



Field Notes and Ecology

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Tracking Team W-7 Shana Stewart, FN-W

On any given Friday, you can find the first year Field Naturalist/Ecological Planning team exploring local landscapes. We put together clues of wildlife, bedrock, soils, and natural communities to determine the story of a place. Some onlookers suggest that we hike swiftly through the woods, while others complain that we pore over small discoveries endlessly. I feel like we're involved in a constant struggle between investigating all the detailed facets of a place, while still covering enough ground to take in an entire landscape. I decided to end this debate by using a pedometer to enumerate our steps.

We arrived on a clear October morning at Bristol Cliffs, VT and paused to admire the beautiful cascading rocks of a talus slope clearly visible from Route 116. We took our first 1,558 steps to simply gain altitude. We stopped for a moment, and Corrie (FN) pulled a pH testing kit from the equipment bag. Sarah (EP) liberally sprinkled a chemical reagent onto a selected soil sample, while simultaneously guessing 6.5. Sarah was correct and the rest of us noticed that she was fast pulling ahead as the most accurate human pH meter. One of our guides, Matt Kolan (FN-U), pointed out plantain-leaved sedge, a plant that grows only in enriched soils. We all cherished this piece of knowledge as a step towards achieving the soil pH savvy Sarah had attained.

Just 82 steps later Kate (EP) and Corrie paused to whip out their second snack. Known for well orchestrated questions that allow for snack time, they held up the group by commenting on nearby plants. Hepatica and wild ginger, like plantain-leaved sedge, also indicate rich soil. We discovered the origin of the alkalinity when we arrived at pockets of calcareous glacial till. As we began to put together the pieces of the landscape to tell a story, I'm sure Kate and Corrie were speculating on another pertinent ambiguity: the timing of our lunch stop.

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Searching for Clues of Vermont's Cultural History Kate Westdijk, EP-7

My husband grew up across the river from one of the oldest cities in the Netherlands - Dordrecht. A walk through the city of Dordrecht is an absorbing search for subtle clues that tell the story of the city's long history. Seeing these clues is not easy to the average citizen of the 21st century, but a small pamphlet helps you know where to look and what to look for. These intriguing traces of Dordrecht's history include a cannon ball embedded in the 1,000 year old church wall, and the leaning architecture in the streets, which tell the informed tourist that many of the houses used to be warehouses.

Growing up in Vermont, I always felt that its landscape offered a different kind of story in the untouched natural beauty of its mountains, lakes, and forests. Many of us have walked in a Vermont forest unaware of the cultural stories the landscape can tell us. We've been taught to pay attention to the "natural" beauty of a forest and to block out distracting signs of human influence. If we shift our lens to focus on traces of human inhabitation, however, the story of Vermont residents 200 or more years ago begins to emerge.

A good place to look for clues of Vermont's cultural past is in Little River State Park in Waterbury. As you explore, the most obvious clues of the area's human history are old stone walls or foundations. Walls made up of small rocks and rubble were probably built around cultivated crop fields because rocks needed to be removed to allow a plow to break up the soil every year. If the wall in front of you is made of larger stones, it was probably used as pasture for livestock, or for hay, since these uses did not require plowing. A rectangular pit lined with rocks indicates a cellar hole, or what is left of a house or outbuilding. Lacking refrigeration, many 18th century Vermonters built cellars to store root vegetables for year round use.

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From the Directors' Desk

Deane Wang on Leadership Ecological Planning Curriculum Advisor



Many indicators signal a more rapid and comprehensive degradation of the Earth's ecological systems, and consequently signal a reduction in the quality of life of the humans that these systems support. For too many people in the world, this translates into a more visible desperation around simple issues of daily survival. Meanwhile, for many others, life goes on largely unchanged. The technological advances of our built environment isolate us from the environmental changes that are happening around us. In addition, the consistent messages from our corporate media continue to tell us that everything is OK and we should keep on consuming the American Dream. This leaves most of us unaware of and unprepared for the inevitable changes in Earth's life support system.

Universities and colleges must play a role in increasing both awareness and preparedness. Today's students must be tomorrow's leaders in the new millennium's calling to protect and restore those ecological systems that sustain our quality of life. This is not a simple task or one suited for the timid. It is abundantly clear that our ecological system is tightly tied to our socio-economic system, and to make changes in one requires changes in the other. These connected systems require integrated designs and plans. Successful outcomes must be based on a holistic understanding of how our biosocial ecosystems function.

The backdrop to all of this work is change. While we accept technological change with only small pockets of Luddite resistance, socio-economic change of the sort needed to meet the needs of future generations is threatening to most of us.

Ecological Planning, a curriculum begun in 1999 in collaboration with UVM's Field Naturalist Program, will be merging with a new concept, Conservation Leadership, to begin to address the education and training needed for the coming challenges. A thirty credit curriculum can not complete the job of preparing tomorrow's leaders, but it can provide a foundation and a map for the life-long learning that has to be part of the plan. Conservation, ecological science, policy, law, social science, critical systems thinking, leadership, group dynamics, and communication training form a core from which to build individual qualifications and technical capacity.

A leader is a learner, a person who can listen carefully and then take informed action with confidence. A leader is also a person who can learn from his/her mistakes. Our curricular design, with foundation, electives, and active field-based classes, seeks to build a community of learners who will challenge themselves to think creatively and comprehensively, and then act. This is only the beginning. 🐾

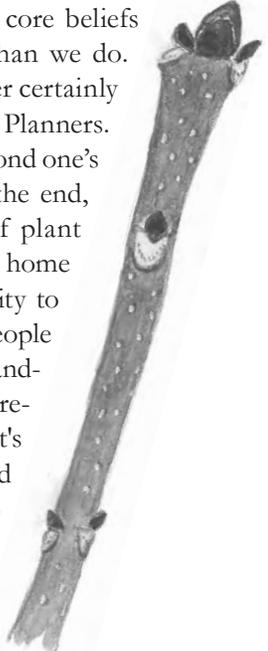
Jeffrey Hughes on Humility and Ways of Knowing Field Naturalist Program Director

It's mud season in Vermont. Mud season means many things, of course - drumming ruffed grouse, fragrant dairy farms, spotted salamander orgies, maple sap runs, wild onion emergence, surviving another winter. Mud season also means getting unstuck.



