The BogHaunter

the newsletter of the Friends of the Cedarburg Bog

Volume 8, Number 1 WINTER 2012/13

LIFE IN THE PUKAK

Snow – or the lack of it – plays a significant role in the lives of animals in the Bog. An inch of snow makes it hard for ground-feeding birds like turkeys to find food, but that same inch allows mice and shrews to tunnel, hiding them from hawks, owls, and foxes.

Three or four inches throw a blanket over plants and small animals but still let in sunlight. A fox can move easily in six inches of the white stuff; any deeper and it must bound, using more energy. Just as hunting success becomes more critical, it becomes easier to miss its prey. A foot of snow lets in essentially none of the available light from above. The drifts that immobilize deer, restricting them to the cedar thickets, act as step ladders that let cottontails feed on twigs that are normally out of reach.

Weather reports are based on data collected in a louvered box about five feet above the ground, but the vast majority of animals live a scant few inches above and below the soil's surface., and what matters to them is the air at ground level. The microclimate that forms between the snow and the ground is called the subnivean layer; the Inuit call that zone the pukak.

Snow is an effective insulator because of the air that is trapped between the small snow particles. Like a bird's down feathers, these air spaces are warmed by heat from beneath (from the soil, in the case of snow). These snow-lined air-spaces are constantly changing - solidifying as water vapor diffuses through the snow; compacting; melting and enlarging. The result is an insulating layer that keeps the temperature below the snow at about 32 degrees, while the air above the snow bank may be 30 or more degrees colder. It truly is a blanket of snow.

A subnivean layer needs an uneven landscape with some plants at ground level to keep the snow from settling flat on the earth. There is no pukak zone on the ice-covered lakes in the Bog – their surfaces are too smooth – but the hummocky sedge habitat that makes up much of the Bog is ideal. In mountainous areas, the subnivean layer keeps the snow from being "glued" to the landscape and is a factor in avalanches.

By the time the snow is a foot deep (some sources say 6"), the air temperature of the pukak is stable – chill but not frigid; warm enough for some plants to stay marginally green.

But the pukak isn't just an exercise in physics, it's the winter home of animals like mice, voles, moles, and red squirrels (the largest pukak-dweller), plus hardy insects and other invertebrates. They modify the "warm" air spaces further, creating mazes of trails that allow them to live and feed under the snow. Spring snowmelt reveals pathways, seed caches, grassy residential domes, and small trees that have been girdled by voles.

Mouse trails

The down-sides of pukak-living are several: it can be restrictive, no new food is introduced into the system, air quality can suffer, and it's pretty dark. And even under the snow, the inhabitants of the pukak are not safe. Predators like shrews and weasels follow them into their tunnels; foxes and coyotes listen first, then pounce on the snow to break through to the ground.

Oxygen and carbon dioxide filter readily through the snow, and the tunnels made by shrews, mice and voles provide additional avenues for gas exchange. According to folklore, voles deliberately cut "windows" in the snow's crust to vent carbon dioxide that's given off by respiration and by decomposing plants. A series of experiments suggest that while the concentration of CO_2 may be high in some areas of the pukak, the voles don't seem to care.

Mouse on snow

Northern plants are adapted to take advantage of snow cover, too, and they may suffer when snowfall is light. A textbook example occurred in the Bog during the winter of 2003-2004. After a dry fall, January, 2004 was bitter cold and snowless, and by February, the frost line extended deep into the ground. Although the tamaracks leafed out in spring, their roots had been frozen and their needles soon turned brown. Twenty percent of the Bog's tamaracks died. In the northern half of the Bog 30% of the tamaracks succumbed to the freeze.

Skimpy snow accumulation is hard, too, on the small animals that depend on the climate that develops in the subnivean zone.

To discover the pukak for yourself, pick a spot with undisturbed vegetation (lawns are too uniform) and make a person-sized clearing in the snow, all the way to the ground. Lie down in it and use a flashlight to get a vole's-eye-view of the tunnels and caverns in the airspace below the snow.

To experience conditions within the pukak, make a quinzee (from an Athabascan word meaning "a small snow mound shelter"). Gather enough snow to make a head-high mound about ten feet across, pack it down well, and let it settle for an hour or so. Then hollow out a living space in the middle, leav-

ing the walls and ceiling one foot thick. It's not an igloo – igloos are made by piling blocks of snow in a circle.

For great information about the ecology of winter, try Winter World, by Bernd Heinrich.

Please join us for the

Annual Winter Walk and Chili Potluck

at the UWM Field Station

January 27, 2013

1:00 – hike

4:30 – eats

We supply chili and beverage.

Join us for the walk or the potluck or both.

