

# THE BOG HAUNTER

the newsletter of the Friends of the Cedarburg Bog  
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## IN THE STRING BOG'S WATER

The center of the Cedarburg Bog wetland is occupied by a *string bog*, also called a "patterned bog" or a "ribbed fen." It is characterized by alternating low, wet swales, packed with sedges and wildflowers, and raised strings - slightly dryer ridges of peat that support stunted tamarack and white cedar. With each step you take toward the center of the Bog, the plants you pass are increasingly challenged by their environment.

For plants, the paradoxes of life in the string bog are two. First, they grow in peat, the semi-decayed remains of hundreds of generations of bog plants (the Bog started filling with dead plants as the glaciers retreated), but recycled nutrients are not readily available. Second, although they grow "with their feet in the water," these plants have difficulty absorbing it.

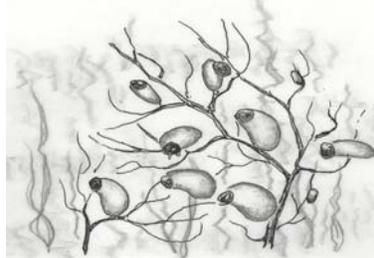
The common factor is oxygen, or the lack of it. Oxygen levels in the waterlogged peat are low-to-non-existent. The primary mechanisms for mixing air into water, currents and the action of wind over the surface, don't work when the water is kept still by the sponge-like peat. Many bacteria and the invertebrates that are responsible for the breakdown of organic matter need oxygen. Low oxygen levels result in a pokey rate of decomposition.

Root hairs, like those slender "hairs" on the side of a carrot, are the only part of the root that absorbs water and minerals. As oxygen decreases, fewer root hairs are produced, which, in turn, restricts water uptake. Out of necessity, the roots of most bog plants are shallow - restricted to the oxygenated layer of the peat.

The same deficiency limits the kinds and the locations of aquatic animals that occur here.

How do they cope? Life in the Cedarburg Bog isn't for sissies. The leaves of bog plants may have fewer pores (*stomata*), limiting water loss. Leaves may be small and thick, or they may have waxy coverings, undersides that are coated with hairs, or edges that are curled under to ensure that when water *is* absorbed by their roots, it is not easily lost through the leaves. Similar adaptations are found in desert plants.

The string bog is home to a variety of carnivorous plants. Purple pitcher plants, round-leaved and the very rare linear-leaved sundews, and five species of bladderworts grow here. These "meat-eaters" supplement the nutrients they can get from soil and water with minerals from the tiny invertebrates they digest.



True bogs get their water only from precipitation and run-off from surrounding lands. They have no outlet, so they have no current. Often mineral-poor, the slow decomposition of plants in their stalled waters produces acidic conditions.

The Cedarburg Bog is a "fen" not a bog because in addition to rain and snow, it gets some groundwater seeping in from springs, and an outlet stream in its southwest corner provides drainage. The definition of fens often specifies that sedges and other non-woody plants are the dominant vegetation, and that the water contains magnesium and calcium compounds. Classified as a

"poor fen, the Cedarburg Bog is not mineral-rich.

Its pH, overall, is neutral (around 7) to slightly alkaline. Within the string bog, the mounds of sphagnum moss are acidic, as are the decaying cedar and tamarack needles on the raised strings; but overall the "hard" groundwater seeping in keeps the wetland from turning acidic. Most days, the word "current" would be an exaggeration.

Springs contribute only a small amount of the water held in the Bog, but their water is high in minerals, and its influence on the water chemistry is huge. Precipitation is slightly acid, and the pH of the Bog water will be mildly acidic after a big rainfall or snowmelt, but the buffering effect of spring water will return the pH to neutral within a few weeks.

Plants in and around the Bog produce an exuberance of potential offspring. Seeds abound - airborne, hitchhiking on the coats of coyotes, carried in the guts of birds. Each fall, Blue jays gather acorns and beech nuts from the beech woods and fly east over the bog to cache them - somewhere.

Since most seeds carry a starter supply of food for their embryos, they may have enough energy to root and grow in the Bog for a while. One professor calls these "hopefuls" that survive for a few years in the wrong habitat "the living dead." The true bog specialists will persist in the challenging conditions of the string bog because they can.

## FOCB STEWARDS

Want to help? Please contact [fieldstn@uwm.edu](mailto:fieldstn@uwm.edu) or call 262-675-6844 to find out what projects are in the works and how you can help the Friends with stewardship and other projects.