I've lately been thinking that much of what we do in the Field Naturalist and Ecological Planning Programs is about getting mentally unstuck - liberating our minds from the bandwagons, knee-jerk reactions, preconceptions, cookbook thinking, and faulty assumptions that limit our effectiveness as conservation leaders. Getting unstuck takes courage and commitment, however, for it means challenging your own ideas and perspectives as vigorously as you would challenge the ideas and perspectives of others. That's not an easy thing to do when every part of you KNOWS that you've got it right and they've got it wrong. But where does that certainty come from? Why is *your* certainty any more credible than the certainty of someone holding an opposing view?

But the issue of who's right and who's wrong may not even matter much. A position that is based solely on scientific reality and reasoned argument may win the minds of intellectuals, but it won't sway those who think with their hearts and souls, and these are the very people who most effectively mobilize troops to action. And so, when we grouse, "They just don't get it!" we're probably getting it wrong. A more accurate assessment would be that *We* are the ones who aren't getting it. Our failure "to get it" is not in our beliefs or rationality, but in our failure to recognize, respect and understand the core beliefs of those who see the world differently than we do.



Deane Wang's definition of a leader certainly describes Field Naturalists and Ecological Planners. But being a "learner" means extending beyond one's natural interests and comfort levels. In the end, understanding the interrelationships of plant distribution, soil chemistry, and animal home range, for example, has little applicability to conservation decision-making if the people factor is not also part of the integrated landscape story. In short, we should not presume to "educate" others about what's right if we're unwilling to be educated ourselves. If we're not willing to listen to their side of the story, we should not expect them to listen to ours. 🐾



A Story in Rock Corrie Miller, FN-W

Nine students uncovered a story in rock on a September Friday at Lone Rock Point. Around noontime, they crowded out of a van called Giselle and walked through a wet, open area into the forest. The students followed two veterans who had been there before and walked with heightened senses, expecting something magnificent to unfold. The forest was there, on the left side, and on the right a thirty meter vertical drop to a small, rocky beach of Lake Champlain. The forest along the trail was open and airy, quite windy and dotted with cedars. The trail took a sharp turn to descend through a stony creek bed. Before they knew it, the students found themselves on the beach facing the cliff they had just peered over. What an extraordinary sight! Two distinct bands of rock made up the cliff. A lower band of dark gray shale rose 15 meters from the beach. A broad cream-colored band of rock with hints of dusty reds and browns jutted out

above the shale. A few cedar seeds had found an oasis of soil in the solid rock face and now adult trees clutch to these recesses for dear life, weathering the rock as they grow.

The nine students approached the rock face silently and began to explore the site, some climbing to the ledge between the two rock bands and others perched on shoreline boulders. After a few minutes the pensive silence transformed into excited discussion.

The field walk leaders gathered the nine students in a circle on the rocky beach. Everyone spoke loudly to be heard over the noise of crashing waves. The students shared their individual observations and, collectively, painted a comprehensive illustration of the site. But what had happened to create the scene they observed? What stories did the rock hold? Armed with a dictionary of geology terms, a bedrock geology map, and several handouts regarding geologic time periods, the nine students pooled their background knowledge, experiences, and critical thinking to develop a story of the rocks. This is the story they told.

The dark-colored rock on the bottom of the formation is called Iberville shale and dates to approximately 530 million years ago. The lighter rock on top is Dunham dolomite and dates to around 475 million years ago. Normally in a bedrock cross-section

one would expect younger rock to be closer to the surface than older rock. What happened, then, to cause the dolomite to rest atop the younger shale? In the middle Ordovician period, the continents began to converge. During this tectonically active time the force of the plates moving together caused substantial thrusting to occur along the Champlain fault line. This thrusting is responsible for the age anomaly evident in the bedrock at Lone Rock Point. Even after millions of years of change, this rock holds clues to the story of the landscape's past.

The air swelled with synergism as the nine students retraced their steps from the low, rocky beach across the streambed to the wooded area above. They arrived in the forest of cedars that had been hidden by earlier clouds of anticipation. Now, this forest generated new questions and held new meaning. What does the underlying rock tell us about the vegetation? What can the vegetation

here tell us about the underlying rock? The students dispersed to investigate the interrelations between the biotic plant life and the abiotic mineral base on this site. This is the story they told.

The parent material at a site determines the physical and chemical properties of the soil. The soil, in turn, helps to determine the suite of plants which will grow there. The Dunham dolomite bedrock at Lone Rock Point has

high concentrations of calcium and magnesium carbonate. These molecules enrich the soil and cause it to have a relatively high pH. The bedrock is only four inches from the surface at Lone Rock Point and the resultant soil pH is 8. Plant species growing on this site are therefore ones that outcompete others in shallow, dry, rich soils. Ebony sedge, goldenrod, meadow rue, and aster compose the herbaceous layer in the autumn and northern white cedar dominates the canopy. While short-term successional changes can create dynamic vegetation patterns, here the ancient history of rock writes the story of the plants.

Rocks tell stories about the history of the earth but they also help determine the present vegetation patterns, and influence those of the future. On this September day, nine students investigated rocks and began forming stories about how ecosystem pieces interact to shape the whole landscape. 🌲





Team W7: From Whence They Come

Each fall, a new cohort of Field Naturalists and Ecological Planners joins the ranks of The University of Vermont's Graduate College. While the two programs are housed separately in the Botany Department and the Rubenstein School of Environment and Natural Resources, respectively, first-year FNs and EPs work and play as a team. This year's team brings to the table diverse interests, backgrounds, and aspirations, yet all share the common goal of identifying and solving environmental problems.

Kristen Sharpless (FN) These days, you are most likely to find Kristen at home in Starksboro. When she isn't doing schoolwork, she is probably tinkering with the solar electric system, digging in the garden, shoveling snow, or wandering in the woods with her partner, Dan. Transient-turned-homebody (for now), Kristen is happy to be living in the mountains of Vermont and working on becoming an active member of her small-town community.

