio natural areas and preserves.*

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Cranberry Bog world's only known floating bog

By Guy Denny

Throughout our nation, only a relatively few natural areas are nationally significant enough to be designated as National Natural Landmarks under the National Registry of the Natural Landmarks Program of the U.S. Department of the Interior, National Park Service. However in October of 1968, Cranberry Bog was designated as one of Ohio's first National Natural Landmarks, and arguably, it is our most significant natural area since this is the only large floating bog island known to exist in the world. Additionally, it was dedicated as a scientific state nature preserve in 1977.

The story of Cranberry Bog goes back to the Wisconsin Glacier, the last or at least the most recent continental glacier to invade Ohio during the Pleistocene Ice Age. As the glacier slowly lumbered out of eastern Canada, a miles wide band of Canadian boreal forest proceeded it, nourished by frigid temperatures and cold meltwaters generated from the glacial ice sheet. Finally, about 18,000 years ago, with a warming global climate, the Wisconsin Glacier began a final slow retreat northward. As it did, Canadian boreal plants were able to retreat along with the glacier by colonizing the newly exposed cold wet glacial soils that emerged from beneath the receding wall of ice, as well as around the countless lakes, ponds, and marshes left in the glacier's wake.

Buckeye Lake, in which Cranberry Bog is located, was a pre-glacial river valley. However, a loop moraine filled in and blocked the east end of the ancient river valley. This created a long, linear, deep finger lake whose shores were colonized by bog plants retreating with the glacier, forming a floating bog mat from the shoreline out over open water. Over the next few

thousands of years, the finger lake began to fill with peat deposits, a natural process by which such lakes fill in and eventually go out of existence. The natural succession sequence is from lake, to marsh, and finally to swamp forest, leaving little evidence a lake ever occupied this space.

Even though the original glacial lake was about 46 feet deep, by the time the first settlers made their appearance, the sphagnum moss mat had closed in and filled the original lake basin to the extent that the lake had become largely a



Google Earth view of Cranberry Bog SNP in Buckeye Lake.

tree-covered swamp forest extending over an area of about 4,000 acres. The only open water surface of the lake was reduced to one long lake about five miles long, but only 400-500 feet wide. A much smaller floating cranberry bog mat comprised of surviving boreal bog plants was still present at its center. Early settlers simply called it the Big Swamp. Yet the cranberry bog in which both the settlers and the Native Americans before them collected cranberries was unlike the cranberry bog we know today.

With the coming of the Ohio and Erie Canal, the Big Swamp provided an excellent site for the

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1973: Cranberry Bog dedicated a state nature preserve

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construction of a large canal feeder lake to furnish water needed for a canal locks system to lift canal boats over the divide between the Licking River and Scioto River basins. In 1826, the Ohio Canal Commission began work on an earthen dike four miles long around the west end of the swamp. The dike was completed and the reservoir filled in 1830. Two years later, the reservoir had to be enlarged by another 50 acres to provide sufficient water for two-way barge traffic. The Licking-Summit Reservoir was born and the Big Swamp was no more.

It was the impoundment of the Big Swamp that made Cranberry Bog unique. As the waters rose, all the swamp was inundated and destroyed except for the very youngest and most buoyant segment of the bog mat. This 50-acre segment of bog mat along the north shoreline stretched and expanded like a giant water-logged sponge rising eight feet with the new water level. No longer did the floating bog mat surround the glacial lake. Now the bog mat, still attached to the bottom of the lake, became an island surrounded by the reservoir.

In 1894, the Ohio General Assembly officially abandoned the reservoir as a canal feeder and changed it to a public park with the new name of Buckeye Lake. In 1949, with the creation of the Ohio Department of Natural Resources, Buckeye Lake, including Cranberry Island, was officially dedicated as Buckeye Lake State Park and placed under ownership of the newly created ODNR Division of Parks.



Photos by Guy Denny

Large cranberry, the same species as sold in stores, nestles in the sphagnum moss of the bog that carries its name.

Finally, in 1973, Cranberry Island was dedicated as Cranberry Bog State Nature Preserve and ownership and management was vested in the ODNR Division of Natural Areas and Preserves. DNAP constructed a boardwalk funded by generous public donations from the "Buy a Piece of the Boardwalk Program."

