

The Sampler

PROTECTING NEW HAMPSHIRE'S LAKES THROUGH THE DEDICATION OF VOLUNTEERS

PUBLISHED BY THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES
VOLUNTEER LAKE ASSESSMENT PROGRAM, SPRING 2009

Beaches Continue to be Plagued with Cyanobacteria

by Sonya Carlson, DES Beach Program Coordinator

Cyanobacteria in New Hampshire's lakes and ponds are an ongoing concern. Cyanobacteria commonly occur in nearly all of New Hampshire's waterways. When present in low numbers they do not cause recreational or aesthetic problems. When they congregate into a bloom, or form a scum on the water's surface, they can become potentially toxic to domestic animals, livestock, waterfowl and humans. Many cyanobacteria produce toxins that may cause acute effects, such as skin and mucous membrane irritations after short term exposure, or chronic effects, such as liver or

central nervous system damage after long term exposure to water containing these toxins.

The DES Beach Program recognized the risks associated with cyanobacteria and initially issued three cyanobacteria advisories in the summer of 2004 when a bloom at a beach was greater than 50 percent cyanobacteria. Since 2004, the number of advisories has increased; 14 beach advisories were posted in 2008. Additionally, a new procedure of cyanobacteria lake warnings was implemented in 2007 to alert lake users of cyanobacteria blooms on lakes without designated beaches

or for areas of a lake away from the designated beach. Fifteen lake warnings were issued for cyanobacteria blooms in 2008.

The Beach Program also began analyzing cyanobac-

Watershed Report Cards — the Latest Grade for Your Lake

To find out whether your lake or pond made the honor roll, DES has created watershed report cards available via the DES website. The report cards are built from the 2008, 3035(b)/303(d) surface water quality assessments.

The Surface Water Quality Assessment Program produces two surface water quality documents every two years, the "305(b) Report" and the "303(d) List." As the two documents use the same data and assessment methodology, the 305(b) Report and 303(d) List were combined into one integrated report. The integrated report describes the quality of New Hampshire's surface waters and an analysis of the extent to which all such waters provide for the protection and propagation of a balanced population of shellfish, fish, and wildlife, and allow recreational activities in and on the water.

From the integrated report, watershed report cards were developed to provide a user-friendly overview of water quality. Each watershed report card covers a



Cyanobacteria outbreak on Half Moon Pond, Kingston.

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Connor's Corner



by Jody Connor
DES Limnology Center Director

Welcome volunteer monitors to our 24th year of VLAP. As always, it is a great pleasure to work with each dedicated volunteer monitor to maintain the quality of New Hampshire's lakes and ponds. Thank you for your hard work!

VLAP continues to grow each year with a record number of participating lakes in 2008. This past year six new lakes joined VLAP bringing the number of participants to 175. Of course we're always looking to add new lakes to the program, so if you have a neighboring lake or pond, please encourage them to join VLAP or become Weed Watchers. The Weed Watcher program also continues to grow and has demonstrated its' importance in protecting our lakes from exotic aquatic plant infestations through early detection and quick response protocols. As VLAP and Weed Watchers continue to grow, program coordinators are always looking for new ways to make life a little easier on our dedicated volunteers. If you have ideas that will benefit VLAP, please feel free to share them with us.

With the increasing participation in both VLAP and Weed Watchers and the downturn in our economy, DES continues to search for new innovative programs to increase program income. DES's Water Monitoring Strategy states that volunteer monitors are key players in collecting water quality monitoring data to support good environmen-

tal decision making. To better serve our volunteers, DES is initiating an Adopt-A-Lake Program that will hopefully provide some needed income into this extremely popular program. The VLAP Adopt-A-Lake Initiative is a great opportunity for local businesses to support lakes and ponds in their community. Please think about possible program participants within your watershed. We will soon be distributing more information concerning this important program.

We all need to work together to protect lake quality through watershed protection efforts. DES relies on VLAP monitors to keep abreast of the latest monitoring and watershed management programs that may help protect the waterbodies you live on. Please read the recommendations that biologists include in each VLAP report and try to incorporate these recommendations for the upcoming year. The recommendations are the result of water quality trends and issues detected through your diligent monitoring efforts.

