



Missisquoi Matters

is the quarterly newsletter of the Friends of Missisquoi National Wildlife Refuge, Inc., a non-profit 501(c)(3) organization, dedicated to promoting a better awareness, appreciation, conservation, and responsible utilization of the Missisquoi National Wildlife Refuge.

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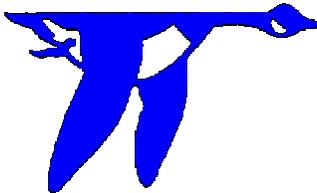
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Newsletter edited by Ken Copenhaver

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MNWR HQ hours are
Monday thru Friday
8:00am – 4:30pm
Saturdays
10:00 am – 2:00 pm

Manager's Update – November 2014

by Ken Sturm, Refuge Manager, Missisquoi NWR

The leaves are down and the field season is wrapping up. This is the time of year the refuge spends looking back at what was accomplished and begins looking ahead to next year's projects. The refuge had a productive year in many ways – finishing the cultural resources protection project at the Dead Creek/Missisquoi River junction, successfully applying for and being designated a Ramsar Wetland of International Importance, providing outreach and educational opportunities for hundreds of area school children and college students, and of course taking care of the habitats and wildlife the refuge was established for.

Speaking of taking care of habitats and wildlife, many of you have surely noticed that the refuge has cut patches of trees at the Stephen J. Young Marsh this fall. Approximately 3.6 acres were cut this year to set back successional growth of young trees to maintain high quality habitat for early successional ("young forest") wildlife species. Cutting these trees will allow root sprouts and dormant seeds to regrow forming a dense young forest and shrubland.

So why is it important for the refuge to do this? Over the past 50 years, Vermont and other New England states have seen a drastic decline in early successional forest habitat as forests mature, development continues, and other changes in land use occur. In the process, wildlife populations that depend on young forests for food and cover are declining as well.

Birds that depend on young forests and shrublands are especially at risk in the northeast. In New England and the Mid-Atlantic, two-thirds of these bird species experienced significant population declines between 1966 and 2010. Providing and maintaining this habitat will benefit bird species such as: American Woodcock, Rusty Blackbird, Black-billed Cuckoo, Brown Thrasher, Hermit Thrush, Gray Catbird, Ruffed Grouse, White-throated Sparrow, Chestnut-sided Warbler, and many others that use early-successional habitat for some or all of their life stages. In addition, a variety of other species, including butterflies, bees, white-tailed deer, snowshoe hare, garter snakes, and frogs will benefit from the flush of new growth that occurs in early successional habitat, providing both food and cover.

Early successional forests don't stay young for long. In most cases, when forests become older, they also become less productive and less valuable for certain species of wildlife. In order to maintain this forest in an early successional stage, the refuge will most likely cut this area again in 8 to 10 years. As you spend time at Stephen Young Marsh, pay attention to the changes you see in the young forest regrowth. It won't stay open long, and with the new vegetation will come the wildlife that will make these areas their new home.

Winter is coming but I hope that it doesn't discourage you from coming out to enjoy the refuge. Remember that our trails are open for snowshoeing and cross-country skiing and that winter can be a magical time to visit our wild places. Also be sure to stop into the Visitor Center and let us know about your experiences on the refuge!

A Feast Worth Quacking About

by Judy Sefchick Edwards, Wildlife Biologist, Missisquoi NWR

What's all the quacking about at Missisquoi National Wildlife Refuge? In refuge wetlands, there's been a feast of magnificent proportions (and portions!) going on since August. It could certainly rival the best Thanksgiving dinner, but don't expect turkey, mashed potatoes, or cranberries on this menu. Instead, this extraordinary, long-lasting meal is made up of one main dish: the seeds of *wild rice*, served wet and cold, just the way migratory waterfowl like it!

What is wild rice? It's not rice at all. Instead, it's an annual aquatic grass, adapted to northern latitudes, that benefits a variety of wildlife because of the food, cover, and structure it adds to wetlands and rivers. Prized for its nutritious seeds that are awesome, energy-rich duck food, you may recognize its mature plants in July or August. That's when wild rice has dense, upright stalks (sometimes towering up to 10 feet) with flowering heads at the tips. But there's a lot more than meets the eye with this plant!