From the early 1980s through 1999, DNAP provided annual open house general public tours of the bog in late June, during peak blooming for the cranberry and the bog orchids. In groups of 15-20 visitors at a time, DNAP staff and specially trained volunteers guided interpretive group tours of the bog meadow along the boardwalk.

By the 1990s, it was common to accommodate as many as a thousand visitors on the Saturday

of the open house. Visitors were able to get up close and personal to see and experience the wonders of this buoyant floating sphagnum mat, a living relict of the Ice Age. The bog mat is a light green lawn of sphagnum moss held together with small, native cranberry vines. It is adorned with fascinating carnivorous plants, including round-leaved sundews and thousands of Northern pitcher plants. Add the strikingly beautiful and abundant Calopogon and rose pogonia orchids, it is a splendid sight to behold.

Sphagnum peat bogs require acidic conditions to survive. Sphagnum moss releases acid into the environment as it grows. But even after it dies and starts to decompose, it releases humic acids as part of the decay process that also plays a large role in



Carnivorous plants: the tiny round-leaved sundew (left) is camouflaged in the moss; there are more pitcher plants (right) growing on the island than in all the other Ohio bogs combined.



Calopogon orchid (left) and Rose pogonia orchid (right) are found in Cranberry Bog

Photos by Guy Denny

keeping this ecosystem intact. Unfortunately, Buckeye Lake tends to be a very alkaline, well-oxygenated, shallow lake with significant wave action (from abundant boat traffic), all working against the bog ecosystem. The original size of the island was 50 acres. But it has been losing ground ever since. Today the island is less than 11 acres in size with the open bog mats being much smaller in size.

Concerns over the ultimate fate of the island, led to the Ohio House of Representatives to adopt House Resolution No. 26 in April of 1963. Pursuant to this resolution, the ODNR Division of Parks was directed to undertake a study of possible remedial measures that could be taken to save Cranberry Island from further deterioration. After an intensive investigation of the problem by scientists and engineers alike, the consensus was that there is no practical way to stop further loss of the island. It was feared that remedial measures sufficient to prevent further deterioration might tend to change the character of the bog environment and actually do more damage. A similar study conducted by the National Park Service came to the same conclusion.

So just how much time does this nature preserve have? No one really knows. With proper ecological management keeping trees and woody shrubs from invading and shading out the sphagnum moss so critical for the survival of the bog

mat, it might last another 100 years or so. In any event, Cranberry Bog State Nature Preserve remains today one of the most unique and fascinating natural areas in the nation — truly an Ohio natural treasure.

From the time DNAP took over management of Cranberry Island, a major effort was initiated annually for staff to cut back and chemically treat encroaching woody plants to prevent them from taking over the bog mat and shading out the rare boreal species that have survived here more than 10,000 years, since the retreat of the Wisconsin Glacier. This effort is critical for prolonging the life of the bog. Living sphagnum moss is what sustains this peatland ecosystem. It is shade intolerant and if the woody species dominate and shade out the sphagnum moss, as well as the other rare bog plants, the moss dies; deterioration of the island rapidly accelerates.

On December 2, 2011, ODNR Director James Zehringer signed a five-year memorandum of understanding with The Greater Buckeye Lake Historical Society to handle the day-to-day operations of the preserve. With the retirement of DNAP Preserve Manager Greg Seymour, the decision was made to allow the Historical Society to assume management for the preserve. For several years prior, DNAP had coordinated

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Cranberry Bog one of Ohio's 23 National Natural Landmarks

Many of Ohio's National Natural Landmarks are in state nature preserves, but not all. ONAPA volunteers assist with Stewardship projects in many of the state preserves as well as some managed by other organizations.

