Chair’s Message
Mimi Becker

Many changes have occurred during this past year, both in DNR and in COLSA. In January 2006, I began my tenure as DNR Chair, and Bill McDowell stepped down to invest more time as Director of the UNH Water Resources Research Center. We continue to contribute our collective talents in teaching, research and service to UNH and the community at large. Dr. Tom Lee was again selected as Teacher of the Year for COLSA, Dr. Kim Babbitt was awarded the Class of 1938 Professorship for Excellence in Teaching, and Dr. Andy Rosenberg was elected a fellow of the American Association of the Advancement of Science. Drs. George Hurtt and Serita Frey were promoted to Associate Professor with tenure. We are very proud of our DNR faculty, with its outstanding record of excellent teaching and research, as well as its commitment to community service. Our students also continue to excel; at least 10 of our Undergraduate majors have received either IROP or UROP Fellowships over the past year, and Luci Nascimento, one of our NRESS Ph.D. candidates, received a prestigious American Association of University Women International Fellowship to support her field research in Brazil.

This has been a year preparing for change. Since August of 2006, Kim Babbitt and myself have represented the Department on the COLSA Strategic Planning Committee, developing the Plan that will guide the restructuring of our College. The final recommendations for the reorganization will be forwarded to Acting President Bonnie Newman, by the first week in February. We anticipate that DNR will merge with the Department of Resource Economics and Community Development. Faculty from the two departments have been collaborating to develop a new joint major in Community and Environmental Planning. As of this date, DNR intends to continue to support our existing four majors in Environmental Conservation Studies, Environmental Sciences, Forestry, and Wildlife. We anticipate that the USNH Board of Trustees will make its final decision about COLSA reorganization in the late spring. We anticipate that it will take at least 12 months to complete the fiscal and physical reorganization to implement the new structure.

Other changes are also in motion: COLSA has been searching for a new dean to succeed Dean Trumble. Serita Frey has represented us on the Dean Search Committee. A successful search resulted in Dr. Tom Brady, currently completing a 3 year assignment at NSF, as our new Dean. He will begin July 1, 2007. UNH is also searching for a new President, and I am one of three UNH Faculty on that search committee. We hope to complete our search by the end of Spring Term.

We continue to be an extremely productive department and now support 65 MS students and 30 of the total number of 60 NRESS doctoral students. Thanks to continued alumni support for both Graduate and Undergraduate scholars in our department, we continue to graduate talented young leaders, who are committed to doing their part to save the planet. We are also very proud of our alumni, all of you, who are already out there making a difference. One of our priorities is to better serve our alumni as well as to continually improve our academic programs to offer the best education possible to our current students. To these ends, we have included a brief survey in this mailing and ask that you invest a few minutes to complete it and return it to the department at the specified address. Please feel free to add whatever comments or suggestions you might have. We are very interested to know what you are doing and what you feel we can do to prepare the next generation of DNR students to be productive citizens as well as skilled professionals. Thanks for your timely participation.
Russ Congalton, Professor of Remote Sensing & Geographic Information Systems was busy last summer (2006) working on his research projects including the GLOBE Land Cover Investigation. Jen Bourgeault, Jesse Bishop, and Russ conducted a workshop for teachers hosted at UNH on land cover mapping in May. Jen has received funding from the NH Department of Education for continued GLOBE training and she put all the materials together for an exciting Fall (2006) workshop schedule. Russ was invited to present a seminar at Ball Aerospace in June as part of the Advanced Geospatial Intelligence Lecture Series for the National Air and Space Intelligence Center in Dayton, Ohio. His 2-hour talk was on assessing the accuracy of maps derived from remotely sensed data. Approximately 50 participants attended the seminar. In July, Russ attended and chaired the first Sanborn Mapping Company Academic Advisory Council meeting in Colorado Springs, CO. Russ was asked by the CEO of this company to create a council of academics to advise Sanborn on future directions and share research results. The meeting was a great success and a second meeting was scheduled for the Fall. Finally, Russ wrote a number of proposals last summer including a new initiative called AmericaView which creates state consortia for the use and development of geospatial technologies.

Mimi Larsen Becker, Associate Professor of Natural Resources and Environmental Policy completed her service as Coordinator of the Environmental Conservation Studies Program, when her colleagues selected her as the new Department Chair. Her teaching and research continue as well, so she was proud to graduate two of her doctoral students, David Howland and Penelope Morrow this past May. Dave’s research developed a new policy sciences based method for tracking the impact of the media on Climate Change Policy decisions in the U.S., while Penny’s longitudinal study tracked the impact of a particular sustainable living and learning pedagogy on the students lives over time. Both Dave and Penny are currently teaching at UNH (Dave in the English (Technical Writing) and Journalism Program, and Penny in Women’s Studies). Jesse Bishop, a GLOBE supported MS student, co-advised with Russ Congalton, completed his New Zealand land cover change project, and has moved on to work at NMFS Woodshole National Oceanographic Research Center.

Mimi continues to serve as a member of the Executive Committee of the Society for the Policy Sciences, and here at UNH, on the Executive Committees of the Interdisciplinary Natural Resources Environmental Studies and Environmental Sciences, Ph.D. Program and the joint Department of Education-Department of Natural Resources Masters of Environmental Education Program. As the Department’s representative to the Faculty Senate, she serves on the Senate’s Agenda (executive) committee and represents the Senate on the Presidential Search Committee.

She has collaborated in development of two new courses designed to enable our graduates to address some of the more challenging problems of our time. The first, Ecosystem-based Governance, was designed in collaboration with NRESS Ph.D. Student John R. Coon, J.D. The second, Land Conservation Principles and Practices, a collaboration with Extension Educator, Frank Mitchell, and Dr. Robert Eckert, was offered for the first time this spring. It is intended that this latter course replace the Senior Project as the Capstone for Environmental Conservation Studies program.