The only way to circumvent these issues is to make sure that your lake association and monitors continue to educate key municipal leaders. Make sure that local government committees and boards receive a VLAP report copy to keep them in the loop to trends occurring in local waterbodies. Make it your responsibility to keep them well informed and active in solving issues in which municipal activities influence water quality. Town and state roadways have an extreme impact in the amount of water and pollutants that enter the lake. There are new watershed and road runoff treatment technologies available to remove pollutants before they enter the lake. Lake protection and watershed management can only be

achieved if we all work together.

Lake Management and TMDLs

The federal Clean Water Act (CWA) provides regulations to protect United States waters. The CWA requires states to identify waters not meeting current state water quality standards and to develop total maximum daily loads (TMDLs) for these waters. A TMDL sets the maximum amount of a pollutant that a waterbody can receive and still support designated uses. Thirty lakes will go through the TMDL process over the next year. These lakes are impaired as a result of elevated chlorophyll-a levels (algal growth) impairing the primary contact recreation (swimming) use.

EPA, DES and AECOM, an envi-

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Watershed Report Cards

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single 12-digit Hydrologic Unit Code (HUC12), on average a 34 square mile area. Each waterbody within the HUC12 is divided into smaller segments called assessment units (AUs). Data gathered within each AU is used to assess water quality and then report the findings. Each report card has three components:

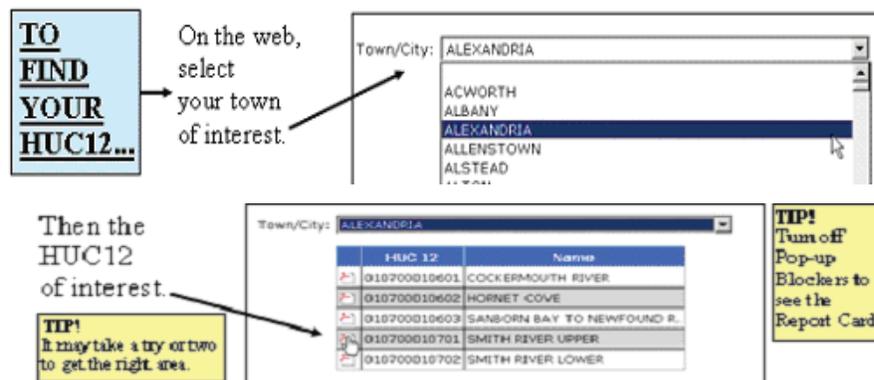
- **REPORT CARD:** A one-page card that summarizes the overall use support for aquatic life, primary contact (swimming), secondary contact (boating), and fish consumption designated uses on every assessment unit ID (AUID) within the HUC12.
- **HUC 12 MAP:** A map of the watershed with abbreviated labels for each AUID within the HUC12.
- **ASSESSMENT DETAILS:** Anywhere from one to 40 pages with the detailed assessment information for each and every AUID in the report card and map.

How are Assessments Coded in the Report Card?

Assessment outcomes are displayed on a color scale as well as an alpha numeric scale that provides additional distinctions for the designated use and parameter level assessments as outlined in the table below.

How to Find Your HUC12 Watershed Report Card:

http://des.nh.gov/organization/divisions/water/wmb/swqa/report_cards.htm



For More Information:

Ken Edwardson
DES Water Quality
Assessment Program
(603) 271-8864

kenneth.edwardson@des.nh.gov

<http://des.nh.gov/organization/divisions/water/wmb/swqa/index.htm>

		Severe	Poor	Likely Bad	No Data	Likely Good	Marginal	Good
		Not Supporting, Severe	Not Supporting, Marginal	Insufficient Information – Potentially Not Supporting	No Data	Insufficient Information – Potentially Full Supporting	Full Support, Marginal	Full Support, Good
Category 2	Meets standards						2-M or 2-OBS	2-G
Category 3	Insufficient Information			3-PNS	3-ND	3-PAS		
Category 4	Does not Meet Standards;							
4A	TMDL [^] Completed	4A-P	4A-M or 4A-T					
4B	Other enforceable measure will correct the issue.	4B-P	4B-M or 4B-T					
4C	Non-pollutant (i.e. exotic weeds)	4C-P	4C-M					
Category 5	TMDL [^] Needed	5-P	5-M or 5-T					

* "Category 1" only exists at the Assessment Unit Level.

[^] TMDL stands for Total Maximum Daily Load studies (<http://des.nh.gov/organization/divisions/water/wmb/tmdl/index.htm>)

2008 Secchi Disk Award Winners

Since 2004, DES has recognized at least one volunteer for his or her dedication and commitment for volunteer lake monitoring. This award has been appropriately named the Volunteer Limnologist Award because each time a volunteer monitor collects a water sample from a lake or pond or conducts a Weed Watcher survey, the volunteer is performing the role of a true limnologist. In addition, the Secchi Disk Award is given to the overall Volunteer Limnologist award winner of the year.