Arthur B. Williams Memorial Woods
Blacklick Woods
Brown's Lake Bog
Buzzardroost Rock, Lynx Prairie, The Wilderness
Cedar Bog
Clear Fork Gorge
Clifton Gorge
Crall Woods
Cranberry Bog
Dysart Woods
Fort Hill State Memorial
Glacial Grooves State Memorial

Glen Helen Natural Area
Goll Woods
Hazelwood Botanical Preserve
Highbanks Natural Area
Holden Natural Area
Hueston Woods
Mantua Swamp
Mentor Marsh
Serpent Mound Cryptoexplosive Structure
Tinkers Creek
White Pine Bog Forest

<https://www.nps.gov/subjects/nnlandmarks/state.htm?State=OH>

Management of Cranberry Bog vital to preservation

Continued from page 3

the annual Cranberry Bog tours with the Historical Society, which provided volunteer boats and drivers to transport visitors back and forth from the island. As part of the agreement, they were to do the following:

- (1) Trim woody vegetation in specific areas,
- (2) Perform boardwalk maintenance and dock cleaning,
- (3) Control invasive plants, and
- (4) Provide educational programming.

Some of these tasks were done, until the lake was drawn down while the dam was being re-constructed. Boat access to Cranberry Island became extremely difficult. In the absence of a licensed herbicide applicator from DNAP, volunteers from the Historical Society could cut invading woody plants, but not chemically treat the cut stems. Volunteers from the Native Orchid Preservation and Education Society of Cincinnati joined forces with the Historical Society around 2013 to monitor rare orchids in the preserve, and they tried their hand at cutting back invading woody species in November 2018. However, they were not able to use herbicides either.

The problem with not using herbicide on cut woody stems, as DNAP had always done in the past, is that untreated cut stems from a species such as poison sumac or European buckthorn typically results in it shooting up additional stems the next year from the original single cut stem.

Although the memorandum of understanding with the Historical Society expired on December 2, 2016, volunteers from the Native Orchid Preservation and Education Society (NOPES) were the only ones who did any invasive species control on the island during the last two or three years, and then only on a very limited basis without the use of herbicides carefully applied to cut stems.

The results have been catastrophic. Poison sumac and European buckthorn, along with some other invasives, have taken over the entire sphagnum lawn. These shade out the sphagnum moss and other rare bog plants, especially the rare



The top photo (from DNAP files) shows Cranberry Bog as recent as the 1990's, before it became clogged with woody plants (bottom photo from October 2019) that shade out sphagnum moss and rare bog plants.

orchids that NOPES sought to preserve.

Finally, last fall DNAP staff requested assistance from ONAPA to see what could be done to control the invading woody species and restore the bog mat. The result was a joint ven-

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Photo by Jennifer Windus



Photo by Bob Klips

ONAPA's Stewardship volunteers cut and treat poison sumac and European buckthorn at Cranberry Bog. One meadow east of the boardwalk was cleared of encroaching shrubs.

23 National Natural Landmarks a short drive away

By Tim Snyder

In 1962, the Federal government inaugurated a nation-wide program to recognize the very best remaining natural areas in the country. The National Natural Landmark Program, administered by the National Park Service, was established to “encourage the preservation of sites illustrating the geological and ecological character of the United States,” with the goals of enhancing their scientific and educational value, encouraging public appreciation of our natural history and increasing interest in its preservation.

Designation as a National Natural Landmark does not change a site’s ownership or management strategy. It also does not confer any financial aid. The greatest benefit to the site is recognition of its national importance, emphasized by the presentation of a bronze plaque to be displayed at the site. The National Park Service does, however, visit them periodically to insure that they are being maintained “unimpaired.” Sites which lose the values for which they were originally designated can be removed from the list with the loss of its identifying plaque.

The scope of areas which can be considered for listing is broad. The main requirement is that they be one of the best remaining examples of a type of biological community or geological feature within its biophysiological province. Lands owned by Federal, state and local government agencies, universities, local park districts, museums, private organizations and individuals can be considered. Only those places that pass a rigorous vetting process make the list.



Photo by Tim Snyder

Clifton Gorge SNP, Greene County, is a designated National Natural Landmark.

As of the latest available directory, fewer than 600 areas in the entire United States and its dependencies (American Samoa, Guam, Puerto Rico and the U. S. Virgin Islands) have made that list. Some familiar names can be found there: Garden of the Gods (CO), Rancho La Brea tar pits (CA), Corkscrew Swamp Sanctuary (FL), Cranberry Glades (WV) and Red River Gorge (KY).

As is obvious from this partial listing, for a state to have a listed area is a distinction to be proud of. It is not unusual in traveling the country to see billboards promoting visitation to a scenic attraction with the proud declaration that it is a “National Natural Landmark!”