Ted Howard, Professor of Forestry Economics and Director of the Center for International Education, traveled to Lake Tahoe, California for the summer meeting of the National Association of State Universities and Land Grant Colleges Commission on International Programs where he gave a presentation on UNH’s International Affairs Dual Major Program. After the meeting, he spent a day on the El Dorado National Forest examining fuel management practices.

Bill McDowell, Professor of Water Resources Management and Director of New Hampshire Water Resources Research Center was invited to lecture in China. He gave three lectures at Nanjing Forestry University and one at Fujian Normal University. He also visited field sites in the Wuyi Mountains, where Nanjing Forestry University has a long-term research program on soil carbon dynamics and ecosystem processes. He is working on establishing a long-term relationship that would involve student and faculty visits between UNH and Nanjing Forestry University.

Scott Ollinger, Assistant Professor of Natural Resources and Earth, Oceans, & Space, gave a presentation at the EPRICOT climate change workshop in Elsinore, Denmark and then spent a week in Iceland where he saw retreating glaciers, boiling hot springs and geothermal power plants. He recently received grants from the Northeastern States Research Cooperative and the National Institute of
Climate Change Research to study the effects of climate change on northeastern forests. He also received a 4 year grant from the NSF GLOBE program to develop educational activities based on North American Carbon Program research for students at the K-12 levels. As part of that project, Sarah Silverberg, one of Scott’s Master’s students, attended the annual GLOBE meeting in Phuket, Thailand where she gave a presentation on the NACP project.

John Litvaitis, Professor of Wildlife Ecology, participated in the annual meeting of The Wildlife Society in Madison, WI. While there, John had a chance to catch up with Bill Giuliano (BS Wildlife 1988), Amanda Moors (BS Wildlife 1988), David Delaney (BS Wildlife 1991), Gus Smith (PhD Natural Resources 1997), and Paul Jensen (MS Wildlife 1998). Bill recently joined the Wildlife faculty at the University of Florida where he is working with large land owners to enhance wildlife habitats. Amanda has found a home in Arizona where she has been working as a wildlife biologist including some activity with native Americans. Amanda has become an accomplished wildlife photographer and has a special interest in a unique subspecies of whitetail deer, coues whitetails (check out her website: http://www.coueswhitetail.com/coues_biology/coues_biology.htm). David is a research biologist with the Army Corps of Engineers based in Illinois and is working on a variety of projects on military lands after completing his MS degree on spotted owls. Gus was recently granted tenure at Northland College in Ashland, Wisconsin, where he is teaching a variety of biology and ecology courses and manages to participate in a number of Park Service and Forest Service funded projects. Paul is a furbearer biologist with the New York Department of Environmental Conservation and recently enrolled in a PhD program that will incorporate his work on marten population dynamics.

John continues to work with New England cottontails and issues associated with early-successional habitats and land-use change. He was recently awarded a USDA grant to expand his work on invasive shrubs with Tom Lee, Serita Frey, and Karen Bennett.

Fred Short, Research Professor of Natural Resources and Marine Science recently returned from Thailand where he gave a SeagrassNet workshop for 30 people from around that country, and some from the Anadman and Nicobar Islands. The workshop participants learned seagrass monitoring techniques and have started 2 SeagrassNet sites, where monitoring is conducted quarterly with data sent via the web to UNH. Fred also attended a post-tsunami workshop in Phuket, Thailand. “The devastation of tourist areas along the Indian Ocean in Thailand was tremendous, but the rebuilding is happening very fast, unfortunately often without reasonable set-backs,” Short says. In January, Fred spent three weeks in Belize, where he is creating a nation-wide seagrass monitoring network. One of the new Belize sites is located at the “Blue Hole,” at Lighthouse Atoll, a famous recreational diving area, where the Belize Audubon Society is using SeagrassNet to monitor dive boat impacts. UNH Media Services has produced an article about Fred’s research titled “Seagrass Is In Decline Worldwide, Says UNH Researcher - From New Hampshire’s Great Bay to Tsunami-Ravaged Thailand, Critical Ecosystems Have Diminished; Human Activity Is to Blame.” You can read this article at http://www.unh.edu/news/news_releases/2006/march/by_060327seagrass.html. (excerpted from Saltwater News).

Andy Rosenberg, Professor of Natural Resources Policy and Management spent one month working for the United Nations Division of Ocean Affairs and Law of the Sea on a Secretary General’s report on destructive fishing practices. He also spent a week in Washington DC as part of Capitol Hill Oceans Week briefing members of Congress and their staffs on ocean policy related issues. He participated in a week long workshop in Santa Barbara, California at the National Center for Ecological Analysis and Synthesis on Ocean Zoning followed by a presentation at the Society for Conservation Biology Annual Meeting in San Jose.

Jacqui Aitkenhead-Peterson, Research Assistant Professor of Natural Resources and Whitney Taylor (REU) and Environmental Conservation Studies major visited the University of Debrecen in Hungary to sample soils in the Sikfokut Forest. The Hungarians have a different way of doing research - Muci (the lab technician) was our ‘chef’ and breakfast and buffet lunches were prepared on the field site. Janos and Maria both professors at Debrecen, sat in the pouring rain to dig 15x15 cm holes with us for soil collection.
We dug 54 holes and sampled at 4 depths collecting a total of 216 samples at a weight of more than 300 kg. Rich Bowden of Allegheny College, PA joined us on this trip and we will investigate above and below-ground litter manipulation effect on DOC adsorption in forest soils. We did manage a couple of days in Budapest on the way home, and an interesting interaction with airport security when they started to ‘sniff’ in some of the 216 soil sample bags we had with us. We had a great time with our Hungarian collaborators.

Jackie was offered a position as Assistant Professor of Nutrient Cycling in the Soil and Crop Department at Texas A&M University beginning November 1st 2006.