Fragile, submerged seedlings of wild rice start growing in May. Anchored by only a tiny hair root, they need constant water levels so they won't uproot; and clear water, so sunlight can reach them and help them grow. In June, the ribbon-like leaves of wild rice float on the water at 90 degree angles to the stalk. This is when wild rice is at its most vulnerable: if water levels rise, the plant may uproot; if water levels fall, the stalks may collapse; and if high winds or waves occur, the whole stand of wild rice could be lost. With all the odds against it, it's amazing that wild rice can even survive, let alone thrive!

As the refuge biologist, I would love to take some credit for this Thanksgiving smorgasbord...but I can't. There was only one cook in the kitchen preparing this meal, and her name, of course, is Mother Nature. After all, who else could provide exactly the right recipe and ingredients for this bumper crop of wild rice to occur?



Besides needing relatively shallow (1–3 feet) water, with a slight current, over mucky organic soils, some secret ingredients have to be added for the perfect crop of wild rice to grow. Water levels are essential—they have to remain constant or slowly recede throughout the growing season (apparently, Lake Champlain doesn't always get the memo!). In addition, scientists have discovered that wild rice needs a certain amount of nitrogen, available from sediments, in order to flourish. The sentiment, "It's not easy being green," said by a fabulously famous frog, certainly holds true for wild rice as well!

How long will this seemingly never-ending Thanksgiving buffet last? It's hard to say. In a bumper crop year like this one, wild rice can produce as much as 500 pounds of seed per acre (that's a lot of delighted ducks!). But wild rice, like most plants, has a survival strategy: its seeds don't mature all at once. In fact, usually, only around 10% of a seed head matures at a time, with seeds at the top of the stem ripening first. Sediment type, water depth, and weather also influence the ripening process, ensuring that no matter how many hungry ducks there are, some seeds will be left in the soil to sprout in years to come.

After learning more about the wonders of this plant, can you see how a biologist, like me, could never pull off the perfect crop of wild rice without some help? Though migrating waterfowl are the main recipients of the gifts of wild rice, there are lots of other beneficiaries: aquatic insects and invertebrates live among the growing stalks, muskrats feed on the tender shoots, grebes use bent-over stems for nesting, blackbirds and sparrows readily gobble up seeds, white-tailed deer sometimes eat the whole plant, and black terns will use the decaying rice straw for next year's nesting material. This year, we need to give special thanks to Mother Nature for all she does...especially for providing a Thanksgiving feast at Missisquoi worth quacking about for many years to come!

