

The BogHunter

the newsletter of the Friends of the Cedarburg Bog
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MAST YEAR PLUS TWO

2013 was a "mast year" for sugar maple, and by June of 2014 the beech woods west of the Field Station were ankle-deep in an unbroken cover of maple seedlings. It still is!



A path through the seedlings

"Mast" refers to the fruit of forest trees - acorns, hickory nuts, beechnuts and the like. The term originally referred only to nuts that were fed to livestock, but the broader meaning of the word embraces the edible seeds or fruits of any woody plant. Masting is loosely cyclical - it's typical for trees to produce very small seed crops for a few years and then have a big year, a "mast year," and trees of the same species typically have mast years simultaneously over a large area. For example, sugar maple typically produces big seed crops every three to five years.

The phenomenon of mast years suggests two questions. First, what's in it for the plants - why would they synchronize large crops of seeds only every few years? And second, how does a tree species over a broad area "coordinate" this event (synchrony) for a super mast year?

The first question is relatively easy to answer. If trees produced about the same quantity of seed each year, the seed eaters would have a regular supply of food, and their numbers could stay fairly constant at about the level that could eat all those seeds. The bonanza of a mast year

might allow some seed-eaters to produce more offspring, but a larger population can't be sustained because seed production drops back to normal after a mast year. In the meantime, there are so many seeds on the landscape during a mast year that the birds, deer, mice, squirrels and chipmunks can't possibly eat them all, and many are allowed to grow.

The answer to how a tree species can manage to synchronize seed production over a large area is far less certain. It takes a lot of energy to flower and make seed; tree ring widths are consistently smaller in years when big seed crops are produced because so much energy went into making the seed. So one obvious theory was that trees generate lots of seed when the growing conditions are extra good to provide that energy. The theory makes sense, but many studies have found that mast years don't correlate with the weather or any environmental conditions that might be the cause, and besides, the weather doesn't tend to be uniform over as large an area as masting is typically synchronized.

The theory that currently seems to be best supported by observations is a little more complicated. First, an individual tree is not capable of producing a massive seed crop every year. After a huge seed crop in might take two or three years for the tree to build the reserves that it would need to do that again. That necessary recovery period between big crops is combined with the idea of "pollination efficiency." Since many plants that have mast years are wind-pollinated, throwing a massive load of pollen into the winds results in high rates of fertilization, so all of a tree's flowers will get pollinated only when everybody else in the population is also flowering. Fertilization of an insect-pollinated species like sugar maple would also depend on how many flowers were

available to attract large numbers of bees.

So putting those two observations together ... If an individual tree is physiologically ready to make a big crop, but is not synchronized so flowers heavily in an "off" year, not enough of its flowers will be pollinated to make a big crop of seeds. It will still be physiologically ready to make a big crop the next year because the limited pollen supply prevented it from spending its resources in the off year. When all the trees have a big flower year, that tree makes a big crop, and *voila*, the tree is back in synchrony with the rest of the population.

The mast year for sugar maple in 2013 is not enough to explain the unprecedented density of sugar maple seedlings in the spring of 2014 not only in the Field Station woods, but over much of southeastern Wisconsin. Sugar maple makes mast crops every few years but we have never seen as many seedlings.



A Mayapple towers over a mass of maple seedlings

The seeds are dropped in fall, just before the leaves are shed burying the seeds in the new litter. They may begin to germinate by putting out a little root in fall, but the cotyledons (seed leaves) don't emerge until spring. To get the incredible density of seedlings of 2014 there had to be exceptionally high survival of seeds over the brutal winter of 2013-14. It may have been the almost

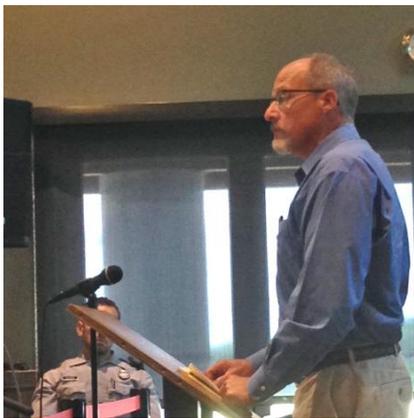
continuous snow cover we had over that winter that was so favorable for the maple seeds. Whatever the explanation, that winter, so hard on us, was very kind to maple seedlings.