## **IF YOU (RE)BUILD IT.....**

It has taken 11 years, \$25,000 worth of materials, a pair of Black Hawk helicopters and as many as 2,000 hours of volunteer labor, but the rebuilding of the Cedarburg Bog boardwalk has been completed. "The last of the loop is completed, so I guess we can finally say we are done," said Jim Reinartz, director of the University of Wisconsin-Milwaukee Field Station located at the 2,500-acre mosaic of wetlands and shallow lakes. "We still have a few teaching platforms to add over the course of the summer, but that's all that's left."

The Cedarburg Bog is one of the largest and most diverse wetlands in southern Wisconsin. At its heart lies the southernmost string bog in North America. This type of patterned vegetation typically is found in the large peat lands of northern Canada. But without the three-quarter-mile long boardwalk and trail that span a series of wetlands, connect the bog's upland rim to two islands, and then loops through the center of a state natural area, scientists and the public would have little access. The bog is home to more than 35 higher plant species and 19 species of breeding birds that reach or are near the southern extent of their range in Wisconsin.

The new boardwalk is actually the bog's third. The first one was built in 1970, using railroad ties and steel drums to keep the planks afloat atop the bog's watery mat of peat. Over the years, field station staff and volunteers replaced every plank and barrel – switching to plastic barrels in the mid 1980s.

But as the heavier-than-water old railroad ties continued to sink away when they broke through the mat, a decision was made in 1998 to literally start over and re-engineer the boardwalk.

"We really did not have an acceptable model," Reinartz said. "What we have now with the new outrigger system is entirely our own design." And this time, the boardwalk would be a complete replacement utilizing new plastic barrels and pressure-treated lumber designed to survive 30-40 years in contact with water. "The bung caps had deteriorated on the plastic

barrels installed in the '80s, so at just \$8 apiece we decided to replace them all," Reinartz said. By the end of 2002, the project reached all the way to the second island. It would resume five years later in the fall of 2007 with work on the last section east of East Island.



There were several critical parts to the project's success:

\*\*The Friends of the Cedarburg Bog handled the fundraising for the project. "The total cost for materials was \$25,000, but only 10% of that was state-funded," Reinartz said. "We didn't have to ask the taxpayers. Instead it was the generous donations of the people who use and appreciate the bog."

\*\*Leading the way were some 85 friends and family of the late Don Bezella who donated to a memorial fund commemorating Don and his love for the bog. On September 14, 2008, a dedication was held at the Friends' annual meeting to erect a special sign a half-mile out in the bog. The Friends also secured a Bezadny Grant from the state Natural Resources Foundation.

\*\*The friends were able to arrange for 21 Army National Guard personnel and two Black Hawk helicopters from the 1st Battalion, 147th Aviation Unit out of Madison (along with four members of the West Bend Guard unit's 832<sup>nd</sup> Medical Company) to lift in 56 12-foot-long boardwalk sections, 75 plastic barrels to support the boardwalk in water, pre-built saddles for the barrels that would attach to the top sections, and the planks. "It would be impossible for us to carry all the materials out there," Reinartz said in explaining why he requested the National Guard's

assistance. The Guard choppers returned in May 2008 to remove the last of the old railroad ties and other boardwalk materials from the East Island.

\*\*The volunteers who donated 1,500 to 2,000 hours of free labor. They were drawn from the ranks of the Friends, the Field Station volunteer list, the Riveredge Habitat Healers and the Sierra Club.

Looking back on the more than decade-long project, Reinartz says he remains happy with the decision to do all the work "in-house." "Going through such a sensitive area, we wanted to be the contractor so we could be very fussy about our impact. We could recognize and protect a particularly valuable little hummock that a teacher has used to show some rare plant or a microcosm of the bog world."

### **Boardwalk by the Numbers**

*Volunteer hours for construction:*

1,500 to 2,000

*Number of deck screws:*

15,000

*Number of bolts:*

1,100

*Weight of material airlifted into bog:*

19,000 pounds

*Estimated life of new boardwalk:*

30-40 years

-- By Carl Schwartz

### **PHRAGMITES - COMMON REED**

We've all seen them growing in roadside ditches, clumps of grass, head-high and taller, topped by feathery, reddish seed heads. Despite the showy seeds, they colonize by sending out dense, interlocking suckers that can extend up to 50 feet in a year, and the impenetrable stands they produce crowd out native plants. Phragmites or Common Reed (*Phragmites australis* or *P. communis*) is a cosmopolitan plant found in North America, Asia, Europe. It is both native and alien.