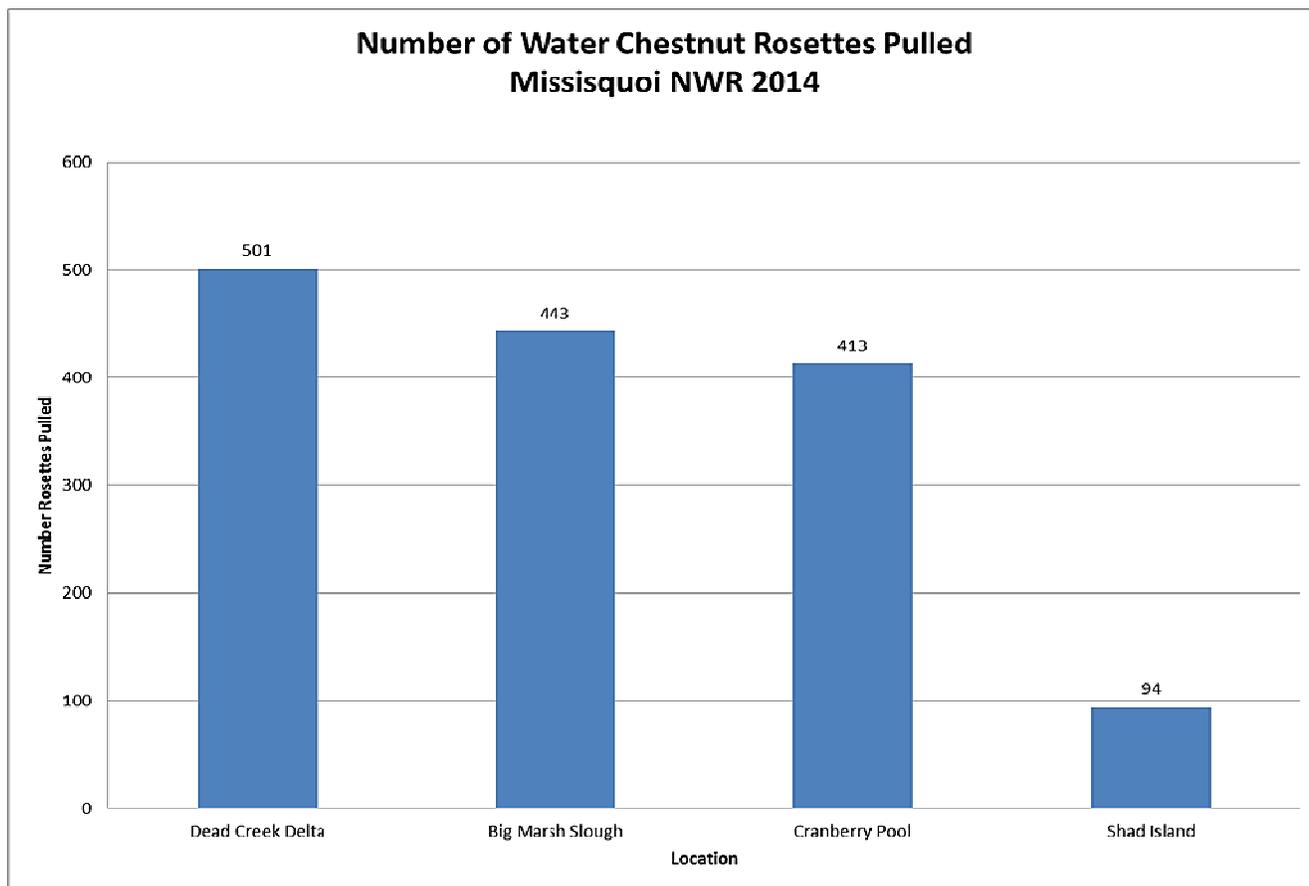
Water Chestnut Update – Fall 2014

by Ken Sturm, Refuge Manager, Missisquoi NWR

Thanks to the Friends of Missisquoi NWR we were able to get another grant this year to hire contractors to control the aquatic invasive water chestnut on the refuge. Water chestnut is a big concern on the refuge as it can out-compete our native wetland plants reducing biological diversity, eliminating valuable habitat, and reducing native forage plants for the thousands of ducks that rely on the refuge during fall migration. Special thanks goes out to Cathie Waltz and Rich Kelley who were instrumental in shepherding the grant along in the approval process and ensuring that our contractors were paid on a timely basis.