At the 2008 Annual Volunteer Lake Assessment program workshop, Pat and Dave Johnson of Forest Lake, Winchester, received the Volunteer Limnologist Award and the Secchi Disk Award. Pat and Dave have monitored Forest Lake at least three



Dave and Pat Johnson of Forest Lake, Winchester, received the 2008 Volunteer Limnologist Award and the Secchi Disk Award.

times each summer through VLAP since 1993. They have been extremely active in educating members of the lake association, the watershed, and the community about responsible lake stewardship. In particular, they have been dedicated Weed Watchers involved in exotic plant control management projects, the Lake Host Program, and advanced tributary sampling. Thank you, Pat and Dave, for your continuing dedication to protecting and improving the quality of New Hampshire's lakes and ponds!

And the Nominees Are ...

The following individuals have been selected to receive the Volunteer Limnologist Award and have been nominated for the Secchi Disk Award:

- Dayton Goudie, Partridge Lake, Littleton
- Fred Szmít, Spofford Lake, Chesterfield
- Tom Newcombe, Granite Lake, Stoddard

Attend the VLAP Workshop to see who will receive the 2009 Secchi Disk Award!

If you would like to nominate someone for these prestigious awards, please send or email a letter explaining who you have nominated and why to the VLAP Coordinator before April 2010.

Attend the Annual VLAP Workshop! May 16 in Concord

The 2008 Annual VLAP Workshop will be held on Saturday, May 16, at the Department of Environmental Services in Concord from 7:30 a.m. to 12 p.m.

There is a small fee for the workshop and complimentary snacks and beverages will be provided.

All workshop participants will learn about the latest lake management activities, VLAP program updates, exotic plants, loon monitoring, and the newest cyanobacteria research. Also, the recipient of the 2009 Secchi Disk Award will be revealed.

Attendees can choose to attend two of the three following sessions: Aquatic Plant Identification Workshop, Lake Ecology and Sampling Refresher, or Loon Observation Training for the Loon Preservation Committee.

Also, attendees from 20 VLAP lakes will be able to learn about the Total Maximum Daily Load (TMDL) conducted on their lake.

If you would like to attend, please complete a registration form located at www.des.nh.gov/organization/divisions/water/wmb/vlap/index.htm, or contact Sara Steiner, VLAP coordinator, at (603) 271-2658 or sara.steiner@des.nh.gov.



Diver Assisted Milfoil Machine – A New Tool for Managing Exotic Aquatic Plants

by Scott Ashley, Jody Connor and Amy Smagula, DES Limnologists

For the past two years, limnologists with the DES Biology Section, in cooperation with several individuals including divers and fabrication specialists, have developed a diver-assisted suction harvester device (milfoil machine or DAMM) to assist with managing exotic aquatic plant growth in New Hampshire's waterbodies.

Exotic aquatic plant managers understand the importance of the integrated approach to provide long-term and more effective control of exotic plant infestations. A combination of scaled approaches is the proven method to manage exotic plants. The DAMM unit is one more tool available for the control of exotic plants in New Hampshire.

What It Is

The DAMM is essentially an aquatic vacuum cleaner used by divers to remove hand-pulled exotic plants and their roots from bottom sediments. This device is operated by specially licensed divers who hold Weed Control Diver certification through the Professional Association of Dive Instructors. The suction harvester is best suited to physically manage small to moderately sized infestations. However, a suction harvester has been working in large infested areas of Smith Cove, Lake Winnepesaukee, for the past two summers and is making excellent progress at controlling the variable milfoil growth in the cove.

The unit is constructed on a floating platform, such as a pontoon boat, barge, or even a swim platform



The diver-assisted milfoil machine in action.

mounted on pontoons. The deck of the platform is modified by cutting a 2' x 3' rectangle in the floor. The floor hole is lined with a plant collection net that retains any plants and roots that are suctioned from the bottom sediments. Mounted on the deck is a vortex pump to draw plants pulled by the diver. A special low-density, large-diameter hose connected to the pump extends into the water from the vessel is used by the divers to suction the bottom plants.

A certified diver works to systematically hand-remove the exotic plant by the roots and then feeds the plant and the roots up the hose. The plants, water and a small amount of sediment are discharged into the net-lined cut-out in the platform. The water filters through the net fabric while the plants remain in the net.