Karen Bennett, Extension Professor & Specialist of Forest Resources, was involved in coordinating an Uneven-aged Management Workshop offered by UNH Cooperative Extension on April 13 that was so popular with foresters that it was repeated again in June. Over 160 people attended the two workshops, that were held at the Caroline Fox Research Forest in Hillsborough. Helping Karen coordinate the workshops were Will Guinn (BSF 95), and Ken Desmarais (AAS 78, BSF, 97). Several department faculty participated in the program. Mark Ducey presented a paper entitled, The Reverse-J and Beyond: Developing Practical, Effective Marking Guides; Tom Lee, The Ecology of Uneven-Aged Management; and Ted Howard, Uneven-Aged Management in New England; Does It Make Economic Sense?

Proceedings of these workshops will be published and available at http://extension.unh.edu/Forestry/Forestry.htm or from the Forestry Information Center at 211 Nesmith Hall, Durham, or forest.info@unh.edu or 800-444-8978. Pdf versions of all powerpoint presentations are also available at http://extension.unh.edu/Forestry/Forestry.htm.

The College Woods Coalition contains about fifty members. Its purpose is to:
1) Inform members of the UNH community, the town, and the state about the value of the College Woods and other UNH woodlands used for education, research, recreation, and watershed protection.
2) Encourage UNH Administrators and Board of Trustees to take steps to protect woodlands, with some lands permanently protected through conservation easements.

In the past year, the UNH Board of Trustees has approved establishing a conservation easement on the 64-acre College Woods Natural Area. In addition, the Coalition is preparing a newsletter.

If you would like to become a member of the College Woods Coalition, or would like to make an additional contribution, please complete the form on page 15.

Boulders, Humans, and a Landscape Through Time
About three centuries ago men (with the help of animals) placed the boulders shown in the foreground of this College Woods photo. About a hundred centuries ago a melting glacier placed the large boulder on the land shown in the background. Humans linked boulders together in a stone wall that once marked the boundary of a pasture. Stone walls, like the one in the photo, meander across thousands of miles in New England to remind us of the agrarian past. The stone wall now nestles in a forest. A white pine twenty inches in diameter found its home atop the large boulder. Nearby stand thirty-inch pines that climb skyward well over a hundred feet.
Dear Department of Natural Resource Alumni/ae: We are in the process of reorganizing the College and are taking a hard look at our program offerings in Environmental Conservation Studies, Environmental Sciences, Forestry and Wildlife Ecology, and would very much appreciate your participation in this process. We want to prepare our current students to meet today’s challenges as well as to have the foundation to provide leadership as we face the future. As you know, our department’s major programs have “evolved” over time, and we are thinking about how best to meet the needs of society as well as the professions for which you were prepared. Thus we are in need of specific information from you. Please help us by completing the survey assessing your UNH education and how it served you at the time you graduated and since. As always -- your comments are most helpful and appreciated -- so feel free to write us a story!

Thanks for taking the time to share with us!
   Mimi Larsen Becker, Chair

Please return your completed survey -- with comments -- to:
   Nancy M. Brown, Admin. Mgr.
   Department of Natural Resources
   215 James Hall
   56 College Road
   Durham, NH 03824

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Department of Natural Resources Alumni
Questionnaire

1. What was your academic standing when you first entered the Department of Natural Resources?
   ___ New Freshman.
   ___ Transfer Student.
   ___ Other. Please describe:

2. When you first entered the Department of Natural Resources, what major did you enroll in?
   ___ Environmental Conservation Studies
   ___ Environmental Sciences
   ___ Forestry
   ___ Wildlife
   ___ No, entered DNR in a different major. Major:

2a. What was your major upon Graduation?
   ___ Environmental Conservation Studies
   ___ Environmental Sciences
   ___ Forestry
   ___ Wildlife
   ___ Major:

3. What is the highest lifetime educational goal you now have?
   ___ Continuing education but not pursuing a particular degree:
     ___ Master’s
     ___ Doctorate (Ph.D., Ed.D., etc.)
     ___ Professional (M.D., J.D., etc.)
   ___ Do not have a clear goal at this time
   ___ Other:
4. Which one of the following best describes your primary status at this time?
___ Employed full-time. Please list job title: ____________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
___ Employed part-time
___ Continuing education full-time
___ Continuing education part-time/employed.
___ Continuing education part-time/not employed.
___ Caring for family/home full-time.
___ Serving in military
___ Unemployed, seeking employment
___ Unemployed, not seeking employment.
___ Other:

5. Which one of the following best describes your current position?
___ Academic ___ Consulting
___ Industrial ___ Non-profit
___ Public Agency ___ Military
___ Retired ___ Other: __________________________________________________________
___ Not Applicable

6. How well did your undergraduate educational experiences prepare you for your most recent position?
___ Exceptionally well ___ More than adequately
___ Adequately ___ Less than adequately
___ Very Poorly ___ Not at all

7. How closely related is your most recent position to your degree from the Department of Natural Resources?
___ Highly related ___ Moderately related
___ Slightly related ___ Not at all related

8. Have you completed or are you in the process of completing an advanced degree since your graduation from the Department of Natural Resources?
___ Yes (please answer Question 9) ___ No (please skip to Question 10)

9. Please indicate your educational status for the advanced degree(s) you have completed or are currently completing:

<table>
<thead>
<tr>
<th>Degree Completed</th>
<th>Currently Enrolled</th>
<th>Name of Major or Area of Study</th>
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<tbody>
<tr>
<td>Master’s</td>
<td></td>
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<tr>
<td>Doctorate (Ph.D., Ed.D, etc.)</td>
<td></td>
<td></td>
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<tr>
<td>Professional (M.D., J.D., etc.)</td>
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<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. Overall, how would you rate the quality of education you received from the Department of Natural Resources?
___ Excellent ___ Good ___ Average
___ Poor ___ Very Poor

Comments:
11. Please rate EACH of the following experiences/skills/tools in your academic program for its importance to your Career and Personal Development.