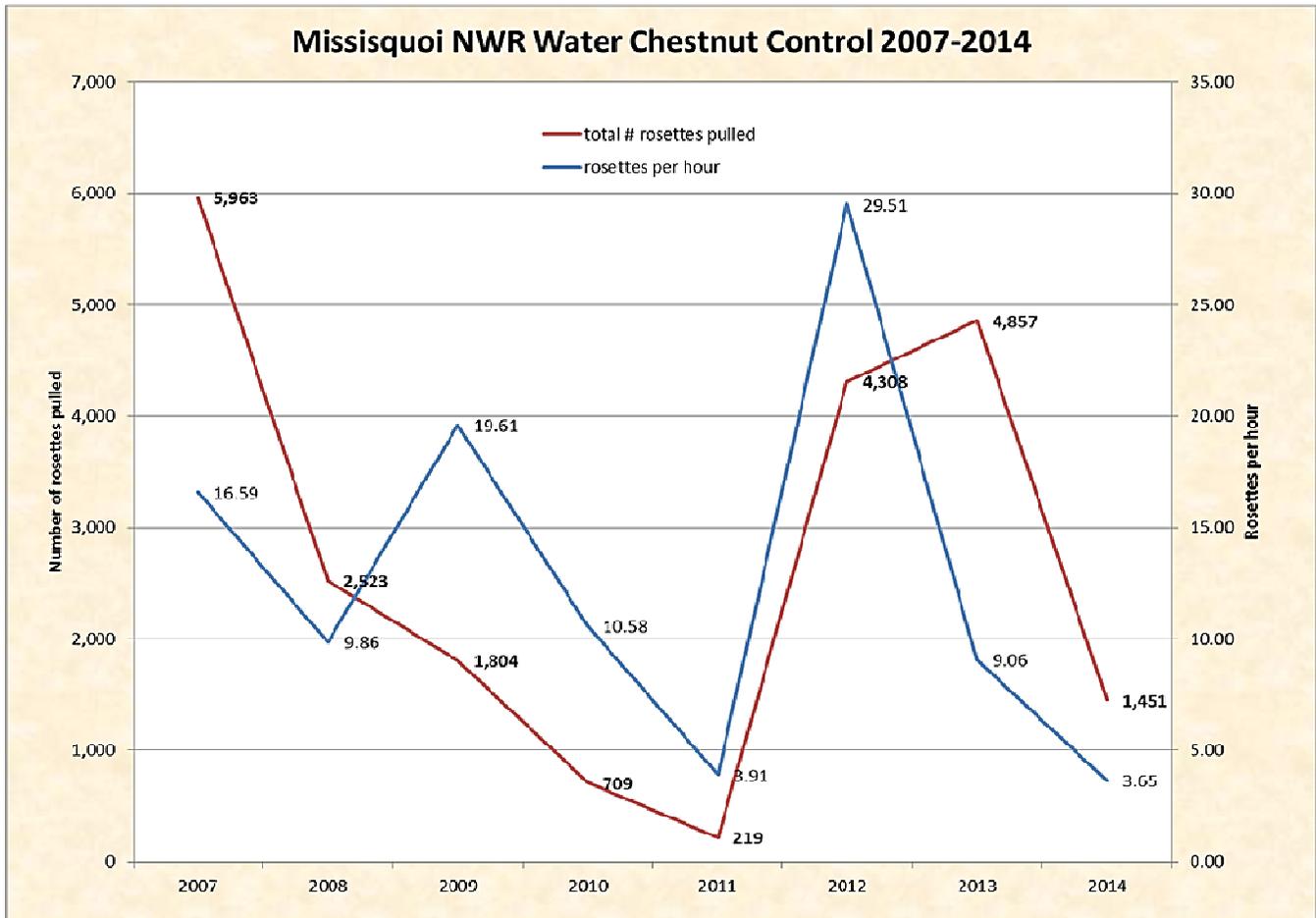
So what happened in 2014 and how does it compare to the previous year’s work to control water chestnut? A total of 397 person hours were spent pulling 1,451 water chestnut rosettes. The contractors covered at least 776 acres surveying and pulling chestnut. Of this, 682 acres were on the Missisquoi National Wildlife Refuge and 94 acres in Missisquoi Bay (Rock River Bay and Dead Creek Delta).

The graph below shows the areas where water chestnut was found and pulled. It’s apparent by this graph that the area of greatest concern for continued infestation is the Dead Creek Delta area, newly identified during field work in 2013 and off refuge property. The refuge is working with state and NGO partners to ensure that this site receives continued attention in the future.



Overall the work the refuge has been doing, supplemented by the Friends of Missisquoi NWR, is working to get a handle on our water chestnut problem. The next graph shows the number of water chestnut rosettes pulled each

year since 2007. It also shows the number of rosettes per hour pulled in each year, an indicator of the density of plants growing on the refuge. The good news is, thanks to the last two years of grant funded contract work, we have reduced chestnut infestation back to levels similar to 2009. The bad news is that water chestnut seeds remain viable for 8 to 10 years and we expect to have to continue this control effort annually to ensure we don't lose control of this damaging aquatic invasive species. Thanks again to the Friends of Missisquoi NWR for supporting these efforts; we could not do it without you!