Kristen hasn't always spent so much time in wool and Carhartts, but she has always enjoyed fresh air and getting dirty. Originally a small-city girl from Binghamton, NY, Kristen also spent a lot of time as a kid playing her ute, going to the theater, and playing games. But, whether making "hide-outs" in the backyard with her sister, Laura, hiking the Finger Lakes Trail with her father, going to summer camp, working at her family's plant nursery in Maryland, or living in the woods as a shelter caretaker on the Appalachian trail, Kristen has never been far from heading out the door.

Since she would have had to spend too much time indoors to be a professional artist, Kristen turned her interests to science. Before studying biology at Swarthmore College, she took off for a year of living and study in Vancouver, Kenya, and Montana. These experiences sparked her interest in education, which led her to get her science-teaching certificate, also at Swarthmore.

Wanting the process of science to come alive for her students, Kristen has experimented with a variety of teaching venues over the past few years: at a Quaker school in downtown Philadelphia, on board a historic wooden sailing vessel, on snowshoes in the White Mountains, at the Keystone Science School in the Colorado Rockies, and at the Hinesburg Community School in Vermont. Kristen's best teaching moments have been doing field research with her students. Her hope is that the Field Naturalist Program will provide her with the skills to integrate ecological research with community decision making and environmental problem solving in a way that is exciting and meaningful for middle and high school students.



Brendan Weiner (EP) After spending the past five years exploring the mountains of the western U.S., Brendan is excited to be back in the east reconnecting with people and places from his youth. Brendan grew up in the Boston suburbs, where he spent much of his free time navigating the wetland in his backyard. Whether he was chasing frogs and turtles, hopping across the marsh on tufts of grass, or climbing trees, throughout his youth Brendan could usually be found exploring the outdoors.

In school, however, he became interested in the social sciences, and at college he studied economic theory and English. Following graduation, Brendan worked at the Federal Reserve Bank in New York City, studying the international use of the U.S. dollar. He then moved to San Francisco and worked at a small non-profit writing grants and helping to manage international justice projects in developing countries.

After a few years of city life, Brendan's interest in land conservation prompted him to leave the concrete jungle behind and move to South Lake Tahoe, CA. For the next four years, Brendan worked for the Forest Service on local watershed restoration projects and served as a wildland firefighter in California and Oregon. During the winters, he ski patrolled in California and New Zealand, became interested in analyzing snowpack metamorphosis and stability, and performed avalanche control work. While living in the Sierra Nevada and Teton mountain ranges, Brendan developed a love for ski touring and mountaineering, and he gets out into the Vermont backcountry as often as he can.

Living in small mountain towns brought new meaning to land use and conservation for Brendan. As he witnessed the difficulties inherent in managing large tracts of federal, state and private lands, he recognized the need for a balanced understanding of the ecological, economic and social issues that surround local decision-making processes. Brendan chose the Ecological Planning program because of its focus on understanding ecological processes and how to apply this knowledge to land use issues. Through the program, Brendan hopes to strengthen his knowledge of ecological processes and looks forward to helping Vermont and the U.S. grow in a more sustainable manner.



Corrie Miller (FN) passed her early years on a small farm in the Shenandoah Valley of Virginia. She has memories of the spotted Appaloosa horses her parents raised, of summers spent frolicking around outside naked, and of their two-story farmhouse that burned down in her fifth year. But standing out among all those still shots in her mind are memories of a grand weeping willow tree that draped over the small stream running through their farm. Corrie and her brother would play in that spot, where the water pooled up around the tree's roots. She and her family moved from the farm after the fire but her mind still returns to the willow tree, often for inspiration and direction.

During her last year at Vanderbilt University, Corrie's professional interests shifted from molecular biology to ecology. At around the same time she was rediscovering her childhood passion for the outdoors and began exploring the central plateau of Tennessee on foot. After graduating, Corrie adopted a nomadic lifestyle and went wherever she could find exciting field jobs. She worked in southwestern Virginia with ecological resistance to invasive plants and in Carmel Valley, California stalking the illusive wild turkey through the hills and valleys of local ranches. It was in California that she first felt really connected with natural rhythms and systems and she began to be interested in helping others make this connection. Her quest for jobs that would allow her to help people connect to their place landed her first in the Adirondack Mountains of New York, then in the Upper Valley of Vermont and finally along the North Shore of Lake Superior. Through her journeys, Corrie developed a passion (bordering on obsession) for wild turkeys, the Adirondack wilds, wolves, white pine silhouettes and the overarching connections in nature.



She's excited to be back in Vermont and sure that she'll conquer the wanderlust that's bound to creep in around her tenth month here. And, she's ecstatic when she thinks about all she's learned, how her philosophies have evolved, and all the new lenses she now sees the world through- and it's only been eight months! In any given moment, she can be found fruitlessly attempting to eat less chocolate or in utter hysterics of laughter. She spends free time reading, making books and blockprints and getting outside. And, yes, she still frolics through the woods - but now she wears clothes.



Sarah Bursky (EP) If you were to catch Sarah with the Field Naturalists/Ecological Planners on a particularly energetic day, you might find her clapping her hands while leading a rousing round of "Big Booty", one of her favorite teambuilding games. Sarah has discovered in herself not only a passion for environmental conservation but also human experience and connection.

These two passions began as a focal point for her at Cornell University, where she studied natural resources, and also communications and science writing. Working for Cornell Outdoor Education, she led students and Ithaca residents into the woods on backpacking and snowshoeing excursions, and was drawn to learning the ins-and-outs of group facilitation. A semester abroad in British Columbia with the School For Field Studies, studying the economic and ecological impacts of the logging industry on the temperate rainforests, was a foray into hands-on environmental problem solving, and gave her a feel for the impact of policy on local communities. She returned to Cornell further impassioned by the interplay of human experience and environmental management.

After graduation, Sarah moved northwards to Vermont, and she jokes that she somehow never managed to leave; indeed, a wealth of different experiences has kept her in the state. Seasons with the Vermont Department of Fish and Wildlife and the Vermont Youth Conservation Corps developed her understanding of local conservation initiatives. Working as the Outreach Director with the Lake Champlain Land Trust, she pursued her interest in land conservation while exploring different ways to engage the community. Working as an instructor for the University of Vermont Ropes Course, she continued to ask groups what motivates them to take risks and take action. And a year in Americorps in Vermont's Community Stewardship Program exposed her to statewide conservation initiatives, and also local community inequities; asking questions of which communities have privilege and voice in our society has become a dominant theme in her life.