<table>
<thead>
<tr>
<th>IMPORTANT TO CAREER DEVELOPMENT</th>
<th>IMPORTANT TO PERSONAL DEVELOPMENT</th>
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</thead>
<tbody>
<tr>
<td>Not Important</td>
<td>Somewhat Important</td>
</tr>
<tr>
<td>Required social science and policy courses</td>
<td>1</td>
</tr>
<tr>
<td>Required natural science courses</td>
<td>1</td>
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<tr>
<td>Required math courses</td>
<td>1</td>
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<td>Required computer courses</td>
<td>1</td>
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<tr>
<td>Required writing courses</td>
<td>1</td>
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<tr>
<td>Upper division courses in option area</td>
<td>1</td>
</tr>
<tr>
<td>Academic Advising</td>
<td>1</td>
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<tr>
<td>Oral presentations in class</td>
<td>1</td>
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<tr>
<td>Group work</td>
<td>1</td>
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<tr>
<td>Case studies</td>
<td>1</td>
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<tr>
<td>Student club activities</td>
<td>1</td>
</tr>
<tr>
<td>Internships</td>
<td>1</td>
</tr>
<tr>
<td>Other: (Please specify)</td>
<td>1</td>
</tr>
</tbody>
</table>

12. Overall, how well did the Department of Natural Resources curriculum provide the opportunity for you to integrate knowledge and research from the social and natural sciences?

___ Exceptionally well ___ More than adequately ___ Adequately
___ Less than adequately ___ Very poorly ___ Not at all

Comments:

13. What type of Senior Synthesis did you complete?

___ Professional Internship
___ Senior Paper
___ Advanced coursework. Please list:

___ College Honors Program
___ Other:

14. How well did your Senior Synthesis provide the opportunity for you to integrate your coursework with “real world” problems and research issues?

___ Exceptionally well ___ More than adequately ___ Adequately
___ Less than adequately ___ Very poorly ___ Not at all

15. Please describe the type of environmental activities (professional or personal) in which you have participated since your graduation from the Department of Natural Resources:

16. Are there important trends in your situation that you believe the Department of Natural Resources should be programmatically responsive to?

Thank you very much for your participation! 🌿
Graduate Research
The Effects of Forest Clear Cutting on Spotted Salamander Migration
Jessica Veysey
M.S. Natural Resources
Wildlife Advisor: Dr. Kim Babbitt

For vernal-pool-breeding amphibians, habitat conservation laws in eastern North America may be ineffective because the laws preserve the amphibians’ wetland, but not upland habitat; even though the amphibians spend most of their lives in the uplands surrounding their breeding pools. For one such species, the spotted salamander (*Ambystoma maculatum*), inadequate understanding of upland habitat requirements, coupled with nocturnal and subterranean behavior, hinder improvement of conservation plans. Furthermore, though this species’ survival may depend on movement between habitat patches, little is known about its inter-patch dispersal mechanisms. Upland buffer zones around vernal pools have been proposed as a management strategy for these amphibians. However, substantial validation of such buffer zones, in the form of experimental upland habitat disturbances, has yet to occur. Specifically, no studies have examined the immediate effects of forest clear cutting on spotted salamander migration and dispersal.

My research is part of a larger study that examines buffer zone use by vernal pool-dependent amphibians. For this larger study, we used clear cutting to experimentally manipulate upland buffer widths at 11, natural vernal pools. Three pools were used as controls; four pools had a 30-m buffer, encircled by a 100-m clear cut; and four pools had a 100-m buffer, encircled by a 100-m clear cut.

My research specifically examines the effects of our clear cutting on spotted salamander migration and dispersal. To accomplish this, I used radiotelemetry to track 40 adult salamanders at the 11 vernal pools. These salamanders (21 in 2004, 19 in 2005; 25 females, 15 males) were tracked for an average of 124 days (range: 6 to 270 days). Mean maximum migration distance for females was 120 m (range: 1.6 to 428 m), and for males was 82 m (range: 3.8 to 288 m). At the clear cut treatment pools, 20% of females, and 29% of males successfully crossed the clear cut; and for about 23% of both sexes, their longest stay at a single location was in the clear cut (range of longest stay in clear cut: 11 to 164 days). Initial results suggest that maximum and minimum temperatures and precipitation may exert a greater influence on salamander migration behavior than the clear cut/buffer treatments used in this study. Additional analyses are in progress, however. Results from this research will be used to improve forestry and development Best Management Practices.

Using Physical Parameters Derived from Geographic Information Systems to Predict Seasonal Forest Pool (Vernal Pool) Locations
Tina Cormier
M.S. Natural Resources
Advisor: Dr. Russell Congalton

In New England, many natural resources are being threatened by increasing development, resulting in loss, degradation, and fragmentation of critical habitats. Seasonal forest pools (“vernal pools”) are one of the many habitats that are in peril from accelerating development pressures. By definition, vernal pools are small, depressional wetlands that fill with winter snowmelt and spring rains and typically dry by the end of the summer. Unlike their palustrine and lacustrine counterparts, their ephemeral nature means that they do not support breeding populations of fish. With a main predator missing, many organisms have evolved to depend on these wetlands during part or all of their life cycles. These are called “obligate” species, because they require vernal pools to survive. Wood frogs (*Rana sylvatica*), spotted salamanders (*Ambystoma maculatum*), and fairy shrimp (*Eubranchipus vernalis*) are among those species that depend on vernal pools for their survival.

Vernal pools present an interesting challenge to resource managers for a number of reasons: 1) they are very easily overlooked due to their small size; 2) they are not easily recognizable in the dry season; and, 3) they are not typically part of recognized wetland complexes. Often found in upland forested areas or in moderately farmed agricultural land, finding these secret places can be equated with finding a needle in a haystack.