The deckhand sorts through the net contents to remove and set free any mussels or other aquatic life, then scoops the plants into a 20 gallon bucket or container to measure actual exotic plants and root volumes removed from the system. The material is then bagged for disposal in a landfill or compost site that is located a distance from a surface waterbody. During the summer of 2008, the DES-operated harvester pulled over 3,000 gallons of milfoil.

What It Is Not!

For maximum cost effectiveness, the DAMM is best used for small to moderately sized infestations. It is not a technique that can be cost effective when used in a large areas of exotic aquatic plant infestation. The most cost effective method for large area infestations is the use of permitted herbicides by licensed applicators. Also, DAMM is not intended for use in controlling native aquatic plants.

How Many Units Are There?

DES currently has one serviceable unit and available parts to construct one other unit. Our limited staff time only allows the unit to be effectively used one to two days per week from June to October. DES is working with the Milfoil Legislative Working Committee to increase program funds to hire seasonal divers to work full-time operating the DES unit and to expand our suction harvester fleet.

DAMM, continued on next page

DAMM, *continued from previous page*

There are also three or more privately owned units throughout New Hampshire and neighboring Maine. Each of the operators of these devices are certified through the New Hampshire Weed Control Diver program so that their techniques have been validated and approved by DES biologists. These private contractors notify DES if they have been solicited to perform exotic plant control activities in New Hampshire waterbodies. They are required under their certification to provide a pre- and post-dive summary of their work so that DES can keep track of progress made in managing exotic aquatic plants throughout the state.

The three companies are:

DIVEMASTER Dive Service

Mark Richardson, Owner
mark@divemasterdiveservice.com
mrmilfoil@hotmail.com
 Gilford, NH
 (603) 387-7225
 (781) 808-5043
www.divemasterdiveservice.com

New England Environmental Diving Services LLC

Brett Durham, Principal Consultant
brett@needsdiving.com
 PO Box 4
 Plymouth, NH 03264
 (603) 998-4988
www.needsdiving.com

New England Milfoil

Cliff Cabral, Owner

NEMilfoil@gmail.com

391 Center Conway Rd.
 Brownfield, ME 04010
 (603) 387-2425

www.newenglandmilfoil.com

We plan to continue to modify and expand this program each year so that it becomes a standard component within our multi-tiered approach at controlling exotic aquatic plants. If you have questions regarding the DAMM or suction harvest removal of invasive aquatic plants please contact Amy Smagula at Amy.Smagula@des.nh.gov, Jody Connor at Jody.Connor@des.nh.gov, or Scott Ashley at Scott.Ashley@des.nh.gov, or by phone at (603) 271-3503.

Sharing Data will Benefit Your Waterbody

Do you collect water quality data in addition to your normal VLAP sampling? If so, DES now has the ability to accept volunteer data through the OneStop data website. This site allows users to enter their data into Excel templates, which can then be submitted for upload into the Environmental Monitoring Database.

Once you have registered with DES One Stop, you will be able to download the templates and start entering your data. Since there are two versions of the Excel templates, please make sure that you use the "Lite" version, which has been streamlined for volunteers, universities and other small organizations.

Once your file has been submitted, it will go through an automated validation process. If the data does not pass validation, you will be given



specific guidelines for correction. If it passes, it will be put in a queue for further examination and then uploaded into the EMD. The data will then be available for viewing through the OneStop site.

The data will also be included in your annual VLAP report. A comprehensive data set is essential for making educated

trend analyses, assessments, and observations and recommendations for your waterbody. Sharing data is easy, so let's get started!

To register on OneStop, go to <https://www2.des.state.nh.us/OnestopDataProviders/registration-form.aspx?Id=NEW> and look for "Upload Station or Activity Data for the Environmental Monitoring Database (EMD)." For more information or assistance with the templates, please contact Andrew Cornwell at (603) 271-1152.

Connor's Corner

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ronmental consulting group, have teamed up to produce these lake nutrient TMDLs. Twenty of the nutrient TMDLs were prepared on VLAP lakes. These individual reports for each lake will describe potential phosphorus sources and estimate existing phosphorus loading to the lake and most importantly, will suggest elements to be included in an implementation plan. Part of the TMDL process includes a public notice and participation session for each lake. To accomplish this goal, Sara and I will be providing a TMDL public participation session as an extension of our annual VLAP workshop in May. A special TMDL section for those VLAP TMDL lakes is included in your 2008 VLAP report. We strongly encourage lake association members, volunteers and interested local government representatives to attend the VLAP workshop and learn more about the TMDL process and what future best management practices will need to be implemented at these lakes.