The maple woods of southeastern Wisconsin and the Field Station still have a very high density of maple seedlings this spring of 2015. How many of those seedlings will make it past the deer and rabbits to make saplings? It will be very interesting to watch what happens to this bumper crop of maples. If a substantial number of these maples can make it past the herbivores, the timing could not be better since the forest is in the process of losing its ash trees, a substantial portion of the canopy, to Emerald Ash Borer. Let's all watch our little maples over the next few years; come out and join one of our walks in the woods. See information in "Friends Events" about an October 18 walk in the Beechwoods.

Jim Reinartz, Field Station Director

MASTER PLAN UPDATE

The Wisconsin Natural Resources Board (NRB) met in mid-August to consider, among other things, the Master Plan for the Cedarburg Bog. Although the master plan included guidance and strategies for the DNR properties throughout the entire Northern Kettle Moraine Region, the NRB members focused their concerns on the Cedarburg Bog and the question of boat storage by duck hunters at Mud Lake during the hunting season.



Friends president Bruce Ross addressing the Natural Resources Board

Without significant discussion on the merits of the rest of the plan, or the boat storage itself, the NRB unanimously voted to table the entire plan until this single issue is

resolved. The NRB asked that DNR staff move forward with their master plan proposal to establish a working group of users to make recommendations on boat storage for inclusion in the final master plan. At that point, the NRB will reconsider the plan in its entirety. We expect the DNR will move quickly to establish the working group and hopefully move forward. Since the boardwalk into Mud Lake was a part of the now-tabled plan, the Friends will suspend its plans to build the walkway until the DNR gives it approval.

Thanks to everyone who took the time to comment.

Bruce Ross, FOCB President

THANKS, FRIENDS!

A big and hearty thank you again to our loyal FOCB members. We had a banner year and our organization is poised to accomplish many exciting projects and initiatives. Stay tuned for a list of our accomplishments and future plans in our yearly membership letter in October.

Your support and membership dollars continue to help us protect our Wetland Gem and impact not only the Bog but our community. This year, we received a very important grant from the EPA for almost \$200,000 to control Glossy buckthorn in 680 acres of our precious wetland. As part of this grant, we'll have an outreach program to connect with and educate abutting landowners about invasive species control on their property and about the benefits they receive from the Bog. Once we receive approval from the DNR, we are poised to build a boardwalk into Mud Lake that will allow the public access to this very special part of the Bog. We have more programs and news to share in our October letter. Thank you again for being a Friend!

Pam Ross, Membership Chair

WE BUILT IT AND THEY CAME!

As a result of woodland and wetland habitat loss and many years of unregulated hunting, the Wood Duck and a number of other waterfowl species were well on their way to extinction. In 1918, the Federal Government's Migratory Bird Treaty Act mandated nation-wide protection from hunting for Wood Ducks which lasted until 1941 when a restricted hunting season was allowed. Wood

Duck populations in the combined Atlantic and Mississippi Flyways grew by 1.6% annually after 1966 and have grown by 2.4% a year in the last decade. This has been attributed to ongoing expansion of breeding habitat as well as implementation of long term nest box programs.



A pair of Wood Ducks on a nest box

Wood Ducks are cavity nesters -- meaning that they traditionally nest in natural tree cavities or holes made by Pileated woodpeckers. Deciduous trees in woodlands with nearby ponds or small lakes are the Wood Duck's preferred breeding grounds; but they sometimes hole up a mile or more away from water if the hen finds a cavity site she just can't resist. With a summer breeding range that extends from coast to coast and from southern Canada to Cuba, the Wood Duck is now the second most numerous duck in North America.

In part, this relates to their adaptability. Wood Ducks are more slender than most other duck species, allowing them access to secure nesting sites unavailable to their counterparts. They have very slender and adaptable bills designed for foraging on a wide variety of food on land and in water -- from acorns and wild raspberries to invertebrates and fallen ash and maple seeds.

