

NATURAL HERITAGE HARMONIES



SUMMER 2008

A publication of the Nongame and Natural Heritage Program

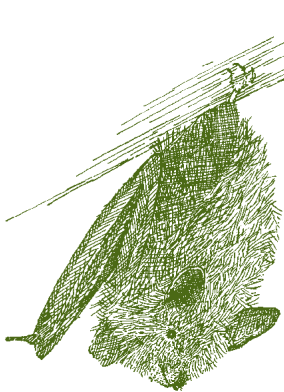
Vermont Fish & Wildlife Department
Agency of Natural Resources

Conserving Vermont's fish, wildlife, and plants and their habitats for the people of Vermont.

Experts Meet to Solve White Nose Syndrome Mystery

By Scott Darling

In June, experts representing over 25 state, federal, university, and not-for-profit organizations met in Albany, NY to develop a comprehensive, coordinated approach to addressing White Nose Syndrome. The cause of White Nose Syndrome (WNS), a condition named after the white fungus often observed on affected



bats, remains unknown as it struck hibernating bat populations in the Northeast during the past winter season. Over

500,000 bats may be affected by the syndrome that is causing widespread mortality in bats from New York, Vermont, Massachusetts, and Connecticut.

The meeting of bat biologists, wildlife pathologists, and experts in fungi,

continued on page 3

Inside Highlights

| | |
|----------------------------|---|
| Division Update | 2 |
| Nongame News..... | 4 |
| State Wildlife Grants..... | 7 |
| What's New | 8 |

Bees, Food, and Wildlife Habitat

By Leif Richardson



Leif Richardson

Vermont has an estimated 270 native bee species. Their disappearance means a loss of pollination service to our crops and wild plants, and a resulting loss of wildlife habitat.

The honeybee crisis has generated a lot of news this year. Beekeepers across the continent have had to contend with a slew of pests and pathogens and the ominous Colony Collapse Disorder. The decline of this important pollinator could profoundly affect agriculture and our food supply.

But honeybees, like cows, are agricultural animals brought to this continent from Europe and Asia some 400 years ago. The “ecosystem service” they provide in Vermont is also performed by an estimated 270 native bee species! These insects are present in nearly every habitat in the state, from urban gardens, to cold northern bogs, southern oak forests, and farms.

The most noticeable are the bumblebees, of which we have about 20 different species. Many of

the others are collectively known as “solitary bees.” They do not have the social lifestyle of honeybees and bumblebees, but they are critical to wildlife.

These native bees are responsible for pollinating many of the plants deer, moose, turkey, and other larger animals depend on. About 1/5th of these bees are specialist foragers, collecting pollen from only one type of plant. This restricted diet makes the bee wholly dependent on the distribution of its plant host. And, some of these plants depend heavily on their bee specialists for pollination service.

Unfortunately, some of Vermont’s native bees face crises similar to the honeybees. Some of the state’s most abundant bumblebee species have all but disappeared across their former ranges in the last decade.

continued on page 3

DIVISION UPDATE

Change is Inevitable – Lets Rise to the Challenge!

John M. Austin, Director of Wildlife

Climate Change – Regardless of what one believes regarding whether or not the earth's climate is experiencing a significant change and why, let's assume for a moment that the earth's climate is in the process of a profound shift towards higher average temperatures, melting polar ice and more unpredictable and severe weather patterns. Keep in mind, the earth's climate has changed before and will no doubt change again, but we are here now, and must handle what mother-nature hands us.

So, what do we do as wildlife conservation professionals to conserve Vermont's wildlife resources in the face of a potentially changing climate?

In my view, we need to monitor and understand any change that does occur through rigorous science-based efforts. This includes our on-going efforts with UVM to monitor sites around the state for biological diversity. It also includes efforts like the Vermont Center for Ecostudies' monitoring of Bicknell's thrush, which may be an important indicator of changing climate conditions. Information obtained through this monitoring can be used in the future to understand changes in climate-based shifts in temperature, precipitation, weather, human population, and forest conditions, among others.