More recently Sarah joined in the land management process while working as an intern with the National Park Service at Marsh-Billings-Rockefeller National Historic Park in southern Vermont. Sitting in on meetings with community leaders from diverse fields, as they assessed how to manage the living landscape sustainably, she knew it was time to return to school. She is excited to pursue an integrated approach to resource management as part of the Ecological Planning program, and plans to explore land management processes and questions of civic engagement.



Katie Pindell (FN) grew up in Keene, New Hampshire, creating houses with sticks and mushrooms and collecting caddis flies from the creek by her house. Early on, she discovered how to pair her scholarly efforts with her love for wildlife when a high school biology teacher took her to a local river to investigate the decline of the dwarf wedge mussel.

She attended the College of the Atlantic (COA) where she found a mentor who taught her to distrust theories of nature packaged too cleanly and to pay more attention to her ears and eyes. COA's holistic approach allowed her to study philosophy with the same enthusiasm she put towards ecology. Her final project was a conceptual art installation in ceramics examining the processes of chance and change in the natural world.

An internship at the White Mountain Research Station in Bishop, CA intensified Katie's desire to pursue ecological fieldwork. She spent the next few years identifying the vegetation of sage grouse lekking grounds in southwestern Utah, collecting data on malaria in forest birds along the slopes of Mauna Loa, HI, studying the breeding behavior of black guillemots 330 miles north of the Arctic Circle, nest searching and territory mapping black-throated blue warblers in forest fragments in Vermont's Champlain Valley and in continuous forest at the Hubbard Brook Experimental Forest, NH, and monitoring seabird populations on Machias Seal Island in the Bay of Fundy.

Katie's fieldwork experiences compelled her to choose the FN program to study ecology and the philosophy of science. She is particularly interested in the proximate adjustments made by birds to changing environmental conditions.



Kate Westdijk (EP) grew up in Central Vermont with her parents and younger twin brothers. From watching tadpoles hatch in a jar on the kitchen table in elementary school to exploring the 130 acres of forest around her home, she developed an early interest in the natural world and pursued that interest through high school and at Smith College. She enjoyed working as a field ornithologist for the Vermont Institute of Natural Science (VINS) but felt too out of touch with the social and economic pressures at play in conservation biology decisions. A desire to travel and experience other ways of life brought her to China in 2004, where she taught English and Business with her husband, Bart. Bart had just finished a Masters in Business and Society management, which focuses on a "triple bottom line" in which businesses consider the importance of social and environmental impact in addition to profit and the economy. Her experience teaching business in developing countries further highlighted the conflict that exists between environment, society, and the economy.

A desire for interdisciplinary training in these fields led her to the University of Vermont. She was initially interested in the Ecological Economics program offered by the GUND Institute, and later learned about the Ecological Planning program which fueled her enthusiasm for studying in Burlington.

During the first semester of the program, she revived her interest in field sciences and had an opportunity to reflect on problems in past approaches to mediating conflicts between ecological, societal and economic needs. Growing up watching her mother fight a polarized and never-ending battle as an environmentalist and state employee, she is searching for a more balanced approach to conservation that involves cooperation and understanding across fields. In the future, Kate hopes to work at the local level to find balanced, participatory solutions that couple ecological and social well-being with a healthy economy.

Shana Stewart (FN) Water has been a theme that has run throughout Shana's life. At an early age she could be found turning rocks in streams, looking for amphibians. Shana found freedom and comfort in the woods, and spent many of her childhood summers roaming the forests around her grandparents' home in the mountains of PA. It is here that Shana realized the importance of people and place in her life. As she has moved through the world, Shana has been guided by her desire to find a home where she can connect with land and people.

Teaching maritime ecology on a barrier island in Georgia and bringing lovely organic vegetables to market in Virginia were fulfilling for a time, but Shana was still searching for the comfort of a place like her home in PA. When an environmental education job opened up in Vermont, Shana jumped at the opportunity to put down roots in a new community, one dedicated to helping youth gain self-confidence while working and learning about the land and their place in it. Shana had a gut-feeling about what she would find in Vermont, and contrary to her usual methodical decision-making process, she left her friends in Virginia to work at Smokey House Center. Smokey House offered the community-based lifestyle for which she had been searching. Shana believes that building strong communities starts with building strong relationships between people and with their natural community. Smokey House felt like a place where people still valued personal relationships, and where educators were taking the time to really understand their students.

After three years of conducting environmental research with students at Smokey House, Shana needed to recharge and to return to the water. This time she relocated to the shores of Lake Champlain to join the UVM's Field Naturalist program.





Chris Nytch (EP) is wondering about some things. What are the qualities that define a sense of place? What are the pieces that fit together to develop true and perpetuating ties of community? How do you broaden environmentalism to include people across all races, cultures, and economic backgrounds? How do you nurture a connection to resources that promotes understanding, respect and sustainability? If you were Chris, these thoughts would swarm about your head. You would also have a strong notion that the answers to these questions lie in the integration and cross-fertilization of traditionally segregated disciplines: sociology, politics, economics, and natural and cultural history.

Chris deeply values a spectrum of viewpoints and education that encourages wild thinking coupled with learning by doing. At one point he debated becoming a professional pianist, and more recently a geologist, but could not circumscribe himself within the confines of one field of inquiry. He traveled to Honduras with the Peace Corps to promote watershed education and soil conservation techniques. There he lived and worked with farmers who had an intimate connection between their daily lives and the natural environment despite a lack of exposure to complex ecosystem concepts. He saw that this direct relationship between people and place inspired villagers to work for the protection of their resources.

Chris was inspired too, and wanted to bring the lessons of rural Honduras back home to the United States. The places we live are built upon the physical landscape; our cultural heritage has roots that burrow deep into the contours of the land. Most North Americans no longer farm for their daily bread, but could an understanding of the way society and nature intertwine to craft the intricate fabric of a particular location be key to fostering environmental

responsibility and action? Chris thinks so. This realization fed his hunger for knowledge, and a desire to gain a better understanding of the world around him – both in academic and field-based settings. He turned to the ecological planning program to cultivate ideas and gather skills that he will fashion into an educational archetype emphasizing the bonds between people and the places they live. Chris plans to pursue community level work that advances sustainability ideals beyond the realm of traditional environmentalism, making them accessible to and practical for a diversity of people and locations, and inspiring citizens to celebrate their relationships with one another and the land that sustains them.