It has a long history of human use, from arrow shafts to insulation to food. The Dutch plant it to draw down water in lands they reclaim from the ocean, and a Phragmites-thatched roof lasts 60 years. It has always been plentiful in the brackish marshes where land meets sea, and has become more common in freshwater habitats inland, especially in fens. Native Americans in our area made berry-drying frames from it, but didn't use it for much simply because there wasn't much of it to use.

About a century ago, a more aggressive form of Common Reed landed on American shores, possibly another hitchhiker in the ballast of European ships. A chart comparing the two forms can be found at <http://www.invasiveplants.net/phragmites/morphology.htm>

In A Book of Swamp and Bog (an excellent resource), John Eastman reports that research is being done in the mid-Atlantic states to find native plants aggressive enough to act as "*Phrag-blockers*" in coastal marshes.

The String Bog hosts the native variety of Reed, but the invasive form can be found along road edges on its north edge. Considering how little of the Bog is accessible, control will be impossible if the invasive form reaches the Bog's interior.

### **JOIN US**

Members of the Friends of the Cedarburg Bog who are interested in serving on the Friends' Board of Directors are invited to contact Secretary Kate Redmond by mail at the Field Station address.

### **BOG COPPER**

The Cedarburg Bog boasts a number of "Bog Specialties" – resident plants and animals that are threatened or rare; plants at the far southern edge of their range, birds that typically breed in Canada, yet call the Bog home; and habitat specialists that simply can't live anywhere else.

One of these specialists is a small butterfly called the Bog Copper (*Lycaena epixanthe*). Typically a denizen of acid bogs, it is found here because its caterpillar feeds only on wild cranberry. Bog Coppers over-winter in the egg stage, on or under

cranberry plants, and the caterpillars emerge to feed in spring. They pupate in June and the adults typically fly in July.



These are the smallest of the Coppers, with wingspans measuring just under an inch. From the top, their wings look indigo/reddish-bronze with a few darker spots. Their underwings range from pale amber to silvery-blue, decorated with a variety of spots and chevrons. When they sit with wings folded near the leaves of a bog birch, they are well camouflaged.

Adults may feed on nectar from a few nearby flowers in the Aster family, but Bog Coppers seldom stray far from cranberry plants. They range from Newfoundland west to Manitoba, south to Minnesota and back east across the northern tiers of Ohio, Indiana and Pennsylvania, to New Jersey. They may be locally common – present in small colonies in favorable habitat – but they are becoming more scarce in the western part of their range.

### **WISH LIST ITEMS**

Pots, pans and bowls in good condition and especially those suitable for cooking for and serving large groups.

### **BEAUTIFUL BLOOMER**

The striking white flowering stalks of the bogbean or buck bean (*Menyanthes trifoliata*) bloom in May. It's buds are pink before they open into lovely bearded flowers with a tube shaped corolla ending in five lobes. The leaves are divided into three leaflets and persist through the growing season.

Bogbean, or common buck bean is a member of its own family – the Buckbean Family, or Menyanthaceae. It's also known as marsh trefoil, water shamrock, or marsh clover. It is found in the northern United States, Canada, and Europe in shallow water as an emergent herb.

It has an extensive history of medicinal uses. *Scharbock*, it's German common name, comes from the Latin *scorbutus* referring to scurvy. Europeans use it for the treatment of rheumatism, gout, and an assortment of other ills.

However, that is not its most interesting characteristic. The roots and stems of the buckbean are specialized for its aquatic habitat. The stem is filled with aerenchyma, a specialized ground or filler tissue that is filled with holes. It appears spongy under the microscope. This arrangement helps the stem float and as a storage area for oxygen produced during photosynthesis.



The roots have large spaces, called lacuna, which also store oxygen supplied by the leaves. These spaces allow oxygen to get to the root tips, so buckbean has a deeper root system than many bog plants. At night, the plant utilizes this oxygen for respiration.