There may be biological and ecological changes we cannot change. If so, we must adapt our wildlife management strategies to cope with new environmental and ecological conditions.

Recently, I listened to regional climate change ecologist Hector Galbraith say we must learn to adapt to a new environment influenced by different climatic conditions. He used the example of land management as a means of adaptation. His point was, we need to learn how to manage our land and habitats to effectively facilitate some inevitable species transitions so that we don't just end up with an expansion of more exotic weeds—a far worst outcome.

We will need to develop our conservation programs to best

suit the public's interests in wildlife conservation. This may mean addressing more species whose populations decline, as well as more species whose populations increase to a point where they present serious problems to public health, safety and welfare. The expansion of opossum into Vermont, and the overbrowsing of sugar maple by deer, which could affect migration of more southern tree species, are two examples. The department's Wildlife Action Plan acknowledges the conservation challenges related to a changing climate and provides strategies and recommendations for addressing this challenge, some of which we are already implementing.

We are seeing a greater frequency of exotic invasive species in the Northeast. For example, hemlock wooly adelgid, an insect that kills eastern hemlock trees, could seriously impact the state's deer population if it infects deer winter habitat on a broad scale. Deer will no doubt survive in Vermont, although their future may be affected by the invasion of pests that kill the trees that create deer winter habitat or provide food, while weather extremes may create very mild summers and very severe winter conditions.

Honeybees, vital pollinators of many plants in Vermont, are experiencing serious declines in populations. This impacts not only our ability to produce food for ourselves, but also fruits and nuts that are valuable food for wildlife.

Recently, White Nose Syndrome in bats has crippled our regional bat populations for species such as the little brown bat and the eastern pipistrelle. Bats have a direct affect on our quality of life. They eat millions of insects that annoy people and possibly transmit disease. This sudden and profound change in species populations is troubling, regardless of your view on climate change. The department has devoted a great deal of time, talent and finances to the White Nose Syndrome phenomenon and intends to continue to serve as a leader in addressing this critical and unfortunate wildlife conservation situation.

Our climate and environment will change regardless of what one believes to be the root cause. We must position ourselves to effectively rise to the challenge of confronting change and, in the end, still leave a positive conservation legacy for the next generation.

continued on page 3



Bees, Food and Habitat *continued from page 1*

The reasons for their decline are unclear. Scientists believe the bees have been impacted by a combination of pesticides, changes in land use patterns, and, in at least one case, non-native pathogens accidentally introduced by greenhouse tomato farms, which depend on managed bumblebees' colonies for pollination.



Losing our biological heritage is a concern even when the species in question has little to do with the human world. But the loss of bees is different. The disappearance of our bumblebees and other native bees means a loss of pollination service to our crops and wild plants, and a resulting loss of wildlife habitat.

The conservation of bees depends on three critical habitats: nesting sites, the plants the bees forage on, and overwintering sites. You can improve habitat conditions for bees by planting nectar and pollen rich flowering plants, leaving areas of your property undisturbed, and by avoiding the use of pesticides. For more information on bee conservation strategies, contact Leif Richardson, Nongame and Natural Heritage Program: (802) 476-0128 email: leif.richardson@state.vt.us. ➔

White Nose Syndrome Mystery *continued from page 1*

bacteria, immune systems, contaminants, and other health fields developed the following hypotheses for the cause of WNS:

- Bats are in poor body condition as a result of entering the winter with low weights, losing weights quickly during hibernation, or having an imbalance of water in their body.
- Bats are affected with an infectious pathogen.
- Bats are affected by a contaminant in the environment.
- Bats are affected by a combination of two or more of the above factors.

The group also developed priority research and management strategies to test each of the hypotheses.

The Vermont Fish & Wildlife Department has been at the center of the issue since numerous caves and mines in the state are affected with WNS. Five hibernacula in Vermont were confirmed with WNS, but dying bats found throughout the state suggests many more sites were impacted by the syndrome.