Monica Erhart (FN) Monica's primary childhood backyard was an open expanse of woodland in the Sierra Nevada foothills, where she hiked and stuffed pillows with cattail fuzz. Her other backyards opened onto big South American cities, where Monica was exposed to landscapes, cultures, and ideas very different from those prevalent in her rural hometown. Returning from each worldly experience provided the challenge of communicating her new ideas to people who had never been far away. Although she had some early success, she often wished her family could just be "normal" and stay put so she could fit in with the rest of her community.

When she went to Lewis & Clark College, Monica was again challenged to communicate her experiences to people with very different ideas. She also studied biology, explored the Pacific Northwest, and became determined to work in conservation. Having inherited her family's love of travel, two semesters took her to Kenya and Micronesia, with programs involving local communities in conservation and land management projects. It was there that Monica developed a strong belief that conservation efforts should be specific to place and supported by local people and their resources.

Monica's next endeavors divided her time between field research and environmental education. She scoured Mt. St. Helens for amphibians, led interpretive walks in Yosemite, observed pollinators in the Rockies, and worked on organic farms in Australia before it became clear that she didn't have to choose between research and education. The key to conservation, she realized, is to involve the community in both research and hands-on preservation efforts, making both relevant to the people involved. Since understanding the values of a community was at the heart of the issue, Monica returned to California to teach at an outdoor school very close to her hometown, deciding it was time to stop avoiding a community simply because her ideas didn't match those of the people around her.

The Field Naturalist program seemed a natural fit for a person dedicated to bridging communication gaps in the natural sciences. When the Field Naturalist program allows her free time, Monica enjoys playing obscure songs on the guitar and doing a diverse array of creative art, which she often abandons before finishing, as well as the typical diversity of naturalist outdoor activities.





Team V6: Where Are They Now?

Strip Malls and Storm Water: My Summer in Paradise Christopher Detwiller, EP-V

If you had told me a year ago that for my Ecological Planning project at UVM that I would be wading through a stormwater outfall along a highway, across the street from a liquor store and gas station, I would have thought you were crazy. I envisioned myself hiking the peaks of the Green Mountains, or paddling Lake Champlain. What I realized, though, is that the Ecological Planning program is about tackling complex situations to meet multiple objectives concerning natural resource management in an integrated, thoughtful manner. Everyone can agree that the Green Mountains are special and should be carefully managed and protected; but what about a small Army base in suburban Narragansett, Rhode Island, surrounded by duplexes, clam shacks, and mini-marts?

Fort Greene is a property composed mostly of wetlands that was developed as a coastal defense battery by the Army in 1941. In addition to filling in wetlands to build an 800-foot long bunker, roads, and other buildings, the Army dug drainage ditches and installed sewer pipes that altered the hydrology of the property. Following the war the Fort was placed on inactive status and largely forgotten. Now the Army Reserve has partnered with UVM to take on the challenge of developing a wetland restoration and integrated natural resource management plan for the property. The Army's goal is to restore and maintain their natural resources while simultaneously achieving their training goals.

My field work focused on the assessment of stormwater that collects from several roads and driveways and is discharged via an outfall into Fort Greene's wetlands. Samples taken as water entered the Fort contained elevated levels of nitrogen and suspended solids, and little or no improvement was seen in water leaving the property. This is likely due to the accelerated rate at which water travels through the drainage ditches and pipes on the property.



This fall I incorporated these results into a series of wetland assessments to determine the losses and potential benefits of several wetland functions, including flood abatement, water quality improvement, wildlife habitat, and education values. While

some wetlands are serving multiple functions, others have suffered substantial impacts. My recommendations address these

impacts and propose a restoration plan that will improve water quality, increase flood abatement, restore wildlife habitat, and create educational and recreational opportunities.

In my time at Fort Greene this summer I did not explore pristine wilderness, and may have come across more discarded beer cans than animal tracks. However, I truly challenged myself with this project to think creatively about what makes a place like Fort Greene important, and found a way to restore many of its lost or degraded functions through the implementation of this plan.

A Swift Kick at 6000' Amanda Devine, FN-V

Steel-toed boots would have been a great idea. Had I known last May, upon wedging myself into Jennie Cramer's (FN-U) overburdened Subaru for the trek from Vermont to Oregon, that I would spend my summer kicking logs, I might have brought them along.



After a marathon drive cross country (beset by shockingly bad gas station coffee) I arrived at the H. J. Andrews Experimental Forest and soon found myself stumbling under an unwieldy pack towards my field site: 5000 hectares of incinerated, high-elevation mountain hemlock (*Tsuga mertensiana*) forest. My task for the summer was to measure the volume, position (standing or downed), and decay state of dead wood in 14 tenth-hectare monitoring plots. Decay state is measured on a scale of 1 to 5, and differentiating between a 4 (pretty rotten) and a 5 (mulch) involves...kicking. Nothing wrong with a little subjectivity now and then. This summer would mark year number three of these measurements since a 1996 fire.

Back in Vermont, the summer's tan replaced by a layer of FN office dust, I am in the final throes of interpreting data on 662 standing dead trees and many, many megagrams of decomposing logs. Preliminary results reveal that fire has had a profound affect on dead wood dynamics in unburned control plots. While the patterns in how snags fall apart verge on predictable in burned plots, wild things are happening to the dead trees of unburned plots 68, 69, 72, and 77, and it is my task to explain why.

While this study may smack of "science for its own sake-ism," there is indeed an application. Once viewed only as an impediment to forest productivity and a safety hazard to loggers, woody debris is now recognized as a major sink for atmospheric carbon. With any luck, my results will shed more light on the effect of fire on forest carbon sequestration. With still more luck, my toenails may someday grow back.



Exploring the Wilds of the Winooski Valley

Charley Eiseman, FN-V



When Jeffrey was first introducing us to the possible summer projects, he commented that what the Winooski Valley Park District was proposing was too big an undertaking and would have to be pared down.