The average clutch size for a Wood Duck is about one dozen eggs; however, some nest cavities have produced as many as 30 ducklings! The really large clutches are a result of "egg dumping" -- a fairly common practice where one or more hens "dump" one or more of their eggs in another hen's nest while she is out feeding. It has been speculated that female wood ducks need to consume the equivalent of 300 invertebrates per hour for up to eight hours in order to be able to produce one egg.

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

Active incubation of the eggs begins when the hen has laid about 12 eggs, usually one egg a day for 12 days. It's the equivalent of a human mother giving birth to a ten pound baby every day for almost two weeks! Incubation takes 27 to 30 days, then all the eggs hatch within a few hours. Within 24 hours of emerging from their eggs, the *precocious* ducklings can walk, swim, and feed themselves and are ready to make their big jump into the big world. (These little balls of duck fluff are called "*precocial*," meaning that they are much more independent at hatching than "*altricial*" bird species like songbirds which are completely dependent on their parents to feed and protect them for weeks or longer in the nest).



Launched!

The first morning after the ducklings hatch, the hen positions herself on the edge of the nest cavity, surveying the landscape for potential predators. If all is clear, she drops down below the nest cavity and gives a unique, soft call. The ducklings innately understand and respond to her by climbing one or two at a time up to the nest hole's edge and then leaping from heights sometimes 50 feet or more in the air!

Their mother leads them to protected places in dense cover, e.g., a marsh or flooded thicket where there is ample food and protection from predators. Nonetheless, mortality rates for the young ducklings are well over 50%, mostly as a result of predation by large fish, snapping turtles, raccoons, owls, hawks, and numerous other predatory creatures.

Whereas wood ducks traditionally prefer to set up shop 25 feet or higher in trees, many of them have learned to lower their housing height requirements in exchange for secure, predator-proof nest boxes 10 to 15 feet off the ground or four to six feet over water. From 2012 through 2015, the Friends of the Cedarburg Bog (FOCB) has installed 14 nest boxes in and around the Cedarburg Bog complex. Eleven of the duck nest boxes were installed over land on trees, and three of the boxes were installed on galvanized steel poles over water.

All of the boxes were equipped with steel predator guards. Over this four year period, duck nest box success rates have increased from 25% in 2012 to what appears will be about 50% or better this current year. In fact, based on nest box monitoring to date, it looks as though 2015 could be a banner year for Wood Duck production.

The FOCB nest box program is gradually morphing in the direction of becoming a "citizen science" project with the goal of having volunteers from the community involved with nest box installation, monitoring, and maintenance. In early 2015, three new duck nest boxes were installed on privately owned property adjacent to the UWM Field Station property. All three boxes had successful hatches, and other landowners within the Cedarburg Bog area may soon have an opportunity to be engaged in this pilot venture. This is a "win-win" proposition; the landowner enhances the natural value of his or her own property, and the entire surrounding ecosystem benefits as well.

For more information about the nest box project, adopting a nest box, or about becoming a nest box volunteer or to get information about other possible volunteer opportunities with the Friends of the Cedarburg Bog, contact us at bogfriends@gmail.com or (262)675-6844.

John O'Donnell, FOCB Board

GIFTING TO THE FRIENDS

I'm very pleased to announce a significant donation to the Friends—an anonymous gift of stock worth over \$48,000! This gift will be put to use (1) supporting current initiatives, and (2) building our endowment fund. An investment of this

magnitude represents the donor's belief in the Friends' mission and our organizational ability to return value on his investment.

This donor has chosen not only to make this gift now, but also to make an additional investment after passing. We are fortunate to be able to sit down with the donor and find out more about his intentions for such a meaningful legacy, so that we can be good stewards of the gift being left to us and to the future generations who experience this impressive wetland.

Our endowment fund currently stands at nearly \$40,000—and, with your help, we can grow that over the years in order to fund our work in and around the Bog with the interest proceeds of this fund.

You can sustain the Friends and the work we do by contributing to our endowment in two ways: your tax-deductible gift can be sent to us directly, or you can send your contribution to the manager of our endowment fund – The Natural Resources Foundation of Wisconsin (116 King St, Madison, WI 53703, *attention: Friends of the Cedarburg Bog Endowment Fund*). Visit bogfriends.org for more information (click on "Join the Friends / Leave a Legacy") or call me at (262)389-4999. There are many ways to make such a gift – either now or as part of your estate planning – with significant tax benefits.

