

The BogHaunter

the newsletter of the Friends of the Cedarburg Bog

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FALL 2012

MISSION IMPOSSIBLE

Monarch butterflies that sail through the air above the Cedarburg Bog in early fall have set a course for Mexico. They're not the only insects that travel - some dragonflies put on more miles - but they are the most famous.

All of the monarchs east of the Rockies overwinter on about 15 smallish sites in central Mexico, 1500 miles from Wisconsin. Monarchs west of the Rockies overwinter along the coast of California, and southern Texas and Florida boast non-migratory populations.



Monarch Butterfly

Only the final brood of summer turns its compound eyes southward, and in spring, the same extra-long-lived individuals that flew south will head back north. They lay eggs as they go, and their offspring and their offspring's offspring follow the emerging milkweed crop north, eventually returning to Wisconsin (recently, scientists have discovered that some hardy individuals may actually make the entire round trip). Newly-returned monarchs produce a few short-lived generations in the Bog's grasslands, where their caterpillars dine on butterfly weed, common and whorled milkweed, and in the dappled wetland edges where swamp milkweed grows.

Decreasing day length activates an internal clock and results in the migratory generation called Gen 5 - the 5th generation removed from Mexico. These are the butterflies whose wings are tagged for migration studies.

Monarchs navigate by the sun, using an internal "GPS" that allows them to set correct flight plans for central Mexico whether they're in Michigan, Maine or Montana. The changing tilt of the earth in late summer also plays a role; wherever they are, monarchs are cued to start moving when the sun recedes to around 57 degrees above their southern horizon.

Such a dramatic journey by a vast majority of its population is highly risky for any species; when a species puts all its eggs in one basket, ecologically speaking, any additional mortality factor can be significant. If the routine hazards of migration are compounded by problems on the wintering grounds, by an extra-early or late spring that puts north-bound monarchs out of sync with milkweed growth, by storms, cars, drought, or disease, monarchs are in trouble.

Snow in the Mexican mountains in 1992 and 1995 caused greater than 60% mortality before the return trip even started, and an el Nino event in the spring of 1996 brought heavy rains the southeastern part of the US as the monarchs were moving through. In the winter of 2009-10, temperatures at the wintering grounds fell well below freezing.

This year's monarchs arrived early and in good numbers, but heat and drought withered the tender young milkweed leaves the caterpillars prefer and the wildflowers adults nectar on. The mid-summer generations were all but absent.



Monarch Caterpillar

Monarch numbers recorded since 1988 on the annual Butterfly Count at nearby Riveredge Nature Center, whose count area includes the Bog, reflect some of these events. With a low of zero (1996) and a high of 94, monarchs usually number between 10 and 25. Eighty-six were counted in 2010; fourteen in 2011, and five in 2012.

When you see a lingering monarch, enjoy the miracle and wish it a "Bon Voyage."



Osprey Platform

OSPREY PLATFORM UPDATE

In late winter of 2008, the Friends of the Cedarburg Bog worked with the American Transmission Company to site five Osprey nest platforms in and around the Bog. Within a month of their installation, an Osprey pair set up housekeeping on one of the platforms, and by the end of summer, they had fledged three young - the first recorded Osprey breeding in Ozaukee County in more than a century. Except for the summer of 2011, when two chicks hatched but didn't survive, one or two ospreys have been fledged each year from that platform.

PHOTO CONTEST WINNER

The winner of the Friends of the Cedarburg Bog Photo Contest is Michelle Stanish. She will receive a \$50 prize and a one-year membership to the Friends. Congratulations, Michelle and thanks to those who entered.

STUDYING THE GROUNDWATER

The approximate size and shape of the Bog's watershed are easy to determine. A lot is known, too, about its water chemistry and about the buffering minerals that underground springs deposit in the water, minerals that keep its pH (the measure of its acidity) largely in the neutral zone.

In the fall of 2011, the Friends of the Cedarburg Bog received a grant from the Wisconsin Coastal Management Program to chart the invisible – the supply of groundwater that so profoundly influences the Bog's ecology. How big is the groundwater "pool" that directly influences the Bog? How deep is it? Which way is it flowing? What is the shape of the rock layer beneath it? A year ago, the Friends, working with the Wisconsin Geological Natural History Survey, Ozaukee and Washington Counties, and other partners, began a year-long study to try to answer these questions. One of the basics of good stewardship is knowing what it is that you are protecting.