Taking this as a challenge, I decided to take on the project, and resolved to inventory all 18 of their properties (totaling 1700 acres). I liked the idea of coming away from the project with as many examples as possible of what I could come up with when sent out to explore a piece of land. But what most excited me about this project was the opportunity to get out and wander around in all these local natural areas I had not had a chance to visit during my busy first year in Burlington.

I was not disappointed. In WVPD's parks I identified 34 natural communities, 139 vertebrate wildlife species, and 546 vascular plant species. Among these were 35 species on the state lists of rare and uncommon plants and animals, including new records of a threatened and an endangered plant species. On the downside, I identified 32 species listed as invasive by the Invasive Plant Atlas of New England, including one (European frogbit) that was previously undocumented in northern Vermont. In my report I assessed the relative threat posed by each of these species to the native flora.

For each property I created a map of current vegetation and another of potential vegetation (natural communities), using the classification in Thompson and Sorenson's Wetland, Woodland, Wildland. For each stand I delineated, I made a table describing the vegetative structure and composition, and listing the birds, mammals, herps, and special habitat features I found there. My document summarizes the geologic and cultural story of Vermont, weaving in specific features of the WVPD parks. It highlights the main assets of each park, with management recommendations addressing issues such as riparian buffers, early successional habitat, and location of new trails.

This spring I am reflecting on the idea of landscape inventories: Why should (or shouldn't) they be conducted? How do landowners and conservation organizations end up using them? How can they be made more useful? How do they inform management? My hope is to create a short document that will help landowners decide exactly what information they want from a property inventory.



Food in the Forest

Abby Hood, EP-6

...Nature-based agriculture will be nourishing in the best sense of the word—an honest and honorable way to take our place in the food web that connects all life...

If we...are truly committed to sustainability in all things, agriculture must be first on our agenda, the first meal of the new day.
from *Biomimicry* by Janine Benyus (1997)

The trees on the shore of Falls Lake looked out of place. I was immediately struck by the lack of an expected pattern: there was no lakeshore riparian zone, no shift in species composition and growth form, just an abrupt transition from forest to water. I found it disconcerting. I soon learned that Falls Lake is the result of a 1970s dam project. This was originally an upland forest; its trees sprouted and grew under forest cover, only later adapting to what most real estate developers would consider a lucky break – the sudden appearance of a lake.



This landscape set the context for a week-long workshop on biomimicry, the science of looking to nature for inspiration in solving our human problems. I was one of a group of biologists being trained by Janine Benyus to use our knowledge of organisms and ecosystems to inform design and innovation. I was in North Carolina to reflect on adaptation, on the meeting of form and function. The incongruity of this lakeshore spoke eloquently – through what was missing – of the myriad patterns that reflect the adaptation of the biotic world to its abiotic underpinnings.

I returned home and walked into the forest that would inspire my thinking about agriculture in the northeast. My project sponsors, a small non-profit called LivingFuture, asked me to apply the concept of biomimicry to food production in Vermont. What do our forested ecosystems have to teach us about productivity and nutrient cycling, soil conservation and pest control? In the Midwest, the Land Institute uses the prairie as a model for polycultures of perennial grains. Here in Vermont, a declining sugarbush is the palette for my own design. My task is to harness the productivity of this woodland and direct it, with minimal disturbance, for human use. The resulting forest garden will, I hope, produce food and medicinal herbs while retaining a high degree of ecological function. Forest gardens will never provide the whole of our diet, but they may be one component of a diverse and ecologically-sensitive food system, a system that can adapt in the face of anthropogenic processes of a much larger scale than the damming of Falls Lake.



Ecological Tunnel Vision

Jesse Mohr, EP-6



As I walked past the Roger's Farm barns and fields and up into the most recent addition to the University of Vermont Jericho Research Forest, the Roger's Tract, my mind was preoccupied with my writings of the past month. So preoccupied, that I barely glanced at the patch *Scirpus polyphyllus*, a recently de-listed sedge I had struggled to find and identify this summer. I

had been writing about "interactions" for the past month, and now that I was headlong into the project, I was beginning to question the soundness of my emerging theme.

Ecologists are always thinking about and describing "interactions". I guess it is just how we see the world, one of inseparable and complex connections between trees, plants, wildlife, soil, bedrock, people, climate, and the list goes on. I can't help it. I've been trained to think this way.

And now a question was running through my head: had I taken this too far? Was my project site really one of incredible interactions? It certainly made a good story, but had I forced my own ecological perspective on this piece of land? Was I illuminating connections that only I saw? In the grander scheme of things, to what degree did they really even matter?

After walking up through a network of sedge meadows, I came to one of the property's many seeps. Surely there was a story of interactions here. Approximately 16,000 years ago, the deep waters of glacial Lake Vermont deposited extensive plains of silts and clays where I now stood. As the glaciers melted northward, the elevation of Lake Vermont dropped and sands were deposited on top of the extensive plains of silt and clay. I now stood at the base of a steep ravine where I could see the contact zone between these two different materials: coarse grained sand on top--Windsor sandy loam-- and fine grained silts and clays below--Hartland silt loam. Along much of this contact zone, groundwater fed by the recent rainfall came seeping out. Here the activities of a lake that existed some 12,000-16,000 years ago were clearly influencing the drainage patterns of today. Because the receding lake had left a faster percolating material over a slower percolating material, modern day hydrology was altered. It was fascinating (at least to a naturalist).

As my mind continued to mull over these "interactions", I scrambled up and over the steep ridge separating me from the

next ravine. As I walked and slid down into the next ravine and neighboring seep, I saw there had been a lot of activity here: a moose, maybe two judging from the two different sized tracks, a fox, a fisher, and who knows how many deer had visited this tiny little spring; each one being nourished by the mineral rich waters and lush vegetation of the seep.

As I headed home for the day, I felt a little bit more confident about my 100 pages of "interactions". Glacial history, substrate, modern day hydrology, and wildlife were all clearly connected. Even better, this was a series of interactions that really did matter--it will likely have a significant bearing on how the University will manage this portion of the property--and this was a story that I couldn't possibly dream up on my best day.