FRIENDS OF MISSISQUOI NATIONAL WILDLIFE REFUGE

Bi-monthly Board Meeting

Wednesday, January 14, 2015 at 6:30 pm

At the Refuge Visitor Center

Members are always welcome to attend.

Come and see what the board is planning and contribute your ideas.

Next meeting: Wednesday, March 11, 2015 at 6:30 pm

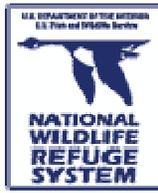
Bird Monitoring Walk Statistics

After 55 months of Bird Monitoring Walks, a total of 605 observers have recorded 134 species and 8561 individual birds. The following chart lists the species by the date each species was first observed.

Date	Trail	Species
3/20/2010	RR	American Crow
3/20/2010	RR	American Goldfinch
3/20/2010	RR	American Robin
3/20/2010	RR	American Tree Sparrow
3/20/2010	RR	Black-capped Chickadee
3/20/2010	RR	Brown-headed Cowbird
3/20/2010	RR	Blue Jay
3/20/2010	RR	Canada Goose
3/20/2010	RR	Common Grackle
3/20/2010	RR	European Starling
3/20/2010	RR	Hairy Woodpecker
3/20/2010	RR	Killdeer
3/20/2010	RR	Mallard
3/20/2010	RR	Northern Cardinal
3/20/2010	RR	Pileated Woodpecker
3/20/2010	RR	Ring-billed Gull
3/20/2010	RR	Red-tailed Hawk
3/20/2010	RR	Red-winged Blackbird
3/20/2010	RR	Snow Goose
3/20/2010	RR	Song Sparrow
3/20/2010	RR	White-breasted Nuthatch
4/17/2010	Maq	American Woodcock
4/17/2010	Maq	Brown Creeper
4/17/2010	Maq	Dark-eyed Junco
4/17/2010	Maq	Downy Woodpecker
4/17/2010	Maq	Eastern Phoebe
4/17/2010	Maq	Great Blue Heron
4/17/2010	Maq	Golden-crowned Kinglet
4/17/2010	Maq	Northern Flicker
4/17/2010	Maq	Northern Harrier
4/17/2010	Maq	Rusty Blackbird
4/17/2010	Maq	Sharp-shinned Hawk
4/17/2010	Maq	Tree Swallow
4/17/2010	Maq	Tufted Titmouse
4/17/2010	Maq	Winter Wren
4/17/2010	Maq	Wood Duck
4/17/2010	Maq	White-throated Sparrow
4/17/2010	Maq	Yellow-bellied Sapsucker
5/15/2010	SYM	American Redstart
5/15/2010	SYM	Baltimore Oriole
5/15/2010	SYM	Black-and-white Warbler
5/15/2010	SYM	Belted Kingfisher
5/15/2010	SYM	Black Tern
5/15/2010	SYM	Bobolink
5/15/2010	SYM	Black-throated Green Warbler
5/15/2010	SYM	Blue-winged Teal
5/15/2010	SYM	Common Yellowthroat
5/15/2010	SYM	Eastern Kingbird
5/15/2010	SYM	House Wren
5/15/2010	SYM	Least Flycatcher
5/15/2010	SYM	Magnolia Warbler
5/15/2010	SYM	Osprey
5/15/2010	SYM	Ovenbird
5/15/2010	SYM	Rose-breasted Grosbeak
5/15/2010	SYM	Red-breasted Nuthatch
5/15/2010	SYM	Ruffed Grouse
5/15/2010	SYM	Turkey Vulture
5/15/2010	SYM	Warbling Vireo
5/15/2010	SYM	White-crowned Sparrow
5/15/2010	SYM	Yellow Warbler
6/19/2010	RR	Alder Flycatcher
6/19/2010	RR	Barn Swallow
6/19/2010	RR	Cedar Waxwing
6/19/2010	RR	Chestnut-sided Warbler
6/19/2010	RR	Gray Catbird
6/19/2010	RR	Northern Waterthrush
6/19/2010	RR	Savannah Sparrow