Bat biologist, Scott Darling, coordinated the department's efforts in the surveillance and monitoring of the affliction. This effort included surveys at Aeolus Cave, New England's largest bat hibernacula, the collection of specimens for submission to wildlife health labs, and the monitoring of citizen reports of dead and dying bats. Department staff will continue to monitor the condition of bats through the summer in anticipation of their return to caves in late summer and early fall. ➔

Change is Inevitable

continued from page 2

If we are successful, future generations will continue to enjoy the song of the loon and the thrill of flushing a woodcock with a dog and taking a shot at that marvelous game bird. I sit each year in marshes around Vermont for the chance to shoot ducks and geese. This puts meat on my table and memories in my mind that fill my soul. These are experiences I want my children and their children to enjoy, just as my grandfather and great grandfather enjoyed them. In order to ensure this conservation objective, we need to think strategically how we will conserve species like common goldeneye and greater and lesser scaup in the face of a changing environment and climate. The populations of these species are declining, for reasons other than harvest, and we need to figure out why and how to respond.

While the wildlife profession and this department have many daunting challenges, I see our obligation for confronting them as a great privilege and not something to be put on the back shelf of one's mind as overwhelming. We MUST confront these challenges with courage, conviction and intelligence. It is our duty and our time to conserve wildlife for future generations, regardless of the circumstances.



THANK YOU

Biologists, botanists, ecologists, seasonal staff, support staff, game wardens, volunteers, program partners and all Vermonters for your help in conserving Vermont's nongame and natural heritage resources.



Natural Heritage Harmonies is a free, semi-annual publication of the Vermont Fish & Wildlife Department's Nongame and Natural Heritage Program. Please acknowledge the Vermont Fish & Wildlife Department in any reprints.



Vermont Fish & Wildlife Department
103 South Main Street, 10 South
Waterbury, VT 05671-0501
(802) 241-3700
www.vtfishandwildlife.com

Nongame and Natural Heritage News

Summer is quickly passing and department biologists, ecologists and botanists have had a busy field season. Here's a brief look at a few of the Nongame and Natural Heritage Program (NNHP) many projects.

Turtles and Tiger Beetles

Seven years of searching for the state-endangered **spotted turtle** paid off with locating the turtle in two new locations. Prior to this, we had only a single verified population. Reenie Rice, a NNHP volunteer, found a spotted turtle on a dirt road in southeast Vermont. Steve Parren, NNHP Coordinator, placed a radio tag on the turtle's shell before releasing, hoping to find more turtles and where they overwinter.

We also set traps in a southwest Vermont swamp, adjacent to the road where a spotted turtle was reported crossing. Volunteer Krista Muller tended the traps daily and scored another spotted turtle. The animal is now sporting a radio-tag and we are exploring the possibility of purchasing the swamp.

Surveys for the Winooski River population of the state threatened **cobblestone tiger beetle** over the last several years suggested this small population might be gone. This was

the only known population of beetles outside of the Connecticut River watershed. However, an expanded survey this July brought good news. Cobblestone tiger beetles were observed at two additional sites near the original location. This suggests that what we thought was an isolated population may have been part of a more dynamic population, occupying available habitat patches that disappear and reappear along this stretch of river.

Bats, Butterflies and Birds

It has been a tough year for bats in the Northeast. In January, hibernating bats exhibiting white fungus on their nose, the classic symptom of White Nose Syndrome (WNS), were observed in a cave in Mt. Tabor. Since then, department biologists have been documenting WNS's progression across the state and its fatal affects on thousands of Vermont's bats. Bat deaths associated with WNS were observed well into June.

Vermonters are urged to be sensitive about harming bats when trying to exclude maternity colonies from their houses and barns. Methods that don't kill or trap bats in houses and allow for alternative roosting sites, such as bat houses, are most beneficial to bats and people.

Field surveys and data collection for Vermont's first **Butterfly Atlas** is complete and survey results have already been used by the department's Nongame and Natural Heritage Program. The status of over 100 species has been reviewed and preliminary state ranks assigned. Final ranks will be assigned following additional review by state entomologists. Meanwhile, work on the atlas continues with data analysis and species mapping. To learn more visit the Butterfly Atlas website at www.vinsweb.org/vbs/index.html.