What to Expect for Lake Quality Trends for the 2009 Season

As we have discussed in past years, lake quality trends are closely linked to seasonal weather patterns. Take for example the 2008 season. The month of May was dry and cold which fostered a slow melt and low intensity runoff events of the record snowfall. Typically, waterbodies with larger watersheds receive the greatest impact from spring rains. Our lakes and shoreland owners were quite lucky that the large snow pack melted rather slowly this past spring. June was warmer and wetter which likely moved suspended solids, phosphorus and bacteria from the watershed and eventually influenced all New Hampshire lakes during the early summer months. If you pick up your handy VLAP reports, you may likely observe that June chlorophyll may be at its maximum summer level while clarity may be at its lowest level. DES posted another record number of cyanobacteria advisories (14 advisories) during the 2008 season. The increased advisories were likely the result of above average rainfall resulting in increased phosphorus loading from the watershed to the lake and warmer temperatures in August and September.

Climate change is certainly the most discussed issue with environmentalists throughout the world. Many limnologists are looking into the impacts of climate change to the world's waterbodies. Increased patterns of violent weather that includes high intensity wetfall events and warmer temperatures are all attributed to

climate change. Continued high intensity wetfall combined with warmer water will likely result in future increases in cyanaobacteria cell production and seasonal duration of surface scums. New Hampshire lakes are clearer than most states, a result of their ability to recover once the ice forms and snow covers the surface. With little sunlight penetration, chlorophyll production is limited. Most of the cyanobacteria, phytoplankton and aquatic macrophytes are forced to limit cell production. Some cyanobacteria can produce akinetes that settle to the bottom and begin cell production once conditions are favorable for growth.

Although still a little too early to predict wetfall for the spring, the state has a moderate snow pack from a second season of above average snowfall. If New Hampshire continues the current wetfall patterns as has been the case during the winter, expect increased runoff, turbidity and phosphorus to our lakes this spring. Expect ice-out on our larger lakes to occur in mid to late April. The combination of sunlight and increased phosphorus will result in a significant spring diatom increase during May and June, high productivity and lower transparency.

The increased snow melt will likely lead to higher water levels this spring decreasing exposure to the near shore littoral zone. Aquatic plant growth will likely begin a little later this season as decreased sunlight penetration and increased turbidity will discourage plant growth, especially exotic plants like milfoil. The increased littoral zone area will likely result in decreased spawning zone competition among the early spawning fish species. As sunlight warms the waters, spawning fish populations may experience a less stressful spawning season resulting in a decreased rate of fish mortality.

Dominant populations of green and golden brown algae may occur in many lakes by July. If we have a sunny spring, the appearance of filamentous green algae may become prevalent in early July. Increased amounts of phosphorus loading this spring will likely result in more lakes with cyanobacteria and an increased duration of blooms. I anticipate an earlier appearance of cyanobacteria this season especially in those lakes that have chronic problems. Look for the appearance of cyanobacteria in early July this year.

I strongly recommend that lake associations monitor the tributaries and lake for conductivity, turbidity

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Away with Geese! The Battle Continues

By Teresa Ptak, DES Clean Vessel Act coordinator and Beach Program assistant

Many wild and domestic animals visit New Hampshire's beaches each day. However, none wreak more havoc on our beaches than Canada geese. And why do geese create such a problem? It's not really the geese per se, but what they leave behind. Geese continue to be a source of bacterial contamination for beaches throughout New Hampshire. An adult goose produces about three pounds of fecal matter daily, fiercely protects its offspring, and can be quite vocal. Geese fecal matter contains millions of



The "AwayWithGeese.com" device contains a solar-powered, flashing amber light on a buoy.

bacteria and pathogens that could potentially cause human illnesses.

Current efforts by the NH Beach Program have focused on different geese management strategies with varied outcomes. The "Away-WithGeese.com" device is a new management strategy being investigated by the Beach Program. The unit is water based and contains a solar-powered, flashing amber light on a buoy. According to the manufacturer, the

device's light serves to disrupt the sleep pattern of geese persuading them to relocate using an environmentally-friendly method.