Date	Trail	Species
6/19/2010	RR	Swamp Sparrow
6/19/2010	RR	Veery
7/17/2010	Maq	Chipping Sparrow
7/17/2010	Maq	Great Crested Flycatcher
7/17/2010	Maq	Mourning Dove
7/17/2010	Maq	Ruby-throated Hummingbird
7/17/2010	Maq	Scarlet Tanager
7/17/2010	Maq	Yellow-throated Vireo
8/21/2010	Jeep	Eastern Wood-Pewee
8/21/2010	Jeep	Great Horned Owl
8/21/2010	Jeep	Red-eyed Vireo
8/21/2010	Jeep	Spotted Sandpiper
9/18/2010	SYM	Blackburnian Warbler
9/18/2010	SYM	Canada Warbler
9/18/2010	SYM	Common Merganser
9/18/2010	SYM	Wilson's Snipe
10/16/2010	RR	Fox Sparrow
10/16/2010	RR	Yellow-rumped Warbler
1/15/2011	Maq	Common Raven
4/16/2011	SYM	Common Goldeneye
4/16/2011	SYM	Great Egret
4/16/2011	SYM	Pied-billed Grebe
5/21/2011	SYM	Blackpoll Warbler
5/21/2011	SYM	Common Gallinule
5/21/2011	SYM	Marsh Wren
5/21/2011	SYM	Nashville Warbler
5/21/2011	SYM	Tennessee Warbler
5/21/2011	SYM	Willow Flycatcher
6/18/2011	SYM	Bald Eagle
6/18/2011	SYM	Cliff Swallow
6/18/2011	SYM	Green Heron
6/18/2011	SYM	House Sparrow
7/16/2011	Maq	Double-crested Cormorant
8/20/2011	Jeep	Solitary Sandpiper
9/17/2011	SYM	American Bittern
9/17/2011	SYM	Blue-headed Vireo
9/17/2011	SYM	Green-winged Teal
9/17/2011	SYM	Virginia Rail
10/15/2011	RR	Northern Shrike
4/21/2012	Maq	Hermit Thrush
4/21/2012	Maq	Pine Warbler
4/21/2012	Maq	Ruby-crowned Kinglet
5/19/2012	SYM	Black-throated Blue Warbler
5/19/2012	SYM	Caspian Tern
5/19/2012	SYM	Cooper's Hawk
5/19/2012	SYM	Northern Parula
5/19/2012	SYM	Rock Pigeon
6/16/2012	RR	Black-billed Cuckoo
6/16/2012	RR	Common Tern
7/21/2012	Maq	Black-crowned Night-Heron
7/21/2012	Maq	Broad-winged Hawk
7/21/2012	Maq	House Finch
7/21/2012	Maq	Purple Martin
10/20/2012	RR	Pine Siskin
11/17/2012	Maq	Bohemian Waxwing
1/16/2013	Maq	Barred Owl
3/16/2013	RR	Common Redpoll
4/20/2013	Maq	Hooded Merganser
4/20/2013	Maq	Ring-necked Duck
5/18/2013	SYM	Eastern Meadowlark
6/15/2013	RR	Common Loon
8/17/2013	Jeep	Chimney Swift
8/17/2013	Jeep	Lesser Yellowlegs
8/17/2013	Jeep	Wilson's Warbler
4/19/2014	MAQ	Brown Thrasher
5/17/2014	SYM	Wood Thrush
7/19/2014	MAQ	Indigo Bunting

Trails key: RR=Railroad Trail; Maq=Maquam/Black Creek Trail; SYM=Stephen Young Marsh Trail; Jeep=Jeep Trail



Winter Activities Schedule at Missisquoi National Wildlife Refuge

29 Tabor Rd.
Swanton, VT 05488

All programs and tours are free, but registration is required where noted.