Although the **osprey**, like the common loon and peregrine falcon, was removed from the state's Endangered and Threatened Species list in 2005, monitoring their nesting success is important to ensure the population remains viable. The protocol for nest monitoring and the placement and maintenance of nest structures is outlined in the department's "*Guidelines for Monitoring and Managing the Osprey Following Removal from the Vermont Endangered and Threatened Species List.*" The guidelines, developed in 2007, call for continued annual monitoring for at least five years. Funding from State Wildlife Grants (SWG) is helping support the monitoring efforts.

There are now over 100 known osprey nest sites, but it is likely more undiscovered nests exist. In 2007, 92 nest attempts were tracked for success, meaning chicks were produced and survived to fledge. Of the 92 nest attempts, 78 were successful. Twenty nests also were monitored for the number of chicks produced. Those nests produced 42 chicks, for a production rate of 2.1 chicks per nest. Based on this rate, it is estimated at least 164 chicks fledged.

Seven new nest structures were installed in 2007, and several were repaired or removed. These tasks were accomplished with help from

continued on page 5

Annual Autumn Turtle Beach Clean-up and Beach Party

Join Steve Parren, Coordinator of Vermont Fish & Wildlife's Nongame and Natural Heritage Program, and others for a workday to prepare two stretches of beach at North Hero State Park and Sandy Point in West Swanton for the turtle egg-laying season next June.

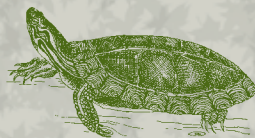
Date: Saturday, October 25, 2008 Rain Date: Saturday, November 1

Location: Start at North Hero State Park

Time: 10:00 AM – 3:00 PM (but feel free to leave at any time)

You can come after 10:00, but be sure to get to North Hero State Park by 12:30 as some of us will work at a second site in the afternoon.

Contact: Eric Lazarus, 658-8505 (ericlazarus@verizon.net) or Steve Parren, 241-3289 (steve.parren@state.vt.us)



a few private volunteers and substantial support from Central Vermont Public Service and Vermont Electric Company. Missisquoi National Wildlife Refuge staff also provided critical nest monitoring information.



East Mountain and other Northeast Highland peaks in 2007, funded through the State Wildlife Grant

program. This was the fourth year of surveying for **Bicknell's thrush** and other montane forest birds, including **Swainson's thrush, yellow-rumped warbler, blackpoll warbler** and **white-throated sparrow**.

A total of 183 individuals of the five species of interest were captured. A high percentage of the birds captured were second-year birds. Surveys on nearby Burke Mountain resulted in the highest number of Bicknell's thrush detected in the past decade. There appeared to be a region-wide increase in Bicknell's thrush population between 2006 and 2007. A lower red squirrel population resulted in less predation, allowing greater Bicknell's thrush nesting success and increased recruitment of second-year birds.

Plants and Natural Communities

Bob Popp, Fish & Wildlife botanist, led a workshop on identifying **native shrub willows**. Staff from the USDA Natural Resource Conservation Service (NRCS) and individuals from local nurseries learned to identify the native willows so they could collect cuttings this winter. The cuttings will be sent to the Plant Materials Center in New York, where they will be propagated and made available for NRCS projects, such as restoring riparian buffers.

A large population of the state-threatened, **smooth draba**, a very rare member of the mustard family, was found growing on a small, privately owned island in Lake Champlain. Its existence was brought to our attention from a 1983 collection found

in the Pringle Herbarium at UVM. Unfortunately, the search for the state-threatened **fairy slipper orchid** was not so successful. Two visits to cedar swamps in Caledonia County over the past two years have failed to locate the very rare and elusive orchid.

Keeping track of Vermont's rare species and significant natural communities means lots of time entering data. But the information is critical in environmental review and in determining the status and management needs of our rare plants and animals.