If your last name starts with A to M, please bring a dessert to share.

If your last name starts with N to Z, please bring a side dish to share.

No dogs, please

Please RSVP at the FOCB website - bogfriends.org (click Events tab) You may also call the Field Station at 262-675-6844 or email at fieldstn@uwm.edu.

Winter Landscape

FIELD STATION ANNUAL REPORT

The title is a bit on the dry side – "2011 Field Station Annual Report" – but the contents are an annual reminder of just how much amazing stuff is going on each year at 3095 Blue Goose Road in the Town of Saukville. And it's a reminder for the Friends of the Cedarburg Bog of just how important a role they play in supporting the University of Wisconsin –Milwaukee Field Station. The Friends' mission is to help preserve and study the Bog and to make the public more aware of its uniqueness.

The Field Station is the gateway to a 2,000 acre outdoor laboratory where researchers study plant and animal ecology, evolutionary biology, ethology, taxonomy, geology, hydrology and climatology. UWM owns approximately 320 acres, most donated by The Nature Conservancy in 1965. Research at the Station has produced 309 scientific publications and 140 theses since 1970.

Here's what the report lists as the highlights for 2011:

* Construction of a new sound room facility for experimentation on frog vocalizations and communication.

* Director Jim Reinartz was honored by the Wisconsin Wetlands Association with its Wetland Enjoyment Award. Friends VP Kate Redmond snagged the same award in 2010.

* Beginning of two major Friends' projects to manage invasives in the Bog.

* Major increases in information available through the Field Station's website www.fieldstation.uwm.edu, where you can find a copies of annual reports for 2008-2011.

* 50 active research projects conducted at the Field Station, including: 6 M.S. thesis, 2 Ph.D. and 19 studies by researchers from outside UWM.

* 6 papers published.

* 11,000 student hours of instruction and group use.

The Field Station also manages five outlying properties, and cited these offsite highlights:

* First year of management of the Habitat Protection Area at UWM's new Innovation Park campus on the old Milwaukee County Grounds.

* Use of Downer Woods on campus for education and research continues to increase.

* Summary of bat activity at the Neda Mine Hibernaculum and environment data sets completed and made available for collaboration with the UWM Biomathematics program.

The annual report notes that in 2011 the Friends sponsored 18 educational events for the general public that contributed nearly 1,600 hours to the group use total. Volunteers from the Friends contributed many person-days of labor, including natural area management, publishing a newsletter, raising funds, and sponsoring and providing staff for events such as Treasures of Oz.

The Friends, with grant funding from the Knowles-Nelson Stewardship Fund and the Wisconsin Energy Foundation through the Natural Resources Foundation of Wisconsin, began projects in 2011 to control glossy buckthorn in parts of the Cedarburg Bog and to kill fruiting-sized Oriental bittersweet on adjacent private land.

Oriental Bittersweet

In 2011, the Friends also were involved in three research studies at the Bog:

* A grant-funded study (led by Friends member and Advisor Joanne Kline) to identify the surrounding areas that contribute groundwater supply to the Cedarburg Bog.

* Mud Lake bird migration point counts, conducted for the Friends by board members John O'Donnell and Victoria Piaskowski. The counts, conducted by canoe and/or kayak, during spring and fall migration, also detected interesting breeding species.

Two Ruddy Ducks were seen with five ducklings on June 16. This species is an uncommon Wisconsin breeder and has not previously been documented as breeding in Ozaukee County. Other notable sightings included probable Least Bittern breeding evidenced by juvenile birds in mid-August and a regular presence of Red-shouldered Hawks and Northern Harriers suggestive of possible breeding.

The counts demonstrated that 245-acre Mud Lake is an important spring migration staging area for waterfowl, cranes, and rails.

* Piaskowski and O'Donnell also conducted point counts in the Cedarburg Bog and Upland Beech Woods to determine the bird species using these habitats during spring and fall migration.

Other research at the Field Station focused on the various food and reproductive issues of Tree Swallows, Common Yellowthroats and Eastern Bluebirds; the conservation genetics of Hines's emerald dragonflies; Blanding's turtles, glossy buckthorn, the Wisconsin Herp Atlas, wildlife monitoring by the Ozaukee Washington Land Trust, and the effects of climate change on

spider assemblages.

Grey tree frog

WHAT'S NEW ON THE BOARD?

The Board of the Friends of the Cedarburg Bog welcomes in-coming Board members Chris Ford and Tim Vargo, who were introduced at the September Annual Meeting.

Departing Directors Gail Epping Overholt, Vicki Piaskowski and Nicole Sidoff were recognized for the many hours they contributed to the mission of the Friends. Thank you.