*By Chris Fredrich*

## **Join us for the Friends Annual Meeting & Potluck**

**Sept 27, 3 - 6:30 p.m.**

**3:00 - hikes**

**5:30 - eats**

**6:00 - campfire & very short meeting**

**We supply brats, buns and beverage.**

**If your last name starts with A to M,  
Please bring a side dish to share.**

**If your last name starts with N to Z,  
Please bring a dessert to share.**

**Please RSVP at 262-675-2443 or  
[fieldstn@uwm.edu](mailto:fieldstn@uwm.edu)**

## CALENDAR

### FRIENDS EVENT *Bird Walk*

July 5, 6:50 – 10: a.m.  
Bird the upland woods and the boardwalk. UWM Field Station

### *Riveredge Speaks Out*

July 21, 7:00 - 8:15 p.m.  
"Ecology Underground – the Hidden Life of the Soil." At the Cedarburg Cultural Center. Other dates for this series of ecology programs: Aug. 18, Sept. 15, and Oct. 1. For topics and locations, contact 1-800-287-8098 or [www.riveredge.us](http://www.riveredge.us).  
A \$5 donation is suggested.

### *Counting Insects at Riveredge*

Come for all or part of the day.  
*Butterfly Count*

July 11, 9:30 a.m. – 3:00 p.m.  
(butterfly review at 8:30)

### *Dragonfly Count*

August 8, 9:00 a.m. – 3:00 p.m.

### *Grasshopper Count*

August 29, 9 a.m. – 3 p.m.

Registration is required.

For more information or to register, contact Mary Holleback at [maryh@riveredge.us](mailto:maryh@riveredge.us) or 1-800-287-8098. \$5 donation suggested.  
Riveredge Nature Center, Newburg

### *Prairie Day*

July 15, 9 a.m. – 4 p.m.

A day of walks and workshops on prairie topics. Lunch is available. Registration required. For information or to register, call 1-800-287-8098, or visit [www.riveredge.us](http://www.riveredge.us).

Fee: Riveredge Member: \$30; Non-member: \$40.

Riveredge Nature Center, Newburg

### *Ozaukee-Washington Land Trust Fish and Steak Dinner*

August 16, 3 p.m. Walk;  
4 p.m. Social hour, Silent Auction;  
5:30 p.m. Dinner (locally grown).  
Music by *Sawdust Symphony*.  
For information or to register, contact [cwenzel@owlt.org](mailto:cwenzel@owlt.org) or 1-262-338-1794 or download registration materials from [www.owlt.org](http://www.owlt.org).  
Forest Beach Migratory Preserve  
4970 Country Club Road, Port Washington



### *Quarterly Board Meeting*

July 16, 7:00 to 8:30 p.m.  
Friends of the Cedarburg Bog,  
Members welcome.  
At: UW-M Field Station.

### *Sci-Tech Adventures—Two-Day Camps* 12:30 – 5 p.m.

August, 4 & 5, "Let's make a DVD about Forest Beach!"(grade 3 – 8)  
August 11 & 12, "Let's Make a Book About Forest Beach!"  
Forest Beach Migratory Preserve  
4970 Country Club Road, Port Washington For information or to register, contact 1-262-338-1794 or [cwenzel@owlt.org](mailto:cwenzel@owlt.org).

### FRIENDS EVENT - *Bird Banding Demonstration*

August 29, 7 a.m. – 10:30 a.m.  
Join Master bird banders Al Sherkow and Debbie Hartman for a banding demonstration at the start of the fall migration.  
Registration appreciated, please contact [fieldstn@uwm.edu](mailto:fieldstn@uwm.edu) or call 262-675-6844. UWM Field Station.

### FRIENDS EVENT - *Sky Spying*

September 11, 8:00 p.m.  
Explore the night sky at the UWM Field Station with guides from the Northern Cross Science Foundation. View planets, nebula, galaxies, and other celestial objects thru a variety of telescopes. Please register at 262-675-6844 or [fieldstn@uwm.edu](mailto:fieldstn@uwm.edu) UWM Field Station. A \$3 fee is suggested.

### *Bluegrass and Brats - This Old Barn*

September 18, 6 p.m. Food,  
7:30 p.m. Concert. Concert tickets \$12. Food tickets are separate.  
At Lac Lawrann Conservancy, 300 Schmidt Road, West Bend

### FRIENDS EVENT – *Annual Meeting*

September 27, 3 – 6:30 p.m.  
See invitation on inside page.

### FRIENDS EVENT - *Fungi of the Field Station's Beech-Maple Forest*

October 3, 1:00 – 4:00 p.m.  
Please register at 262-675-6844 or [fieldstn@uwm.edu](mailto:fieldstn@uwm.edu). UWM Field Station. A \$3 fee is suggested.

C/O UWM Field Station  
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www.bogfriends.org