Some of the water that feeds the surface systems through runoff, rain-fall or snowmelt sinks into the soil and ends up as groundwater. Moisture that doesn't stick to soil particles or get taken up by plants may continue to travel down through the dirt to collect in a saturated zone called the water table. The water table surface in this area has a slight slope so that most of the groundwater that reaches the Bog comes from its north and west.

The location and quality of the Bog's groundwater is very important to the plants and animals that live there and may explain why the Federally endangered Hines Emerald dragonfly chooses this spot as one of the three locations it is found within the state.

A lot has been accomplished in the past year. The first goals were to map the water table and determine the path(s) of the groundwater flow. Several residents of the 42 square mile study area allowed their wells to be tested, and along with historic accounts from drillers' logs, data on water levels and stratigraphy were collected from 800 water supply wells. Stratigraphic studies confirm the types of rocks present and their layering, and the data that have been collected will result in a 3-D map of the water table and of the different kinds of rock layers under and around the Bog.

Mild weather allowed researchers an early start in 2012, and groundwater data study points were established across the study area. Beginning in March, students of UWM Geoscience

Professor Bill Kean measured the thickness of various ground layers using electromagnetic induction and electrical resistivity. Weak electric currents were sent into the ground and the differences in resistance from point to point are recorded. The differences can be used to create contour maps of the rock layers below the surface.



A student in Professor Keans' class preparing to measure electrical resistivity

By mid-summer, new permanent monitoring wells had been drilled at several sites on the north border of the Bog and temporary "push piezometers" were installed in the String Bog, Watts Lake, and Long Lake. A piezometer is a tube that allows scientists to measure groundwater pressure and movement. Mystified fishermen at Watts Lake watched as yards and yards of PVC pipe were sunk into the muck to make a piezometer.



Employees of WGNHS gathering data in Long Lake

In addition, geological data was analyzed in the area that is the suspected habitat of the Hine's emerald dragonfly. The naiad (immature stage) of the Hine's Emerald is a habitat specialist that lives for two to four years in certain kinds of cool, shallow, spring-fed marshes and sedge meadows. Understanding groundwater characteristics where the naiads are known to occur guides the search for other populations.

And the next steps? With one more round of water chemistry data completed, the "muscle work" is over, and the numbers are being crunched. The study will leave us with a much more accurate picture of the shape of the

Bog's basin and the direction of flow in the Bog, and a better idea of chemical composition of its water. An extension of the study might lead to a ground water flow model that would have broad application to groundwater planning in Southeastern Wisconsin. Hats off to Friends' Advisor Joanne Kline for writing the grant and for overseeing the project throughout the past year.

BATS AT THE BOG

Bill Mueller, a scientist at the Western Great Lakes Bird and Bat Observatory, led 22 participants on a two-hour bat hike at the University of Wisconsin-Milwaukee's Field Station at the Cedarburg Bog on the evening of Aug. 27.

The event, the second sponsored by the Friends of the Cedarburg Bog this summer, was co-led by Friends Board President Carl Schwartz, who discussed the role the Friends played in acquiring the ANABAT acoustic bat detection device that was used to locate approximately 35 individuals of 2 species (Little Brown Bat and Big Brown Bat) on a walk from the Field Station down Blue Goose Road and out to Mud Lake. The device's screen displayed each individual's acoustic signature.

Bats use echolocation to navigate the night skies and to hunt. As the word suggests, bats emit ultrasonic pulses of sound that bounce off of both their prey and stationary objects in their landscapes, and they monitor the sounds that return to them.

Just as each of our eyes sees a slightly different view, allowing us to judge distance, a bat's two ears can register slight differences in the arrival times of a returning echo. This allows it to compute the distance, size (a bigger return echo means a bigger object), direction and mobility of an object it detects (a lower-pitched echo means the object is moving away). Sounds bouncing back from different heights hit different areas on the folds of the bat's ear, which indicates the altitude of a targeted insect.

Not all bats worldwide use echolocation, but all Wisconsin bats do, and although there are similarities in the patterns of some calls, Wisconsin bats can be identified to species by their sounds using technology like the ANABAT. The upper limit of human hearing is about 20 kilohertz (kHz), but these high frequency bat vocalizations range from 14 kHz to more than 100 kHz. Some insects, like members of the Tiger Moth family, can detect bat signals, and a few signal back, clicking to alert bats that they are toxic.

Contrary to the old saying "Blind as a bat," bats can see in the daytime, have

adequate eyesight, which they use to compliment their amazing auditory abilities.