A trial run was initiated last summer on Lake Winnisquam at Bartlett Town Beach, Laconia. The site was chosen based on public complaints and elevated bacteria levels resulting in three beach advisories. The unit was placed at the town beach approximately 150 feet from shore, from September 5 to September 12, 2008. Three site visits were made during this time, and from initial set up to disassembly, no geese or solid evidence of geese were noted at the beach. Due to the short period of deployment, the effectiveness of the product was inconclusive and warrants another trial run in 2009 when the unit can be deployed for the entire beach season.

For more information visit www.awaywithgeese.com or contact Teresa Ptak, DES Beach Program assistant, at (603) 271-8803.

Cyanobacteria

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ria samples for the toxin microcystin. Microcystin is a common toxin produced by many species of cyanobacteria. In 2008, samples from eight of the 26 lakes with beach advisories and/or lake warnings contained toxin concentrations greater than 2.5 parts per billion (ppb). The World Health Organization suggests drinking water should contain toxin levels of less than 1 ppb and recreational water should contain toxin levels of less than 20 ppb. DES cannot report results greater than 2.5 ppb due to testing limitations; however future tests may be more specific for higher ranges of toxin. Currently, the only way to prevent adverse effects from cyanobacteria toxins is to avoid contact with contaminated water.

If you suspect a cyanobacteria bloom is occurring at your lake or pond please call DES immediately at (603) 271-3414 or (603) 271-0698.

Connor's Corner

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chloride and conductivity concentrations.

As always, you are welcome to contact us if you have questions and concerns with lake quality or watershed activities that may potentially impact lake quality. VLAP plays an integral role in DES's mission to protect and report on the quality of New Hampshire lakes. Volunteers like you carry out this mission. I appreciate all your long work hours and your extreme dedication to keeping our lakes clean.

Limnologists in Training

By Alicia Carlson, coordinator Outdoor Education Program

Hey Kids! Get outside this spring to enjoy your local lakes and ponds!

Spring is a great time to be outdoors. Plants are emerging. Leaves are coming out. Animals are becoming more active. There's a lot to see! Why not take this opportunity to get outside and enjoy nature?

Your explorations can be very simple. Take a walk with your family and friends to a local wetland, pond or lake. Watch for birds foraging near the water's edge. Bend down to look into the water. What do you see?

Spend 10 minutes in silence, watching and listening to the water. When the 10 minutes are up, share your observations with your family and friends.

Your explorations can also be more detailed. Some supplies you can bring along on your journey might

include a net for collecting small animals, a small pan to look at collections, bags for collecting flowers and leaves, a digital camera, and a journal or sketch pad (don't forget a pencil!).



Some tips for collecting organisms:

- 💧 Be careful! Don't pick up any dangerous or poisonous plants or animals.
- 💧 Only collect plant parts if there are many plants of that type, and only collect ONE.
- 💧 Return all animals to where you find them.
- 💧 Treat plants and animals with respect – don't squeeze them or touch them too roughly.
- 💧 You can write and draw about what you see using the journal and sketch pad. Or, take pictures of animals you see (or signs of animals), different plants that live in the water, and your family and friends enjoying nature.
- 💧 Here are some ideas for when your return home.
- 💧 Press any plant parts to preserve them. You can begin a collection of local plants to enjoy later.
- 💧 Identify plants and animals that you saw using local field guides. Write these names on your sketches or in your journal.
- 💧 Make a collage or photo album using the pictures you took with your digital camera.
- 💧 Start planning your next trip to a nearby water body!

It's amazing what you can find when you take just a few minutes to look around!



DES Completes Level 1 Landscape Assessment of New Hampshire's Wetlands

by Ted Walsh, DES Water Quality Specialist

For many years now DES has had multiple successful water quality monitoring programs on our lakes, rivers, and estuaries. However, one of our state's most important water resources – wetlands – has not previously been a part of our monitoring and assessment programs. This past year DES began the process of developing monitoring and assessment methods for wetlands. Using EPA guidance, DES has set out three levels of analysis to develop these methods.

Level 1 – Landscape Assessment: A GIS based assessment of landscape development indices used to characterize the buffers that surround wetlands.

Level 2 – Rapid Wetland Assessment: An evaluation of the general condition of individual wetlands using relatively simple field indicators.

Level 3 – Intensive Site Assessment: A detailed assessment of biological integrity and hydrogeomorphic function.

In fall 2008, DES completed a Level 1 landscape assessment of almost 24,000 distinct wetland assessment units. Through use of a GIS model, a 125m buffer was first created around each wetland assessment unit. These buffers were then evaluated based on land cover types and their corresponding impact on the ecological communities that reside within the wetland proper.