Here is the Friends Board for 2013, with committee chairs noted.

Bill Taylor – President, Treasurer

Bruce Ross – Vice-president, *Fund-raising*

Kate Redmond – Vice-president, *Newsletter, Events*

Mary Holleback – Secretary, *Education*

Chris Ford

Andrew Krueger – DNR Property Manager

Mark Murphy – *Stewardship*

Bill Niehaus

John O'Donnell

Jim Reinartz – UWM Field Station Director

Pam Resnick Ross – *Membership*

Susan Schumacher

Carl Schwartz

Jennifer Rothstein

Tom Uttech

Tim Vargo

The Friends of the Cedarburg Bog

Support stewardship and appreciation of the Cedarburg Bog through land management, preservation, research and education

KEEPING TRACK

This fall, the Friends switched to a new database. We have our fingers crossed that everyone's information was transferred correctly. You may receive the BogHaunter electronically, by mail or both. To change formats, contact us at the Field Station address or at fieldstn@uwm.edu.

FRIENDS' ENDOWMENT FUND

Current and former members of the Board of Directors of the Friends of the Cedarburg Bog have donated $9,500 to establish a perpetual endowment fund through the Natural Resource Foundation's Wisconsin Conservation Endowment. The fund will provide a sustained source of funding to preserve and nurture the Bog.

The Cedarburg Bog Stewardship Fund will be managed by NRFW. Contributions are tax-deductible and can be made by sending a check to the Natural Resources Foundation of Wisconsin, Attn: Cedarburg Bog Stewardship Fund, P.O. Box 2317, Madison, WI 53701 or by donating online at "www.wisconservation.org, Donate Now," noting the intention of the gift.

Friends of the Cedarburg Bog who wish to help support and protect the Bog for future generations are urged to consider leaving a legacy gift by including the Cedarburg Bog Stewardship Fund in your will. To make such a bequest, simply incorporate the following language in your estate plans:

"I give [describe the gift] to the Natural Resources Foundation of Wisconsin [federal tax id # 39-1572034], a nonprofit corporation organized and existing under the laws of Wisconsin and with a principal mailing address of PO Box 2317, Madison, WI 53701. This gift shall be designated to the Cedarburg Bog Stewardship Fund."

For more information, call the Natural Resources Foundation toll free at (866) 264-4096, email info@wisconservation.org or visit www.wisconservation.org

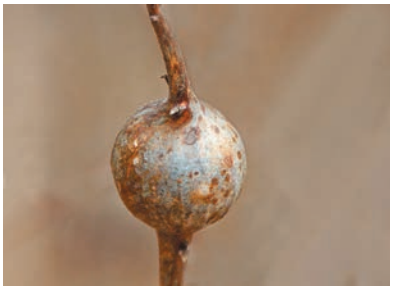
LUMPS ON PLANTS

Winter hikers in the Bog may notice plants that bear a variety of odd-shaped knots and swellings. Often, these lumps are galls. Galls on plants are growths that are made in response to the actions of another organism. Some are protective tissue grown where one plant rubs against another, but many are signs of animals we seldom see.

Gall-makers take over control of a portion of a plant, tricking the plant into growing more cells at one site there, enclosing the gall-maker within its food supply. Various gall-makers produce galls of a predictable size, shape, color, and location on a plant.

North American plants support more than 2,000 kinds of galls - 800 on oaks alone.

Marble-sized Oak bullet galls, formed from the woody tissue of an oak twig, are very firm and may stay on a tree for several years.



Goldenrod Gall

Goldenrod Ball Galls are caused by a quarter-inch long fly. The larva winters within the gall, and before it pupates in spring, it must make an escape tunnel for its adult form to use.

Willow pine cone galls, caused by a gnat larva, form at the tips of the twigs of willow shrubs. The "pine cone" scales overlap loosely, and caterpillars, tiny wasps, beetles, sawflies, and midges may join the gnat larva in the gall during winter.

Pinecone willow gall

Ash Flower Galls are triggered by spider-relatives called mites that inhabit the tree's male flowers. In winter, the gall looks like a brown, woody cluster of "petrified" flowers.

A birch tree that grows at the head of the University's boardwalk trail sports a bushel-basket-sized Canker on its trunk., Cankers are caused by certain fungi whose spores land in an opening in the bark.

Check out those plant lumps – they have fascinating stories.

The Cedarburg Bog: designated an Important Bird Area and a Wetland Gem

CALENDAR

For more events offered by our partner organizations, check: treasuresofoz.org/calendar.

RIVEREDGE BIRD CLUB

First Tuesday of the month except December
Program – 7 PM
At: Riveredge Nature Center Barn.
Free. The public is welcome.