My specific project involves determining the physical correlates of vernal pools and using them to predict their locations. A variety of methods can be employed to calculate the predictors of vernal pools; however, my objective is to develop a basic model that forecasts where one can expect to find a vernal pool in the landscape. In order to do this, I must look
at hundreds of vernal pools and find trends in parameters like slope, aspect, land use, soil type, and light reflectance. Geographic Information Systems (GIS) and remote sensing give me the ability to look at many places that I know to be vernal pools and extract large amounts of information about them in a timely and cost effective manner.

Using eight study areas in Massachusetts (four for model training, four for model validation), I have looked at over 400 vernal pools in the form of the National Heritage Certified Vernal Pools data layer from MassGIS. These are places where I know vernal pools exist, and I know the abovementioned parameters for each pool. With this information, I have generated two statistical models to predict vernal pool locations: a logistic regression model and a Classification And Regression Tree (CART) model. These models should effectively give me a “recipe” for predicting vernal pools in the landscape. Using GIS overlay analyses, I can incorporate the results of each of these statistical models into predictive maps. Once generated, I will have to field verify my predictions as part of the accuracy assessment and comparison of the models. Preliminary results from the logistic regression indicate that slope, land use, and green light reflectance values are strong predictors of seasonal wetlands. The CART model is still processing!

My hope is that these models can be applied to other, similar areas to help narrow the field of focus when searching for vernal pools. Since they are so difficult to locate in the environment, a model that points us where to look would be extremely helpful and save a lot of time and resources.

Impacts of Palustrine Wetlands on Water Quality in the Lamprey River Watershed
Shelby Flint
M.S. Natural Resources
Water Resources
Advisor: Dr. William McDowell

Human activities have increased nitrogen loads to both terrestrial and aquatic ecosystems. Increasing population density leads to greater food imports and sewage generation, conversion of forests and wetlands to urban areas and roads, and greater burning of fossil fuels. Research indicates that some ecosystems can become nitrogen-saturated. This can lead to an increase in the nitrogen lost to these systems, particularly as dissolved nitrate. Nitrate is implicated in risks to human health, including increased incidences of methemoglobinemia (“blue-baby syndrome”) and possibly Hodgkin’s lymphoma. Excessive nitrate concentrations are also linked to the eutrophication of aquatic systems, itself associated with fish kills, decreased biodiversity, and harmful algal blooms.

Population density in the Lamprey River watershed is growing. The watershed is therefore probably receiving increasing nitrogen loads. The Lamprey River drains into Great Bay and (indirectly) the Gulf of Maine -- both areas that could be negatively impacted by increased nitrate inputs. Previous work in the watershed indicates that nitrate levels in the surface streams are lower than expected, based on groundwater nitrate levels. One explanation for the “missing” nitrate could be that it is retained and transformed in wetlands. Some nitrate may be emitted from the wetlands -- and thereby lost from the watershed -- as either the greenhouse gas nitrous oxide, or as inert dinitrogen.

This research is an initial survey that focuses on ten wetlands in headwater streams of the Lamprey River. These wetlands are palustrine -- non-tidal freshwater wetlands that are neither riparian nor peat-accumulating. Cattail marshes are a ubiquitous example. Over the past 16 months, I have collected water samples from the streams flowing in and out of these wetlands. I am looking for spatial and temporal trends in the water quality of these wetlands, as assessed by dissolved species of nitrogen, dissolved organic carbon, pH, conductivity, and oxygen levels. Hydrologic measurements are in process, and will indicate whether these systems are recharge sites (lose water to the groundwater table), or whether they are discharge sites (gain water from the water table).

Preliminary data show that some wetlands have lower nitrate concentrations downstream than upstream. If these are recharge wetlands, the changes in nitrate concentrations may indicate nitrate retention or transformation. At many sites, concentrations of dissolved organic nitrogen are higher downstream of the wetland, which may indicate nitrogen cycling within the wetland. Nitrate and nitrous oxide concentrations also vary seasonally.

This study does not attempt to quantify groundwater inputs. However, wetlands showing substantial increases or decreases in analyte concentrations might be sites for future studies. Such work could include quantifying nitrous oxide emissions, or estimating budgets so that nutrient loads, exports, and rates of transformation could be calculated.
Hi Everyone,

In the next issue of the Tally Sheet we would like to have, along with our regular alumni news, a special section, including pictures, of Department of Natural Resources Alumni who have spent time in the Peace Corps. Please write or email us at natural.resources@unh.edu a short paragraph about where you served your term, how many years, and the type of work you provided. A memorable picture would be great to show as well. We look forward to hearing from you.

1949

Edward Putney, Jr. (For) worked for several years as a licensed land surveyor in North Carolina. He came back north, to Maine, as a State employee on October 21, 1963. He retired on July 1, 1993. Before Ed retired, his last work was as a resident inspector for the high mast lighting system along the interstate in Kittery.

1954

We were saddened to learn that Joseph Szymujko (For) passed away on July 12 at the Sullivan County Home. Joe was former UNH Cooperative Extension, Sullivan County Forester. He was well-known and respected in the New Hampshire forestry community. He was an acknowledged expert in maple syrup production and small woodlot management. Joe retired in 1987 from UNH Cooperative Extension where he had worked for over 30 years. Joe was born in New Britain, CT on April 4, 1930.

1965

Dave Eastman (For) enjoys giving lectures on Bluebirds and Cavity Nesters, as well as Wildlife Forage Shrubs. His radio show continues on WMWV-fm in Conway as well as the Mountain EAR newspapers. He recently returned from the 4th of July VHPA convention held in the Nation’s Capital. He and former VN helicopter pilots went over to the Wall and laid a wreath. Dave’s son was recently married and he and his wife are living in the DC area undertaking international consulting work in World Health.