The Level 1 landscape assessment is based upon the aquatic life designated use and is intended to identify those wetlands that are likely or unlikely to provide suitable conditions for supporting a balanced, integrated and adaptive community of aquatic flora and fauna. The assessment was based on the idea that the condition of a wetland's buffer will be a major driver of the condition of the wetland. Further, we can systematically estimate the condition of the buffer by knowledge of the land cover types within that buffer. Due to the inherent roughness of a landscape level analysis and that no in-wetland measurements were conducted, no definitive support categories were made. Based upon the results of the analysis the use support category "potentially supporting" or "potentially not supporting"

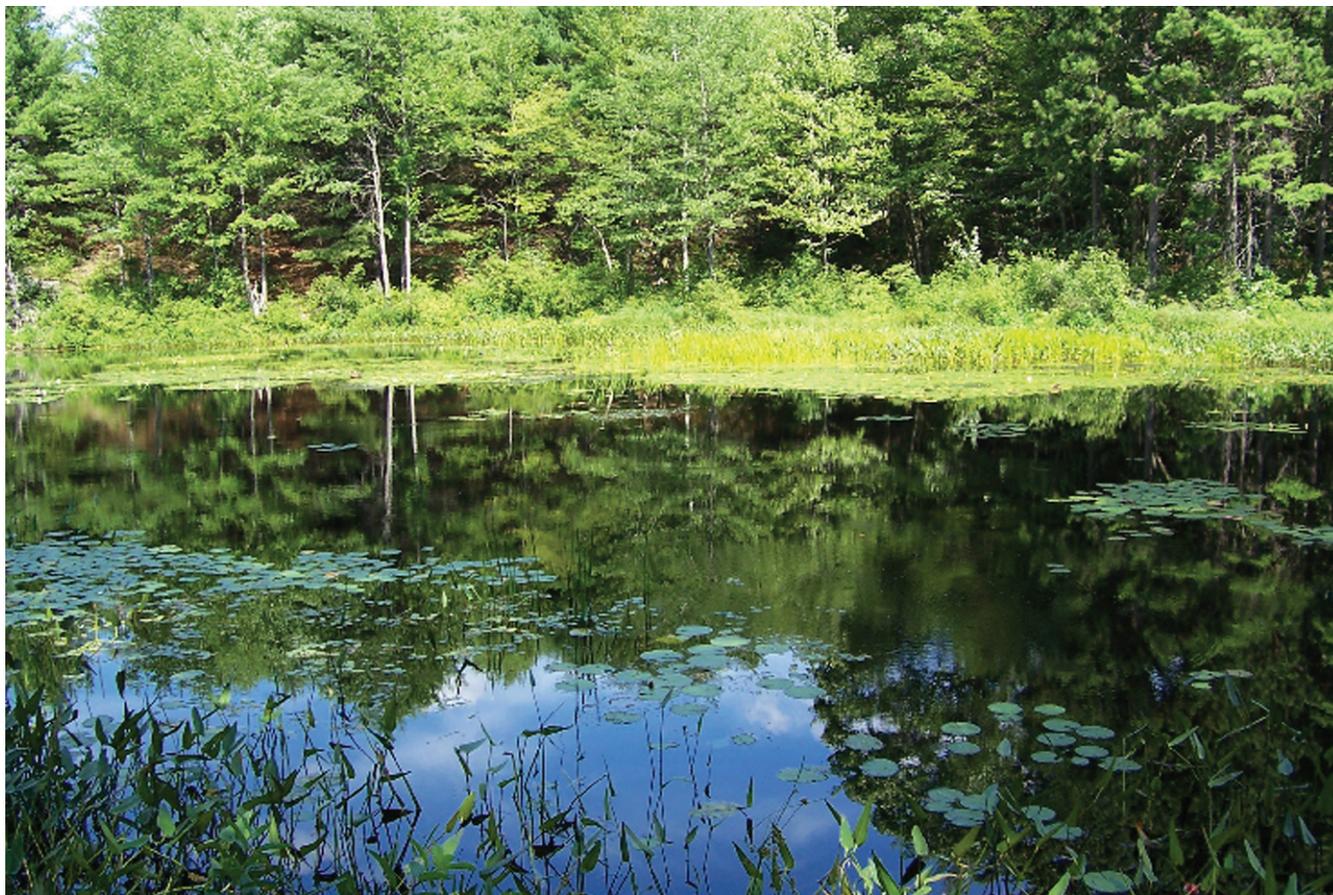
will be assigned to each assessment unit.