Monthly Nature/Photography Walks 1st Saturday of each month, 9:00 am to 11:00 am

Join Friends of Missisquoi NWR members Joe Belanger, Mark Batchelder, and Bob Chaperon for nature/photography walks on various refuge trails, held the first Saturday of each month. Registration is not required. Bob Chaperon will be trying something new with a "photography topic" for each walk. **Come have fun with us!**



December 5: Maquam/Black Creek Trail. Photography topic will be on "Motion." Meet at the parking lot located on Rte 78 approx. 2 ½ miles west of Swanton.

January 3: Discovery Trail. Photography topic will be on "Color Temperature." Meet at the refuge Visitor Center on Tabor Rd.

February 7: Stephen Young Marsh Trail. Photography topic to be announced. Meet at the parking lot on Tabor Rd, about a mile past the refuge headquarters and across the road from the marsh.

Monthly Bird Monitoring Walks 3rd Saturday of each month, 8:00 am to 10:00 am

Friends of MNWR members Ken Copenhaver and Julie Filiberti will lead bird monitoring walks year-round on various refuge trails on the third Saturday of each month. The purpose of the walks is to gather long-term data on the presence of birds, their abundance, and changes in populations. Observations will be entered into the Vermont eBird database where data is stored by the Cornell Lab of Ornithology and the National Audubon Society. These walks are appropriate for birders of all skill levels and provide a wonderful opportunity to learn about birds throughout the seasons. **After 55 months of walks we have recorded 134 species of birds.** Registration is not required. The schedule for the next three months is:

December 20: Jeep Trail. Meet at the Louie's Landing boat access area. We will drive in to the trail head at Mac's Bend.

January 17: Maquam/Black Creek Trail. Meet at the parking lot located on Rte 78 approx. 2 ½ miles west of Swanton.

February 21: Stephen Young Marsh Trail. Meet at the parking lot on Tabor Rd, about a mile past the refuge headquarters and across the road from the marsh.

To check for any schedule changes or additions, visit the Friends website at www.friendsofmissisquoi.org and click on "Calendar."

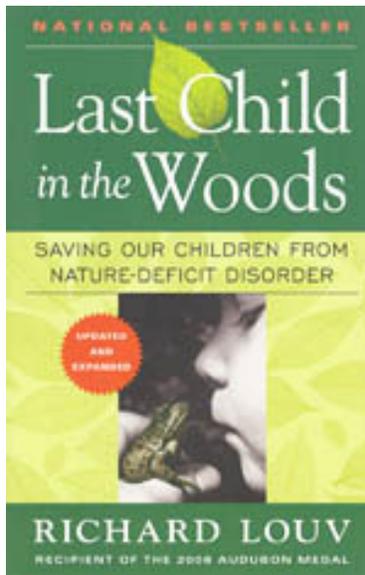
For more information about the refuge, visit www.fws.gov/refuge/missisquoi/

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at the Missisquoi National Wildlife Refuge Visitor Center

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Last Child in the Woods

Saving Our Children from Nature-Deficit Disorder

Updated and Expanded Edition

Richard Louv

\$ 14.95, paper

390 pages, 5 1/2 x 8 1/2

Richard Louv was the first to identify a phenomenon we all knew existed but couldn't quite articulate: nature-deficit disorder. His book *Last Child in the Woods* created a national conversation about the disconnection between children and nature, and his message has galvanized an international movement. Now, three years after its initial publication, we have reached a tipping point, with Leave No Child Inside initiatives adopted in at least 30 regions within 21 states, and in Canada, Holland, Australia, and Great Britain.

This new edition reflects the enormous changes that have taken place since the book—and this grassroots movement—were launched. It includes:

- 101 things you can do to create change in your community, school, and family
- Discussion points to inspire people of all ages to talk about the importance of nature in their lives
- A new afterword by the author about the growing Leave No Child Inside movement
- New and updated research confirming that direct exposure to nature is essential for the physical and emotional health of children and adults.

This is a book that will change the way you think about your future and the future of your children.

About the author:

Richard Louv is the author of seven books. He is the chairman of the Children & Nature Network, has served as adviser to the Ford Foundation's Leadership for a Changing World award program and the National Scientific Council on the Developing Child. He has appeared on *Good Morning America*, *NBC Nightly News*, NPR's *Morning Edition*, and many other programs.