SCIENCE FOR EVERYONE

Programs on Natural History at Riveredge Nature Center (RNC), Newburg; or the Washington County Public Agency Center (WCPAC), West Bend. For directions or other topics, check www.riveredge.us or call 262-375-2715.
7 to 8:15 PM
January 22 - The Influence of Wisconsin's Geology on the Presettlement Plant Communities of the State. Jim Reinartz, director of the UWM Field Station. At RNC.
Fee: Free ($5 Donation Appreciated)

FRIENDS OF THE CEDARBURG BOG

Quarterly board meeting
January 10, 2013, 7 to 9 PM
Members welcome
At: UWM Field Station

WINTERFEST

January 26th, Noon to 4 PM
Winter in Wisconsin is a special time. Join us as we celebrate with some family winter fun! Enjoy a sled dog demonstration, ice skating, sledding, snowshoeing, cross country skiing and ice fishing.
Free
Urban Ecology Center - Washington Park, 1859 N. 40th St. Milwaukee, WI

WINTER WALK AND CHILI POTLUCK

A Friends-sponsored Event
January 27, 1 to 6 PM.
See details elsewhere in the newsletter.
A $3 donation for the hike is suggested.
At: UWM Field Station.

TIKI TORCH SKI/HIKES

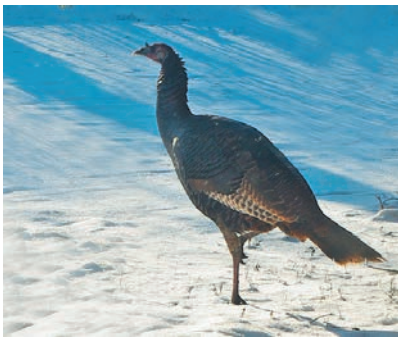
January 5 and February 2, 6 to 9 PM.
Sponsored by the Friends of Harrington Beach State Park.
Bonfire and refreshments at the Welcome Center. Park Admission Sticker required. Please, no sleds or pets. For information, check www.friendsofHarrington.org or call the Harrington Beach State Park office at (262) 285-3015.
At: Harrington Beach State Park, Belgium

RIVEREDGE NATURALIST SERIES

Curious about how natural communities work and what lives in them? This course is for you. Any time is a good time to join the class! Visit www.riveredge.us for topics and fees.
February 7, 9AM to 3:00 PM - Life in Winter
February 16, 1 to 4 PM – Birds
Riveredge Nature Center, Newburg

First Annual WINTER FROLIC

February 9
Snow shoeing, sleigh rides, children's activities, bonfire and more.
For more information please visit our website - mequonnaturepreserve.org or call 262-242-8055.
At: Mequon Nature Preserve, 8200 W. County Line Rd.



WINTER SURVIVAL FOR MAN & BEAST

A Friends-sponsored Event
February 10, 1 to 3 PM Treat your family to a hands-on program about how animals survive the winter. Demonstrations will include living inside an artificial beaver lodge, and survival contests. With Rick Wolff - retired State Game Warden.
Pre-registration required - Enrollment limited to 25. For directions or to register, go to the FOCB website - bogfriends.org (click Events tab). You may also call 262- 675-6844, or email at fieldstn@uwm.edu.
A $5 donation is suggested.
At: UWM Field Station

LOCAL FARMER OPEN HOUSE

March 9th, 2013 11 AM to 4 PM
Your connection to Community Supported Agriculture (CSA) and buying directly from farmers. Meet and sign up with farmers! Learn how you can join a CSA, purchase a share of the harvest, and get a box of fresh produce each week during the season.
Event is Free – lunch is available for purchase
At: Urban Ecology Center – Riverside Park. 1500 E. Park Pl. Milwaukee, WI

OWL PROWL

A Friends-sponsored Event
March 16, 7 PM (snow date March 24)
Bring binoculars, dress for the weather, scout for owls at the edge of the Bog. Meet at the Lab building.
For directions or to register, contact 262- 675-6844, fieldstn@uwm.edu, or bogfriends.org (click Events tab).
A $3 donation is suggested.
At: UWM Field Station

MAPLE SUGARIN' SEASON at RIVEREDGE

Tapping the Sugarbush
February 23, 1 to 2:30 PM
Maple Sugarin' Open House
March 23, 10 AM to 2 PM
For information about these events, check www.riveredge.us or call 262-375-2715.
Preregistration suggested for groups.
Riveredge Nature Center, Newburg

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ADDRESS CORRECTION REQUESTED

UWM Field Station
3095 Blue Goose Road
Saukville, WI 53080

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