The 2006 National Land Cover Data (NLCD) was used to identify landscape types within each wetland buffer area. For example, a wetland assessment unit in a rural area might have a buffer comprised of 60 percent deciduous forest, 30 percent coniferous forest, and 5 percent pasture. In comparison, a wetland assessment unit in an urban area might have a buffer comprised of 40 percent medium density development, 40 percent high intensity development, and 10 percent deciduous forest. For each of the landscape types we then calculated pollutant loads for some of the more common pollutants likely to negatively impact the ecological health of a wetland such as total phosphorus, total nitrogen, metals, etc. Once the pollutant loads were determined for each of the landscape types we were able to convert those ecological impacts to a "score." A total score was calculated for each wetland assessment unit by multiplying the percent of the total area in each landscape type within the buffer by the individual assessment score for each land cover class.

In order to identify wetland assessment units as "potentially supporting" or "potentially not supporting" for the aquatic life designated use, a threshold was needed for the Level 1 assessment scores. Both the Center for Watershed Protection and DES have determined that once a watershed area exceeds 10 percent impervious surface cover, exceedances of water quality criteria are likely. Thus, if a wetland buffer is comprised of 10 percent or greater of the "high density developed" NLCD landscape type, that wetland assessment unit is very likely to have violation of water quality standards. Based upon the 10 percent threshold, any wetland assessment unit with a Level 1 score exceeding 10 will be listed as potentially not supporting.

Figure 1 shows the distribution of the resulting scores from the Level 1 assessment. A total of 18,909 (80.0 percent) wetland assessment units were assessed as potentially supporting and 4,717 (20.0 percent) as potentially not supporting. Results of the Level 1 assessment including both the Level 1 Assessment Score

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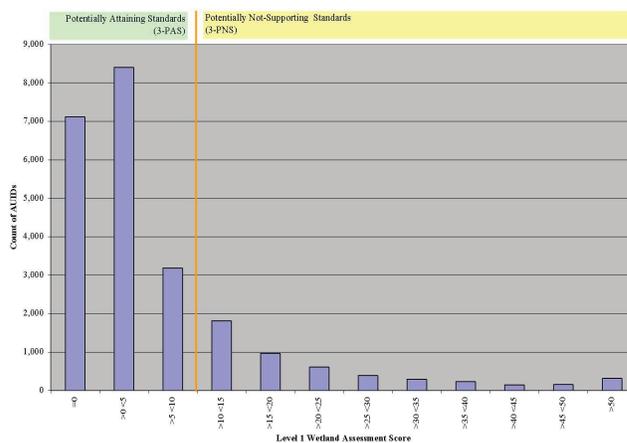


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and the relationship to the potential support threshold, were included in the 2008 305(b) report to EPA.

DES is in the beginning stages of developing a Level 2 Rapid Wetland Assessment Method (RAM) to evaluate wetlands. It is our goal to develop a RAM that could be used by the hundreds of VLAP and VRAP volunteers DES is so fortunate to work with. Incorporating wetland assessments into VLAP and VRAP monitoring will provide volunteers, watershed groups, and lake associations with a powerful tool to better understand the overall health of their watersheds of interest.

Figure 1. Distribution of Level 1 Wetland Assessment Score



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Water Division, Watershed Bureau, Biology Section
PO Box 95
Concord, NH 03302-0095

8522

Upcoming Events

May 1: DES Drinking Water Source Protection Workshop.

Grappone Conference Center
Concord, NH.

For more information, visit www.des.nh.gov/organization/divisions/water/dwgb/dwspp/workshop.htm.

May 16: DES VLAP Annual Workshop.

NH Dept. of Environmental Services
Concord, NH.

For more information, refer to announcement in this newsletter or visit www.des.nh.gov/organization/divisions/water/wmb/vlap/index.htm.

June 26: 2009 Lakes Congress.

Colby-Sawyer College,
New London, NH.

For more information, visit www.nhlakes.org/calendar/htm.

July 23: Lakefest 2009.

The Inn at Church Landing
Meredith, NH.

For more information, visit www.nhlakes.org/calendar/htm.



Have you
scheduled your
annual DES
biologist visit
yet?

If not, please contact
Sara Steiner, VLAP
Coordinator, at
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