1966

Peter Pohl (For) (M.S. 1978) is writing in for the first time since receiving his Bachelors Degree. He writes, “After a tour of duty with the U.S. Army Corps of Engineers in Korea in 1967, I returned to Sandwich, NH and began my forestry employment with a private consulting forester. This opportunity provided that much needed practical field experience. Since December 1969, I have been employed by UNH Cooperative Extension, first as an assistant and then County Forester in Carroll County. This has been a very rewarding career, motivating and advising landowners, organizations, and municipalities to become good stewards of their land. UNH has been a great organization to work for providing each staff member the opportunity to be creative and innovative in carrying out our job assignment. Working with a corp of excellent private foresters and certified loggers, a number of whom are UNH graduates, has been very gratifying and has resulted in many acres of forest land in Carroll County being managed responsibly. My 37+ year career with Extension will end in June 2006. I don’t plan to be a couch potato and have lots to do managing my 156 acre tree farm which is under a conservation easement and must be a model of sustainable forest management. Serving on a number of boards and committees will consume some of my time and, hopefully, doing some much desired traveling. There may also be an opportunity to help local consulting foresters on an occasional basis.

Forestry has proven to be a very rewarding and challenging career. I wish my successor the best in this endless effort to educate the public to be good stewards of our land.
Daughter, Christie, a former ballerina with the Boston Ballet and Art History and Sociology major from Marymount Manhattan College in NYC, is completing dual masters degrees from the University of London in archaeology. She will pursue a career in this field once she completes her practicum at the Museum of London in 2006. Son, Peter, is a senior at Boston University majoring in Foreign Policy and International Relations. Daughter, Laura, is a very well rounded eighth grader who enjoys school and playing sports and musical instruments.

Marshall Patmos, (For) served a 4-year stint as a marine science technician in the U.S. Coast Guard and temporary employment with the NH Department of Parks, after graduating from UNH. He joined the UNH Cooperative Extension in 1971 as assistant Coos County Forester in Lancaster. He became Coos County Forester in 1973 and served in that capacity until 1981 when he moved to Keene to become the Cheshire County Extension Forester. Marshall received a Master of Business Administration degree from Plymouth State College in 1980. He has worked with the New Hampshire Christmas tree industry since 1971 and served as Extension Christmas tree specialist. In this capacity he organized and participated in a number of New Hampshire and New England Christmas tree conferences and is a founding member of the NH Christmas Tree Promotion Board. Marshall authored or co-authored numerous Extension publications and fact sheets including Woodland Account Book, Owning a Piece of the Forest, Timber Sale Guidelines, New England Guide to Chemical and Weed and Brush Control in Christmas Trees.

Kevin Evans (For ‘86) and Julie Renaud Evans (For ‘85) write “Kevin continues (12 Years!) to manage Dartmouth College’s 40,000 acres of land in northern New Hampshire. He enjoys the challenges of sustainable forestry in a changing industry and landscape. Julie finally finished her Masters degree (M.A. Environmental Education from UNH.) She now manages to stay busy with consulting, teaching, volunteering, and managing the home for Tucker 9, and Maggie, 7. Would love to see more classmates!”

Robert Barbieri (EC) works for Diageo, world’s largest producer of premium alcoholic beverages, as Director of Risk Management. Among other things, she is responsible for the environmental compliance of all Diageo production facilities in North America. She has 2 sons, ages 6 and 4.

Seth Paine (WL) has been working at the Nature Conservancy in Chico, CA for the last year, after spending the previous 5 years (following his Peace Corps stint) in Arizona.

Brian Hart (EC) serves as the Executive Director of The Rockingham Land Trust. He began working with the Trust in October of 2002. The Rockingham Land Trust is a membership-based, non-profit organization dedicated to permanently protecting the region’s open spaces, including farmland, forestland, water resources, and wildlife habitat. The Trust serves the 39 communities of greater Rockingham County. It was established in 1980 and has helped landowners and communities protect more than 3,300 acres of land. Brian resides in Newmarket where he is active in Town government as a member of the Town Council.

Lee Kantar (WL) recently returned to New England and now serves as the state deer biologist for Maine Department of Inland Fisheries and Wildlife after working four years for the Washington State Department of Fish and Wildlife as a Wildlife Biologist and two years in New Mexico with the NM Cooperative Fish and Wildlife Research Unit/New Mexico State University. Lee married Danielle D’Auria in 2005.

Bob Noviello (WL) operates Suburban Wildlife Control, LLC out of Windham, New Hampshire.

Emily Beavers (EC) works for Booz Allen Hamilton in Atlanta but has transitioned from solely providing environmental compliance support to also providing emergency and incident management support to various federal government agencies in the Southeast and at the headquarters level. Emily married Jim Herndon in the fall at the Duke University Chapel in Durham, NC. They live in Decatur, GA.
Joanna (Ooms) Yonke (For) had an extremely mild January (2006) in Spring Valley, WI. She does office work for her husband’s family construction company and during the winter started feeding cattle (polled Herefords) twice a day for Larson Hereford Farms. She loves her work but is getting attached to the Herefords. She also took a bartending job at the local pub and eatery. She and Ryan live in a small town of only 1100 people, and after three months of tending bar, thinks she has met them all. She enjoys that as well.

Melissa Bernardin (EC) is Grassroots Director for PrioritiesNH, a nonpartisan nonprofit in Concord, NH that is dedicated to showing people how our federal tax dollars are spent and helping them to demand sensible spending priorities from our government. Visit PrioritiesNH at http://www.prioritiesnh.org

Jim Burnett (For) is chief forester at Vermont Forestry Associates, Inc.

Denise Bryndal (Ernst) (M.S. EC) upon completing her masters, worked for the SC Chapter of the Sierra Club, and the SC Department of Health and Environmental Control as a watershed manager. She then relocated to Denver, CO where she worked for ERO Resources for two years as a natural resource/GIS specialist. Denise married Corey Bryndal in September of 2001 and for the last three years, she has been at home with her two children, Henry (age 3) and Caroline (21 months). They live in Crested Butte, CO.