A Common Nighthawk buzzed the group as they set out from the Field Station, and later in the evening some hikers also were fortunate enough to hear a Barred Owl and an Eastern Screech-Owl.

FALL SOUNDS LIKE INSECTS

Winter is mostly silent - monosyllabic bird calls muffled on a snowy landscape. Spring brings a crescendo of calls from migrating and territorial birds. By mid-summer, the auditory passion of the breeding bird season has calmed, but deep in the grass, the insect chorus is warming up. A fall walk in the Bog is a treat for the ears.

Birds put aside their melodic songs by fall, and they communicate alarm or location with short, ventriloquistic "chip" notes. Nomadic Cedar Waxwings wheeze from crabapple trees, and the broody clucks of Robins and other thrushes announce that they are preparing to leave.

Blue Jays of the Bog harvest acorns from the upland beech woods in fall and cache them on the Bog islands. Recently, an acorn cap was found in a core sample of 5,000 year old lake sediments. Was the acorn dropped by an ancient jay collecting its winter food supply?

A few spring peepers and tree frogs call tentatively on warm fall days before they hibernate, shutting down their metabolism, heartbeat and breathing, only to restart when the air warms in spring.

And the insects! The rustle of a dragonfly's wings. The drone of wasps and bees working the asters, goldenrods and tickseed sunflowers. The muffled buzz of bumblebees on turtlehead, jewelweed and swamp lousewort - tubular flowers that require a muscular pollinator.

This year's choir of field crickets, tree crickets, grasshoppers, and katydids



Bumblebee

rivals the frog chorus of spring. Tree crickets, small and hard to find, dominate. Nathaniel Hawthorne said about tree crickets that "If moonlight could be heard, it would sound like that." For more information about insect calls, try *The Songs of Insects*, by Elliot and Hershberger.

As you enjoy the trails at the north end of the Bog, off of Hwy 33, take the time to listen!

FRIENDS GROUP CELEBRATED

The Friends of the Cedarburg Bog has received a 2012 Wisconservation Award from the Natural Resources Foundation of Wisconsin as this year's Outstanding Conservation Partner. The award was accepted by Friends board President Carl Schwartz, Field Station Director Jim Reinartz, and DNR Property Manager Andy Krueger.



Jim Reinartz and Andy Krueger

The award recognized the Friends group, organized in 2005, for its "incredible commitment to the Natural Resources Foundation of Wisconsin, and to the protection of our state's lands, waters, and wildlife."

The foundation presented the award at its annual Celebration of Conservation event on September 20 in Madison.

As further evidence that the Bog Friends' partnership with NRF is destined to continue long into the future, Friends of the Cedarburg Bog board president Carl Schwartz announced at the event that members of the Bog Board have in the past month donated or pledged \$8,450 toward establishing a perpetual endowment fund through the NRF's Wisconsin Conservation Endowment that will help support our stewardship and the preservation of the Cedarburg Bog. The endowment fund will officially be launched when an additional \$1,550 has been raised.

The Cedarburg Bog was designated a State Natural Area in 1952. Only the second property added to this program,



Carl Schwartz accepting the award.

it is owned primarily by the Department of Natural Resources and the University of Wisconsin-Milwaukee, which maintains its Field Station there. The State Natural Area has grown to 1,656 acres today.

The uniqueness of the bog's natural history has been recognized by its inclusion in the Wisconsin Natural Area System, and it also is registered as a National Natural Landmark by the U.S. Department of the Interior.

The Friends has participated in the NRF Field Trips program, hosting events like "The Guts of an Amazing Wetland," at the bog for several years, thanks to Field Station Director Jim Reinartz and naturalist and Friends board member Kate Redmond.

As a 501(c)3 organization, the Friends of the Cedarburg Bog has been the vehicle through which several NRF programs have helped finance efforts to protect the Bog, increase access to the area and educate the public about its unique natural features and wildlife.

Under the Foundation's Adopt-A-Natural Area Program, companies, families, or organizations are encouraged to adopt a specific site by pledging support for management activities for a three-year period. The Cedarburg Bog has been designated a priority candidate site and was awarded a \$25,500 grant from the Wisconsin Energy Foundation to mount an offensive against such invasives as buckthorn, oriental bittersweet and Phragmites from 2010 to 2012. The Friends of the Cedarburg Bog paired this with a \$20,000 Knowles-Nelson Stewardship Grant for the same purpose.