Ohio has not one, but 23 areas on the list. Since National Natural Landmarks represent the best remaining examples of biological and/or geological features, it is not surprising that many of Ohio’s listings are also state nature preserves: Cranberry Bog, Clifton Gorge, Goll Woods, Mentor Marsh and Hueston Woods, among others. Other agencies also have listings: Glacial Grooves and Fort Hill State Memorials (Ohio History Connection), Glen Helen (Antioch College) and Highbanks Natural Area (Columbus Metroparks), for example.

For more information on the National Natural Landmarks Program and a directory of all designated sites with a short description of each, visit the Landmarks Program website at <https://www.nps.gov/subjects/nnlandmarks/index.htm>.

The next time you visit one of these special areas, look for the designation plaque and take pride in knowing that you are visiting one of the best of the best in all of America.

Tim Snyder, an ONAPA board member, helps coordinate the Stewardship Projects. He served with DNAP before his retirement as the West Central Ohio Preserve Manager.

Cranberry Bog

Continued from page 4

ture using DNAP staff, ONAPA volunteers, and volunteers from the NOPES to engage in a major effort that may take several years. Woody species in the former bog meadows are cut and their stumps treated with a systemic herbicide. The first stewardship project took place on September 25, with a follow up work day on November 5.

The work is demanding, slow, tedious and hazardous due to the abundance of poison sumac. Cut brush must be hauled off the bog mat and deposited at the edge of the island. Even

though volunteers are encouraged to wear Tyvek suits to protect them from poison sumac, inevitably several volunteers and staff did get severe cases of poison sumac. It is hoped that if Buckeye Lake freezes solidly, the task of clearing invasives can resume this winter after poison sumac foliage has fallen, reducing but not eliminating the risk.

It took several years without effective habitat management for the preserve to fall into such disrepair: restoration of the bog mat will not be remedied overnight. Nevertheless, ONAPA is committed to restoring this outstanding National Natural Landmark and Scientific State Nature Preserve over the next few years. Anything less is not acceptable and would be irresponsible.

***Brinkhaven
Oak Barrens
is one of several
preserves owned
and managed by
organizations
other than DNAP
where ONAPA
volunteers assist.
Projects are
scheduled
year-round.***



New partnerships benefit natural areas

By Jennifer Windus

This year, ONAPA has connected with some new partners, beyond the Division of Natural Areas and Preserves (DNAP). Some of these were at the request of DNAP, regarding dedicated state nature preserves managed by other organizations, such as The Nature Conservancy and Ohio History Connection. We have always promoted our stewardship program as working on high-quality nature preserves and natural areas in the state, not just DNAP preserves. For example, we have been working at Brinkhaven Oak Barrens in Holmes County for several years, which is an excellent natural area owned and managed by the Killbuck Watershed Land Trust (see website for a recent stewardship project in October).

The Nature Conservancy (TNC) has a number of nature preserves in Ohio which are dedicated. These preserves are owned and managed by TNC, but have been dedicated by ODNR as state nature preserves to provide an added layer of deed restrictions. TNC stewardship staff contacted ONAPA in 2018 asking for assistance with stewardship primarily in NE Ohio, not only to conduct stewardship but to assist in determining stewardship priorities.

ONAPA stewardship assistants and I helped with some stewardship at Brown's Lake Bog and Betsch Fen last year. This year we have helped four days at Herrick Fen (also known as Frame Lake Fen) and are planning to help at Beck Fen and Flatiron Lake Bog this winter. DNAP staff also suggested that we help TNC in NE Ohio as they knew the preserves were in need of stewardship help due to changes in TNC staff. We have developed a great relationship with Derrick Cooper and Marcel Weigand, TNC stewardship staff in NE Ohio, and they are very appreciative of our assistance.

ONAPA also worked at Cedar Bog in cooperation with the Ohio History Connection to conduct stewardship on three days this summer and fall. Mike Crackel, Cedar Bog preserve manager, has little staff and few volunteers to conduct stewardship at this high-quality fen, which is in need of habitat management in the fen meadows and former massasauga field areas adjacent to the fen.