In related news, we've also recently received a gift of \$6,000 for the Friend's support of field studies at the UW-Milwaukee Field Station. This initiative was recently approved by Friend's Directors to encourage scientific understanding of the Bog and its significance to our community. We intend to provide three \$2000 grants to post-grad students who will be studying the Bog. Our ability to positively impact the Bog is growing—and with your support, it will continue to grow.

Bruce Ross, FOCB President

*Friends of the Cedarburg Bog:
Supporting stewardship and
appreciation of the Cedarburg
Bog through land management,
preservation, research and
education.*

ADDRESS CORRECTION REQUESTED

UWM Field Station
3095 Blue Goose Road
Saukville, WI 53080



FRIENDS EVENTS

Unless otherwise noted, walks meet at the UWM Field Station on Blue Goose Rd. Space is limited, so please register. To register, visit bogfriends.org (click on Events). Walks are free and open to the public; a \$5 donation is appreciated. Questions? Contact (262) 675-6844 or fieldstn@uwm.edu. Please, No Pets.

**Friends of the Cedarburg Bog
Quarterly Board Meeting**
October 15, 7 to 9 PM
Members welcome



Witch Hazel

A Walk in the Maple Beechwoods
October 18, 12:30 to 3 PM
Experience the Cedarburg
Beechwoods State Natural Area as
the leaves are turning.

How do Trees Grow?
November 15, 12:30 to 3:30 PM.
Come and find out what makes
trees tick. Indoor presentation
followed by outdoor walk.



Fall Owl Prowl at Hawthorne Hills
November 6, 6:30 to 8:30
Join us and check for owls at a
new location, 4720 County Rd I.



Beechdrops

CALENDAR

Noel J. Cutright Bird Club

Free and open to the public held at **RNC** on the 1st Tuesday at 7 PM
Free. Open to the public.

Science for Everyone

Programs on Natural History held at **RNC** on the 3rd Tuesday and at **LLC** on the 4th Tuesday 7 to 8:15 PM
Check the **LLC** or **RNC** websites for topics and driving directions.
Programs are free, \$5 donation appreciated.

Luminary Walk and Reading in the Pines

October 10, 6:30 to 8:00 PM **LLC**
Walk a trail lit by luminaries and hear a scary tale read by lantern light. Star gazing, a campfire, and refreshments.

Big Sit - Noel J. Cutright Bird Club

October 11, dawn to dusk
Join the Bird Club for its annual Big Sit on the Hawk Tower at **FBMP**. Drop in and lend your eyes and ears to the count.

Fall Family Festival

October 17, 4 to 8:30 PM **RNC**
Enjoy an adventurous evening of seasonal activities – scarecrow-building, pumpkin-carving, night hike, star gazing and campfire. Preregistration required. For more information, phone or visit website.

Enchanted Forest: Uprooted

October 17, 5:30 to 7:30 PM **UEC**
Meet plant and animal characters, and find out about the life of plants. Come inside for games and crafts. Costumes encouraged! Registration for a walk time is required. For families and adults. Members: Adults \$6, Children \$4 (Nonmembers: \$9 and \$7)

“Wisconsin Wonderland” – A Kohl’s Wild Theater Performance

December 10, 5:30 PM **MNP**
In collaboration with the Milwaukee County Zoo, this FREE kid friendly, musical performance teaches people of all ages about what animals do to survive winter.

RNC – Riveredge Nature Center
4458 County Hwy Y, Saukville
riveredgenaturecenter.org
(262) 375-2715

LLC – Lac Lawrann Conservancy
300 Schmidt Rd, West Bend
laclawrann.org
(262) 335-5080

MNP – Mequon Nature Preserve
8200 W County Line Rd, Mequon
mequonnaturepreserve.org
(262) 242-8055

UEC – Urban Ecology Center
Riverside Park, 1500 E Park Place, Milw
urbanecologycenter.org
(414) 964-8505

FBMP – Forest Beach Migratory Preserve,
4970 Country Club Rd, off Hwy P north of
Port Washington