The daunting task of bringing the plant database up-to-date has been helped by the addition of Aaron Marcus in a temporary position to assist Bob Popp. Data on 45 populations of federally listed and candidate plant species have been added through his efforts. He also improved the data quality of the database by finding species reports, critical details, and mapped locations in the paper files that had not been previously entered. As a result, over 310 plant element occurrences have had major changes added to the Bionics database. When Aaron is not entering data, he is collecting it. This field season he has monitored over 60 rare and uncommon species, 18 of which had not previously been documented.

The Endangered Species Committee has recommended adding **common arrow-grass** and **Pickering's reed bent-grass** to the state's Endangered and Threatened Species list. Both plants are known to be growing in only a single location in Vermont. They would be listed as endangered.

Two new natural communities projects are in the works. **Forest Block and Wildlife Corridor Prioritization** is a State Wildlife Grant funded project to use existing GIS data to prioritize large forest areas (forest blocks) and the wildlife corridors that connect them. Large areas of forest with

continued on page 6

Vermont's **peregrine falcon** breeding population tied its 2006 post-DDT record high of at least 34 territories in 2007. A new territory was established at Red Rock Bay in Benson. A pair returned to Bone Mountain in Bolton after a one-year absence, and another pair came back to Stockbridge Cliff in Stockbridge after a two-year absence. Of the 34 pairs present in 2007, 31 nested and 23 pairs fledged an estimated total of 56 young.

The 2008 peregrine nesting season is nearly complete and early numbers indicate this was one for the record books. Our population hit a new all-time high of 38 pairs, with 74 percent or 28 pairs being successful. Fledged chicks as of July 23 were estimated at a minimum of 59.

There was a record high 62 **common loon** nesting pairs and 82 territorial pairs statewide documented in 2007. Of the 62 pairs that attempted nesting, 47 successfully hatched 71 eggs. Chick survival through August was 79 percent or 56 chicks. The number of nest failures and chicks lost were slightly higher in 2007 than in 2006, resulting in the same number of chicks surviving through August. Eight new nesting pairs and seven new potential territorial pairs were identified.

Preliminary numbers for the 2008 nesting season indicated a total of 62 loon nests, of which 41 were successful. Fifty-two chicks have survived as of the third week in July.

The Vermont Center for Ecostudies (VCE) continued their avian population research and monitoring on

continued from page 5

imbedded wetlands, streams, and other communities provide critical habitat for many species. Wildlife corridors that connect these large forest blocks are critical to wide ranging species such as bobcats and black bears. Fragmentation of forest blocks and corridors due to development and roads is a significant threat to not only Vermont's wildlife, but also for many ecological processes, many social values that we associate with large forests, and economic values of forest resources. This project will help focus conservation efforts on critical forest blocks and wildlife corridors.

Unlike typical heritage program inventories that focus on one or two specific community types, the **Oak-Pine Forest Block Inventory** project will identify some of the highest priority un-fragmented forest blocks that are dominated by any of Vermont's warm-climate oak and pine natural community types. These forests support many plant species of more southern distribution and

also a specialized set of wildlife species. This State Wildlife Grant funded project will provide a better understanding of oak-pine forest distribution, refine the natural community classification for oak-pine forest natural communities, and identify priority forests for conservation work.

Inventoring natural communities on state lands is getting a helping hand this summer with the hiring of Bob Zaino in a temporary position. Bob is working with Fish & Wildlife's Land Ecologist Lief Richardson to conduct natural community inventories at the Bill Sladyk Wildlife Management Area (WMA), Dead Creek WMA, and Fairfield Swamp WMA.

We bid a fond farewell to Dan Farrell who has worked his expertise to get significant natural community data into our Biotics database from our landscape level inventories and state lands mapping. Dan managed a vegetation plots database, provided valuable needed assistance on state lands field work, and became a regional expert on natural community classification. We wish Dan good fortune with his new position with the Vermont Field Office of The Nature Conservancy.

Mussels, Muskies and Stonecats

Vermont Fish & Wildlife's NNHP partnered with New Hampshire's Nongame and Endangered Wildlife Program to compile **dwarf wedgemussel** occurrence data and produce conservation planning maps. The joint project successfully identified areas of population occurrence, important habitat for conservation, threats to dwarf wedgemussel

populations, and conservation strategies. Learn more about dwarf wedgemussel by visiting www.dec.ny.gov/animals/25384.html.