Most recently, we have partnered with the Scenic Rivers

Program, now back in DNAP (formerly moved to the Division of Parks & Watercraft). Bob Gable, Scenic Rivers Administrator and Heather Doherty, Central Ohio Scenic Rivers Coordinator, requested assistance from ONAPA to conduct management in a few prairie remnants on Little Darby Creek, on property owned by the Scenic Rivers Program. Our first stewardship project October 24 was a great success with 12 volunteers, from both ONAPA and Scenic Rivers. We worked on the former Forrest property to reopen a small prairie remnant and plan to work in another remnant on the same property this winter.

This year, we also coordinated with the Division of Wildlife to conduct projects at Meilke Road Savanna Wildlife Area (Lucas County), Mallard Club Wildlife Area (Lucas County), and Killbuck Marsh Wildlife Area (Holmes County). We have worked at Meilke Road Savanna before to improve oak savanna habitat, but the other two wildlife areas have Eastern prairie fringed orchid populations, so we were controlling woody species to maintain open sedge meadow habitat. Finally, we partnered with Knox County Park District to work with them at Wolf Run Regional Park to remove woody species in one of the prairie units we have burned for them previously.

It has been a productive year, working on more than 20 DNAP preserves, but we are especially pleased to be working with new partners and helping to improve additional natural areas habitat. We are particularly interested in conducting stewardship on dedicated state nature preserves managed by other organizations or agencies that need assistance. We can combine our preserve monitoring program with stewardship by visiting preserves to evaluate their status and determine where help is most needed. After five years of developing our stewardship program, we are in a good position to prioritize our projects and add new partners around the state. If you are a potential partner and would like our assistance, feel free to contact us through our website.

If you are considering becoming an ONAPA stewardship volunteer, we welcome your participation as it is greatly needed on Ohio's natural areas!

Stewardship assistant excited to learn in the field

By Olivia Jinnings

Before I walked into my interview with Jennifer Windus and Randy Harr, I wasn't entirely sure what to expect from ONAPA. I had never heard of the organization, but had a chance to briefly look over the website. As a recent graduate who had sped through the biology program in just two years, I did not have a clear direction for where I wanted my career to take me. I was searching for a job that would allow me to get my foot in the door and gain fieldwork experience. It was also important that I find an employer who was interested in training its employees and sharing their knowledge. After chatting with Jennifer and Randy, I had high hopes for a summer full of fieldwork and learning.

Growing up in Wood County, my perception of Ohio was vast, flat land covered with nothing but corn and soybeans. However, working with ONAPA has opened my eyes to all the diverse ecosystems that exist here (in between the cornfields, of course). We have worked in bogs and fens, prairies and hollows, oak barrens and sand barrens, and even a limestone alvar. At each of these locations, I have received a wealth of knowledge from volunteers and preserve managers. Someone is always sharing the history of the preserves and the important plants that reside there. Everyone is so forthcoming and excited to share what they have learned through their own experiences.

I am always amazed by the dedication everyone in the organization has for the work that they do.

Having this opportunity to be a stewardship assistant has taught me so much. Coming into the position, I had little knowledge of Ohio's ecosystems. Working in the field, I have learned how to identify many of Ohio's invasive species and ways we can manage them responsibly in each ecosystem. ONAPA has provided me with formal herbicide training and proper techniques for applying herbicide, which I have been able to put to use many times throughout these six months. Since May, I have had the chance to work at over 20 different preserves and natural areas, many of which I would not have known about if not for ONAPA.

I would highly recommend this position to any recent graduates who need some direction on where to take their careers. This is an organization that truly cares about what it is doing. The members understand the importance of passing on their skills and knowledge to younger generations so that we can keep Ohio's diverse ecosystems flourishing. ONAPA plays a key role in protecting and managing natural areas throughout the whole state. I am blessed to have had this opportunity to connect with so many passionate individuals and to learn so much while working with this organization.

(Olivia Jinnings is one of three Stewardship assistants working with ONAPA this year.)



Photos by Jennifer Windus

Stewardship assistant Olivia Jinnings working with the tools of the trade in the field, which occasionally involves a hard hat when working in an active mine site at the Marblehead Lafarge Quarry.



Ohio Natural Areas & Preserves Association

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