Dan Gardoqui (M.S. EC) is the Executive Director of White Pine Programs, a nonprofit educational organization located on the shoulder of Mount Agamenticus in York, Maine. He and the White Pine staff share their passion and knowledge of nature with people of all ages from toddlers to adults.

Recently, the White Pine staff have been a part of the Maine Lynx Recovery Project and the Eastern Wolf Project in Algonquin Park. In both cases, they have acted as field trackers, collecting genetic and geographic data for biologists studying these unique species.

Dan and his wife Kate proudly welcomed their second son, William Marten (yes, as in Martes Americana) Gardoqui on January 5th 2006. Their oldest son, Jay, is now nearly three years old and already tracking, birding, and gardening.

As the director of an educational organization, Dan is often looking for interns to come and experience White Pine Programs’ style of nature-based learning. You can be part of the naturalist staff of White Pine, working with kids and adults year-round. E-mail him for more info dan@whitepineprograms.org.

Jason Zimmer (WL) received his M.S. in Zoology & Physiology from the University of Wyoming with a minor in statistics. He is currently the Southeast District Supervisor for the Massachusetts Division of Fisheries and Wildlife.

Liz Ignacio (EC) is currently living and working in Concord, NH. She has worked for Governor Shaheen, the State Senate, a couple campaigns and currently, Governor Lynch. She is working towards her masters in Public Administration at UNHM.

Robin Jenkins Innes (WL) is a Graduate Student with the Graduate Group in Ecology Department of Wildlife, Fish, and Conservation Biology, University of California, Davis. She recently accepted a position as project leader of a long-term study looking at small mammal abundance, distribution and habitat relations. Specifically examining the ecology of the primary prey species of the California spotted owl, the dusky-footed woodrat, and the northern flying squirrel. This study is part of integrated research examining fire and fuels management, landscape dynamics and fish and wildlife resource in the northern Sierra Nevada.
Adam Block (EC) is a candidate for Maryland’s Democratic State Central Committee. He has worked for the City of Baltimore, The State of Maryland, and Baltimore County. Adam currently works as a natural resource specialist for the Baltimore County Department of Environmental Protection and Resource Management. In this capacity he performs environmental review of development projects, ensuring that these projects comply with existing environmental regulations and accommodate rational natural resource protection strategies. Adam received a Masters of Science degree in environmental policy from the University of Michigan’s School of Natural Resources & Environment.

John Tierney (MS EC) moved to Washington State following his retirement from the Army. His wife, Jane, grew up there and her parents have resided in Issaquah for over 30 years. They are helping to run a dog boarding kennel on the property which keeps them entertained with canines of all description. Over the next year or so they will build a house as well. John was hired by Ducks Unlimited (DU) to take over the Regional Director position for western Washington. He will manage 45 chapters in their fund-raising efforts for the organization. Recruitment and training of volunteers is also a big part of the job.

Amy Nelson (EC) spent a semester abroad through UNH EcoQuest. Through her studies and field experience in New Zealand, she was enthusiastically hired at AMEC Earth & Environmental in Westford, MA as an entry level ecological risk assessor. She has been with the company for four years and continues to gain much experience and is working on very interesting projects.

Jeanette Batiste (EC) participated in the UNH EcoQuest Spring 2000 semester in New Zealand. Following her graduation in 2002, she joined the Peace Corps in March 2003 where she was assigned to Chikwawa, Malawi, southeast Africa, on a Community Based Natural Resource Management Program (CBNRM) at Majete Wildlife Reserve until February 2005. With the close of two years of service, she was offered employment with African Parks as the Extension Coordinator for Majete Wildlife Reserve, Chikwawa, Malawi. She began work for African Parks in March 2005. As the extension coordinator, her job description included: (1) managing all the day to day activities relating to education, extension, community collaboration and social support activities of African Parks (Majete) Ltd, (2) acting as a liaison between African Parks (Majete) Ltd and all villages, communities, traditional leaders, local government structures and government programs, and (3) providing socio-economic insights and support to African Parks (Majete) Ltd operations including soliciting donor support and development of conservation awareness. Also, she wrote and submitted a proposal to USAID for US$ 600,000 to support their activities, which was granted. Her title became Chief of Party for project implementation.

Jeanette’s education at UNH in the NR program, together with her Peace Corps volunteership and current employment, have allowed her the opportunity for hands on experiences in natural resource based conflict and resolution, collaborative management of natural resources, and the intrinsic link between poverty alleviation and conservation, particularly for subsistence farmers.

Jeanette planned to go on to Grad School in the Fall and just recently wrote that she accepted an offer at London School of Economics and will move to London at the end of September (2006) for the start of school in October.
Adam Torrey (WaRM) is Operations Supervisor at Aquarion Water Company in Hampton, NH.

**2003**

Brian Topping (EC) finished up his masters and graduated from Duke in May and finds himself settling into life back in Washington, DC. He received a Presidential Management Fellowship which opened up a number of doors in the federal government. This included the chance to go back to the Wetlands Division at EPA, where he enjoyed working for two years as a fellow and intern.

Ryan Walls (EC) spent the last four months in New York City completing an internship with New York Cares (www.nycare.org). Opportunities and experiences abound in the city and it’s a place he’ll most likely return to in the future. His next adventure is taking him to India where he’ll be working with an organization in the northern town of Dharamsala. The Louisiana Himalaya Association (www.lhainfo.org) works with newly resettled Tibetan refugees seeking asylum in India. He hopes to split his time between teaching, tutoring, and learning some Hindi and Tibetan language.