The Friends also has been the recipient of two NRF Besadny Conservation Grants. This program promotes the responsible stewardship of Wisconsin's natural resources at the local level.

A 2007 grant assisted with the purchase of lumber and floatation barrels

so that volunteers could construct and install teaching platforms along the boardwalk leading out three-quarters of a mile from the Field Station. The boardwalk is the most heavily used teaching facility at the Bog.

In 2011, a Besadny grant helped fund the interpretive materials for an 8-panel interpretive kiosk at the Bog trail-head adjacent to Highway 33 between Saukville and Newburg. This was the capstone on a three-year, \$17,000 project that allows handicapped access to a half-mile boardwalk trail into the north end of the bog and Watts Lake.

The kiosk complements a set of trail-side signs that together interpret the value of wetlands, the role of the bog and Cedar Creek in the Milwaukee River watershed, the glacial history of the area, the physical makeup of the bog, Native American habitation, habitats, ecological relationships and individual plant and animal members of the bog community. The Friends also secured matching grants from the Milwaukee River Basin Partnership and the Friends of Wisconsin State Parks Affinity Card Naturalist Grant Program in order to complete various pieces of the project.

The continuing support of the Friends members is a very important ingredient in the group's accomplishments.

The Friends of the Cedarburg Bog

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

CALENDAR

RIVEREDGE BIRD CLUB

First Tuesday of the month except December Program – 7 PM

November - Stopover Habitats

At: Riveredge Nature Center Barn.

Free. The public is welcome.

SCIENCE FOR EVERYONE

Programs on Natural History.

7:00 to 8:15 PM

At: Riveredge Nature Center (RNC), Newburg; or the Washington County Public Agency Center (WCPAC), West Bend. For topics or for directions, check www.riveredge.us or call 262-375-2715.

Fee: Free (\$5 Donation Appreciated)

October 16 "Natural History Detectives: The Rivers of Milwaukee" (RNC).

October 23 "Insects; Up Close and Personal." (WCPAC).

MEQUON NATURE PRESERVE

WEEKLY WALKS

Tuesdays at 4:30 PM and Thursdays at 8:30 AM. 45 to 60 minutes.

Join us for guided walks, learn more about the Preserve and get some exercise at the same time. Meet at the PieperPower Education Center, 8200 W. County Line Rd, Mequon.

Fee: Free

STAR GAZING

A Friends-Sponsored Event

October 12, 7:30 – 9 PM.

Join members of the Northern Cross Science Foundation and view stars and other celestial objects through their powerful telescopes.

Dress for the weather; bring a lawn chair and binoculars.

Pre-register at 262-675-6844, fieldstn@uwm.edu, or bogfriends.org (click on the Events tab).

\$3.00 donation requested.

UWM Field Station

GROSBEAKS GALORE

October 13, 9 AM – 4:30 PM

Find out how to attract more birds to your landscape. Morning sessions at Country Inn and Suites, Port Washington, afternoon at Forest Beach Migratory Preserve (former Squires Golf Course) north of Port Washington. For more info or to register, call 608-264-8594 or email kim.grveles@wisconsin.gov.

Fee: \$15

LUMINARY WALK and STAR PARTY

October 13, 7-9 PM

About a mile of Lac Lawrann's trails will be lit by luminaries for a peaceful night walk. The Northern Cross Science Foundation will share views from their telescopes as well. Top your night off with a marshmallow roasted over the fire.

No fee

Lac Lawrann Conservancy, West Bend

ON THE PROWL FOR OWLS

A Friends-Sponsored Event

October 19, 7:00- 8:30 PM.

Join us to learn about owls and find out which owls live on the Bog's edge. Bring binoculars, dress for the weather. Meet at the Lab building. To register, call 262- 675-6844, or email fieldstn@uwm.edu, or bogfriends.org (click Events tab).

\$3.00 donation is suggested.

UWM Field Station

FRIENDS OF THE CEDARBURG BOG

Quarterly board meeting

October 25, 7 to 9 PM

Members welcome

UWM Field Station

ANNUAL CHRISTMAS BIRD COUNT

December 15, 2012 (dawn to dusk)

Help us tally birds within a 15-mile circle around Riveredge Nature Center. New and experienced field counters are welcome. People living within the count area can also be feeder counters. Call Mary Holleback at Riveredge at 262-375-2715 or 262-675-6888.

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ADDRESS CORRECTION REQUESTED

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