Broadening the Scope of Land Management Considerations in Northern Vermont

Ryan Owens, FN-V

Why do we conserve land? We may do it to protect rare species, to ensure clean water, or to provide sustainable sources of natural materials. Half of my Master's project involved identifying and describing the conservation "*whys*" of the Big Jay Tract, 1,600 rugged acres of state forest in northern Vermont managed by the Green Mountain Club. Moose and black bears were my companions last summer as I conducted an ecological inventory and assessment of the tract. The work was hot,



exhausting, and immensely satisfying. By the end of the summer, fly-bitten and thorn-scratched, I had produced detailed descriptions of the tract's natural features, which include habitat for the rare Bicknell's thrush and several headwater streams of the Missisquoi River.

In recent months, however, the project has increasingly drawn me toward the "*hows*" of conservation: once we've decided that we want to protect a landscape, *how* do we do it effectively amidst a dynamic cultural landscape? Answering this "*how*" has been the other half of my project: to write a long-term management plan for the Big Jay Tract and the adjacent 3,800-acre Black Falls Tract. The plan addresses a variety of topics, from bear habitat enhancement to commercial guiding regulation, all within the confines of existing conservation easements and state law.

After navigating a government bureaucracy, collaborating with diverse stakeholders, and poring over hundreds of pages



of deeds, easements, and other legal documents, I've learned that understanding the natural features of a place is the easy part—planning how to protect those features effectively is the real task, particularly on publicly-owned land. Conservation rests on a constantly shifting foundation of law, culture, and politics. As such, the greatest threats to the long-term protection of a place may not be natural, but instead legal, political, or administrative. Cultural values change and institutions come and go, yet protections must often be perpetual. Thus, conservation planning must have both strength and flexibility to withstand the forces of change, both natural and cultural.

How do we conserve land? Of course, we begin by describing its natural pieces, patterns, and processes and identifying future objectives. But attention to detail does not end with botanical features under a hand lens. I've learned that we must also pay close attention to a greater and ever-shifting context: that of law, politics, and human nature. And so we add ever-more facets to the multidisciplinary Field Naturalist.

Monitoring the Changing Face of the Northern Forest in Central Maine Lisa Passerello, FN-V

The Appalachian Mountain Club (AMC) embarked in 2003 on what they have called the “most ambitious undertaking in the organization’s history” when they purchased the 37,000 acre Katahdin Iron Works (KIW) property in central Maine. This purchase was the first step in the AMC’s Maine Woods Initiative, a long-term effort to secure large-scale land conservation and integrate habitat protection, backcountry recreation, and sustainable forestry. The project that I worked on with the AMC this summer – the KIW Forest Monitoring Project - has also been *my* most ambitious undertaking yet as a Field Naturalist. My GPS, DBH tape, (and occasionally my fly rod) leading the way, I tromped to all corners of this property, across clearcuts and through cedar swamps.

The Katahdin Iron Works property is a prime conservation and recreation target, hosting 31 upland and wetland natural communities, the West Branch of the Pleasant River, and a 300 acre bog. It is also bisected at its narrows by the Appalachian trail, through the “Hundred-mile wilderness,” the longest remote stretch of the 2,000 mile trail. But, as I realized as I had



my first view of the property from a bumpy, dusty logging road, these forests are not pristine, and they have been heavily used for the last 150 years. International paper, the most recent owner, was but one of a long line of commercial forest owners who have used the property for its valuable timber resources. When ownership transferred to the AMC, they acknowledged not only the ecological and recreational value of the property, but also its value to the regional economy and traditional way of life. While they set aside over a quarter of the property as an Ecological Reserve in 2004, they also continue to practice forestry – utilizing sustainable silvicultural methods – on suitable lands. And, when possible, they employ natural disturbance silviculture to promote late-successional forest characteristics that are otherwise sparse on landscapes such as these.

Enter the forest monitoring project. This project followed on the heels of Jane Moscovitch’s (UVM Ecological Planning Program, 2005) ecological survey of the entire property, which led to designation of the northern section of the property as the Reserve. The AMC recognized that the Reserve can serve as a natural control to measure the effects of their forest management, so we installed permanent monitoring plots across the forested communities of the entire property. As with any field research, there were difficult decisions to make. At what intensity should we sample? Which research questions are most important for this organization and property now – and which will be important in 100 years? Can you answer multiple questions with the same set of plots? There were many compromises, but taking the long view, we expect that these plots will reveal how the forest communities develop as the management style shifts to a more light-handed approach. So, if you happen to visit and notice a fine yellow birch ringed with orange paint, take note: although forests change at time scales often beyond our human perspectives, perhaps we can be clever enough to capture what really matters.





There are many ways to take notes while in the field. Words describe events. Pictures portray visual appearances. Maps track locations and landmarks, while a poem or story might capture deeper feelings or thoughts that put the pieces of a landscape together.

An event map can represent any or all of these methods. It may include physical position, but it also provides a sensory account of the individual awareness of the observer. Sounds, sights, and any simple morsels that amuse the mapper's curiosity are woven into the flow of pencil on paper.

Here, Monica Erhart's event map and Sarah Bursky's poem are woven together to tell the story of the Battell Woods.

* BATT

Pits, mounds, decaying trees,
Large boulders made of schists,
My group stopped to analyze,
A rock they could not resist.
As we neared the top at last,
We came out on a terrace,
Softs greens, browns across the valley,
Spreading out across the west.



Huge boulders, smaller rocks,
Kept us careful of our steps,
We zipped our fleeces tightly,
Against the chill air from the west.
Tilting hemlocks of great size,
Held their position on steep slopes,
The wind, the hill, the coldness, too,
These conifers, they could cope.

Where water seeps from
cracks in the rock,
icicles form.

Eventually we saw stumps,
Marking the history of this place,
Man had been here after all,
Harvesting with haste.
Slowly we ascended,
An old road formed the path,
We noticed Ginger, Maidenhair,
Paper Birch, White Ash.