Results of DNA sampling of **muskellunge** (muskie) put to rest the question of whether or not a native Vermont-strain of muskies still swims the rivers of Lake Champlain. Although extensive sampling efforts on the Missisquoi River seemed to indicate the unique strain was gone, fishery biologists wanted to be sure. Samples sent to an Ontario lab revealed the muskies caught in the Otter Creek and lower Missisquoi River were offspring of fish stocked from Pennsylvania and New York years earlier.

The discovery of a population of **stonecat**, a small state-endangered catfish, in the Missisquoi River in 2006 is prompting a follow-up survey of the river this summer. Sampling methods will be reviewed and refined with the hopes of expanding the survey to other



Stonecat discovered while surveying the Missisquoi River.

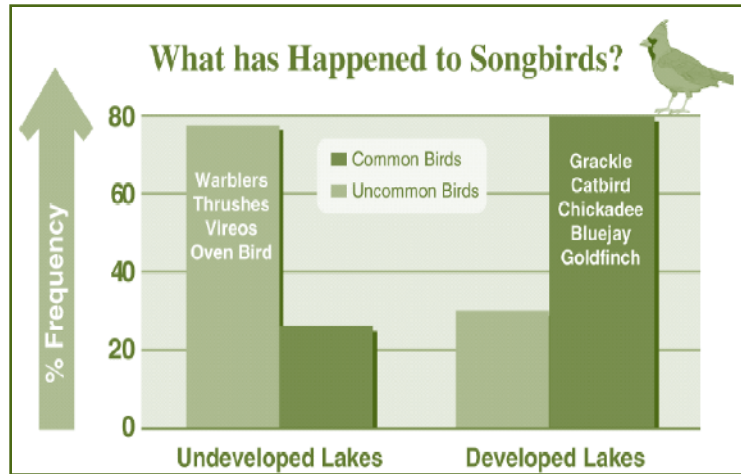
streams and rivers that have potential for supporting populations of this secretive fish.

Each year the department participates in over 70 projects involving nongame species, plants and natural communities. Our work is made possible with help from contributions to the Nongame Wildlife Fund and the State Wildlife Grants program. When you donate on your state income taxes, make a donation when purchasing a hunting or fishing license, purchase a conservation license plate, or make a direct donation, you are helping our efforts to conserve and protect Vermont's natural heritage. Thank you. 🐾

State Wildlife Grants: Wildlife Conservation in Action

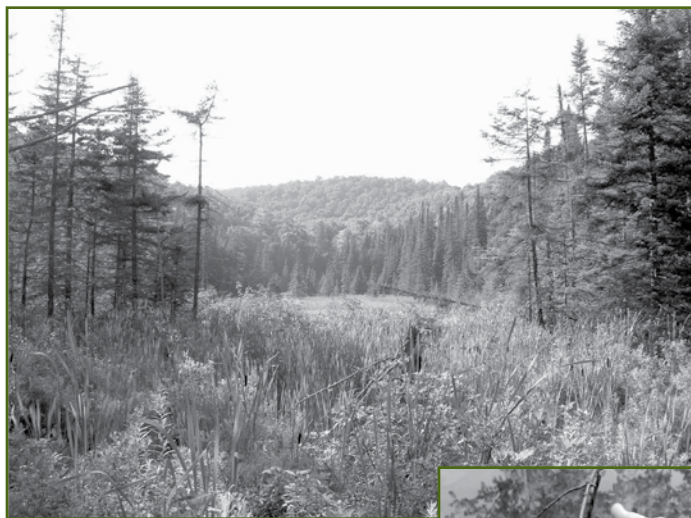
Healthy Lakeshores Make for More than a Nice View

It's hard to find someone, anyone, who doesn't enjoy the view out across a Vermont lake. It can be harder still to maintain that lakeshore in a manner that both pleases landowners and maintains habitats vital for fish and wildlife. Vermont's lakeshores are rapidly transforming. There are more year-round residences and roads, and less of the natural vegetation that so many fish and wildlife species have evolved to depend upon. And, since no more than nine percent of Vermont towns have lake riparian buffer protections, the trend from naturally vegetated to suburbanized will likely continue unabated.