**2004**

Matthew Eckert (MS WL) is working with Ducks Unlimited in North Dakota. Last year he worked with waterfowl, researching hen/nest success and habitat use of three dabbling ducks. This year he will be supervising the same project and assisting in others. He is currently living in Bismarck, ND.

**2005**

Carl Chamberlin (EC) was accepted to grad school at both UCSB and Duke University. His leaning is towards Duke University. He currently works at Cornell University in the Ecology Department.

Ryan Huntley (B.S. For 1998), (M.S. 2005) is working for Exploration Signatures, LLC, which is a newly developed company that is interested in oil/gas exploration using environmental friendly methods. His job involves using remote sensing and GIS to help identify new areas of interest. Their offices are currently in Rockville, MD, but will move to Colorado.

Kenny Damon (WL) has joined the Peace Corps and is stationed in Africa. His address is PCV Kamphenda F.P. School, P.O. Box 1, Kamphenda, Rumphi, Malawi.

Mike Behrmann (EC) just finished up the Masters program at Vermont Law School.

While attending the 13th Annual Wildlife Society Conference held in Anchorage, Alaska to present the paper, “A Bioenergetic Approach to Management of Northern Populations of Wild Turkeys,” at the Physiology for Populations Symposium, Pete Pekins ran into Robert Tobey (WL 1968). Robert was in the first Wildlife Management Class taught by Dave Olson around 1966. Pete also saw Amanda Moors and Bill Giuliano (both BS WL 1988); Amanda is a wildlife biologist for Arizona Game and Fish Department and Bill is Assistant Professor & Wildlife Extension Specialist at the University of Florida. Pete also saw three of his former graduate students including Mark Sherfy (MS 1992), Blake Sasse (MS 1995), and Dave Walter (MS 2000). Mark (PhD at VPI) is a Research Wildlife Biologist with USGS Northern Prairie Wildlife Research Unit in North Dakota; Blake is the Coordinator of the Non-game and Furbearer Programs for the Arkansas Game and Fish Commission; Dave just finished his PhD (2006) researching elk at Oklahoma State University.

Bob Edmonds, Program Leader, Forestry & Wildlife - Retires (contributed by Sumner Dole, Belknap County Extension Forester). Since 1988, Bob Edmonds has led the UNH Cooperative Extension Forestry and Wildlife Program, a joint program with the New Hampshire Division of Forests and Lands. His 20 years in the forest industry prior to joining extension began as a forester managing lands and buying wood in the Adirondacks for Diamond International Corporation. He entered the world of forest products manufacturing as controller for a multi-state forest products company. He was President of St. James Hardwoods, Inc. of Ohio and Vice President of Cortland Wood Products in New York State. This experience was valuable when he came to UNH Cooperative Extension in 1984 as the Forest Industry Specialist and was instrumental in putting on the Gunstock Forestry and Small Sawmill Shows here in Belknap County. As Program Leader, Bob has focused on developing strong Extension partnerships with natural resource individuals, organizations and agencies. Bob received his Bachelor and Masters Degrees in Forest Resources from the State University of New York College of Environmental Science and Forestry at Syracuse University. Bob’s previous involvement with Extension was in New York State as a client and as a volunteer, serving on the county Board of Directors. He was the Barrington Citizen of the Year 1995. 
The Tally Sheet can be viewed online. Please visit our newly designed Department of Natural Resources website at http://www.unh.edu/natural-resources/index.html You can also respond to the Alumni News section on our form page at http://www.unh.edu/natural-resources/tallyform1.html Please check it out—we’d love to hear from you.

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Become a Supporter of the College Woods Coalition

The College Woods Coalition seeks a large membership in order to demonstrate broad support for the permanent protection of College Woods. Your one-time membership contribution of $10 will be used for further outreach by the Coalition. If you provide your email address, we will keep you up-to-date on our progress and activities; your addresses will be neither shared nor overused.

Name_____________________________________________________________________________
Address_____________________________________________________________________________
Town_________________________________________State________________Zip________________
Email (optional)________________________________________________________________________
Check as appropriate: _____Individual _____Organization _____Department
_____Please contact me about how I can help. Phone (         )_________
_____Please do NOT use my name in any public lists.
Send this form and a check for $_______($10 minimum) payable to “UNH,” with “College Woods Coalition” in the memo line, to:
Dr. James Barrett, Emeritus, Department of Natural Resources, 215 James Hall, 56 College Road, University of New Hampshire, Durham, NH 03824-3589.
Permanent Protection for the College Woods Natural Area

In the spring of 1962, Paul Bruns and others had the wisdom to establish the 64-acre College Woods Natural Area, nestled in the College Woods.

On a beautiful spring afternoon in 2003, a group of people, including the Bruns family, recognized Paul’s leadership and rededicated themselves to protecting the Natural Area. Don Quigley, a Professor in the Thompson School, led the ceremony. In a quiet, eloquent way, Don expressed our thanks to Paul and how we continue to use the Natural Area and the entire College Woods for education. During Don’s talk, several dozen people who enjoy the recreational opportunities in the College Woods passed by – joggers, saunterers, and those walking dogs.

UNH administrators are now taking the final steps to establish a conservation easement for the College Woods Natural Area. This living classroom and library will be forever protected for the education and recreation of students, faculty, and townspeople. We thank former President Ann Hart and the Board of Trustees for protecting this area.

Protecting Our Woodland Classrooms

The College Woods and the East Foss Farm are part of our walking campus, giving UNH students a unique opportunity to learn about the natural world. In addition, the woodlands offer opportunities for recreation and the protection of the lower portion of the Oyster River watershed, a source of water for both UNH and Durham.

The College Woods Coalition will work to extend conservation easements from the Natural Area to the entire 290 acres in the College Woods. In addition, we strongly support some level of protection for all UNH woodlands. Beyond that, the ecological integrity of our woodlands depends on adequate protection of boundaries - especially sensitive boundaries, such as the buffer around the Natural Areas.

James Barrett – September 2006