Though lakeshores provide vital habitat for many Species of Greatest Conservation Need, no more than nine percent of Vermont towns have lake riparian buffer protection requirements.

Identifying and prioritizing the lakeshore habitats most important for Species of Greatest Conservation Need is, therefore, vital for effective conservation. Now a collaborative effort by Department of Environmental Conservation's Water Quality Division and the University of Vermont, aims to do just this, through field and GIS-based research. The fruits of this effort, made possible with funding from Vermont Fish & Wildlife's State Wildlife Grant (SWG) program, the US Fish and Wildlife Service and EPA, will help landowners, towns, lake associations and others practice effective conservation.



Landscape-level conservation projects, such as OCHP, address the needs of a broad array of fish and wildlife Species of Greatest Conservation Need, making them crucial to successfully implementing Vermont's Wildlife Action Plan.



Spotted Salamander eggs

Community-Based Landscape Conservation Protects Wetlands and Vernal Pools

The Orange County Headwaters Project (OCHP) began in 2003 as a grassroots land conservation project when several neighbors decided to work collectively to conserve their undeveloped land by donating conservation easements. As community interest grew, landowners realized they could conserve their properties more cost-effectively and with greater long-term community benefits by protecting large, contiguous areas that have broad ecological, forestry, wildlife, and recreational value. OCHP now spans 30,000-acre at the headwaters of the White, Waits, and Winooski rivers in the towns of Corinth and Washington. Over 20 landowners have conserved over 2500 acres.

Vermont Fish & Wildlife supports the Headwaters Project with SWG funds to: identify high priority vernal pool and wetland sites; provide landowners with guidance to better manage their lands; and, help target land conservation activities with

the overall goal of maintaining and improving habitat through land conservation, support for sustainable forestry, watershed protection, civic engagement and a better understanding of land stewardship and ecology.



Nongame and Natural Heritage Program

Vermont Fish & Wildlife Department
Vermont Agency of Natural Resources
103 South Main Street, 10 South
Waterbury, VT 05671-0501
www.vtfishandwildlife.com



Your Support Makes a Difference!

Please donate to the Nongame Wildlife Fund on your Vermont income tax form. Look for the loon icon.



What's New



New Amphibian and Reptile DVD - Rattlers, Peepers & Snappers, A complete guide to the

amphibians and reptiles that breed in New England, is a new DVD designed for anyone interested in herpetology, natural history, or any of the 52 fascinating amphibians and reptiles in our own backyard of New England.

Vince Franke, of Peregrine Productions, and herpetologist Jim Andrews of Vermont Herp Atlas, teamed up to produce this informative and entertaining DVD. The comprehensive collection of videos includes over three hours of programs, featuring action and close-up footage of amphibians and reptiles in their natural environment. Plus there is the added bonus of quizzes, fact sheets and resource pages, making this DVD a great resource for teachers and students. Order your copy today at: www.peregrineproductions.com/home-alias.

Bat Brochure for Landowners - When the federally endangered Indiana bat (*Myotis sodalis*) emerges from hibernation in the spring in the Northeast, it heads to the Champlain Valley from Brandon to Hinesburg to spend the

summer months. The majority of the habitat they use during these months is privately owned. The *Landowner's Guide to Stewardship of Indiana Bat Habitat* is a new pamphlet that outlines the basics of how private landowners can protect and enhance Indiana bat habitat in a way that will also benefit other at-risk species and natural communities. If you are interested in receiving a pamphlet, please contact Jane Lazorchak, LIP (Landowner Incentive Program) Coordinator at (802)479-4405 or jane.lazorchak@state.vt.us.



Celebrate Wildlife at the 7th Annual Dead Creek Wildlife Day
Saturday, October 4, 2008
9:30 to 4:00

Dead Creek Wildlife Management Area - Addison
www.vtfishandwildlife.com/dead_creek_wildlife_days.cfm