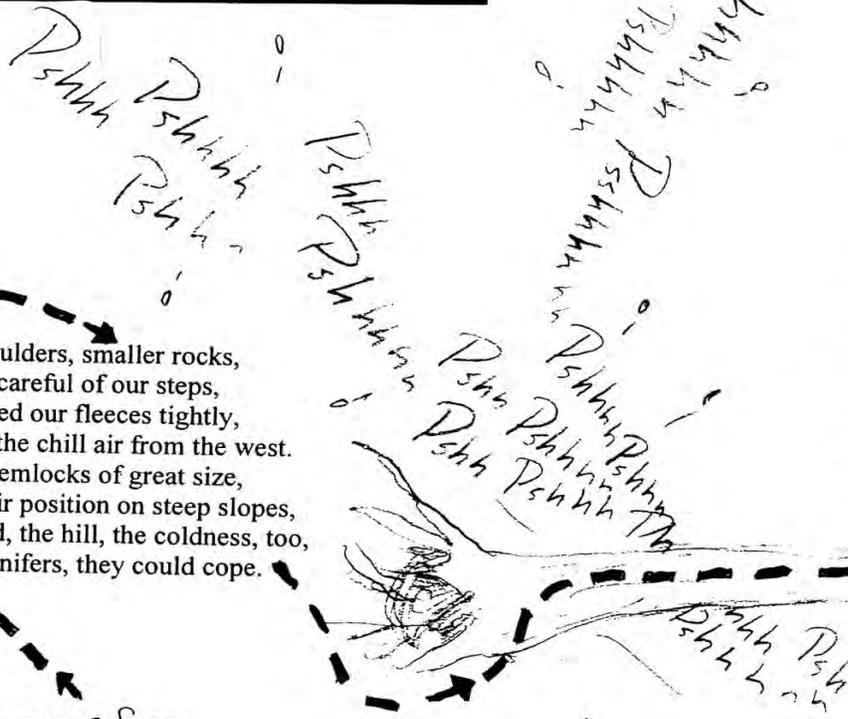
we leave the
sounds of the
human-made landscape
behind.

The trees at
the base are
mostly beeches
and oaks

Another Friday adventure,
The start - Abby Pond Trail,
These Green Mountain Forest lands,
Hid Joseph Battell's tale.
We had read about these woods,
He fought so hard to preserve,
The wilderness around him was,
the cause his life would serve,



We paused to t
To further open
Old trees frame
With their extra
My friend besid
Stooped and fo
Five hands reac
As seeds from i





**Sustainable Forestry on the Landscape:
Deciding the Fate of Vermont's Renewed Resource
Brendan Weiner, EP-7**



When I first stepped foot in UVM's Jericho Research Forest, I wasn't very impressed. The trees were planted in rows, the sandy soils along the logging roads were eroded, and, of course, it was raining. Having recently lived in the forests of California and Wyoming, I felt like a stranger in this unfamiliar land of rolling hills and broad leaves.

Over the past few months, however, I have discovered the story of the Jericho Forest and developed a deeper understanding of the landscape. I now know that many of the trees in the forest were planted as part of a forest restoration effort in 1941, after over 140 years of productive, but ultimately exploitative, farming. I also know that the sandy soils are actually river sediments deposited by the Winooski River thousands of years ago. By making these connections to the Jericho Forest, I feel more attached to the place and more invested in its future.

I am not the only one who has had an experience like this at the Jericho Forest. In fact, UVM's Forestry Department has begun the Green Forestry Education Initiative (GFEI) at Jericho that encourages students, landowners, community members and educators to come together, and re-connect with the land. Led by David Brynn, former Addison County forester and founder of Vermont Family Forests, the GFEI's mission is to integrate sustainable design, land ethics, and real-world learning in community-based forest conservation.

This summer, I will be part of a cohort of graduate and undergraduate students at the Jericho Forest who will be putting concepts of sustainable and community-

based forestry to the test. The goal is to create a forest conservation center where people can re-connect with the land, view what sustainable forest management looks like in practice, and incite productive conversations about the future of forest management in Vermont. Defining what sustainable forestry is and how it fits into a complex landscape is a difficult task. The Green Forestry Education Initiative hopes to bring the Vermont forest community together to re-assess Vermont's forest resources and build on a land ethic that puts forest health at the forefront of forest management. 🐾

**Hibernation, Insulation and Caffeination
Bernd Heinrich**

An emeritus professor rolling naked in the snow at minus-20 degrees Fahrenheit and yelling like a banshee is either exhibiting an amazing remission from seasonal affected disorder or he is performing a slight (O.K., a not-so-slight) act of bragadocio. In any case, I jumped right back into the sauna after 20 seconds, having briefly experienced an altered state of mind.

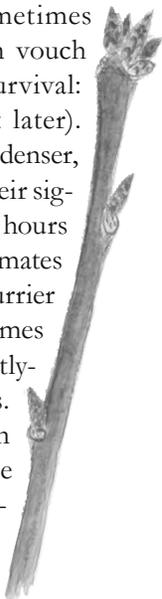
This was during the annual week-long Winter Ecology session with ten biology students at a log cabin in the woods of western Maine. The idea is to experience nature; it is impossible to teach scholars how coffee tastes unless you lead them to drink it. We had chosen mid-January for our winter-tasting. We picked a good time: there was snow a-plenty and temperatures were appropriate. Hopes were high we'd survive.

The differences between just barely surviving the cold for a half-minute immersion and living through the

whole winter outdoors are, of course, not trivial. Animals can show us how to manage. Their ways are a stunningly diverse combination of achieving energy balance, and sometimes even staying warm. From personal experience, I can vouch for the three main ingredients needed for human survival: insulation, granola bars and coffee. (More on that later).

Most of the mammals in the north change into a denser, deeper and sometimes whiter winter coat by late fall. Their signal for coat change is the "photoperiod" -- the relative hours of daylight and dark. But humans are relatively naked primates adapted for life in the tropics, and we don't become furrer in winter. Instead, we learned to survive in Arctic climes by taking our coats from other mammals. Our recently-invented substitutes are serviceable but pale imitations.

Birds' insulation is, per weight, even better than fur. Chickadees get up and search for food on even the coldest morning at first dawn. Their body core temperatures are slightly higher than ours, and the insulating





Winter Ecology 2006 Class: (from left to right) Katie, Shana, Brendan, Corrie, Bernd, Monica, Kristen, Chris, Kate and Sarah.

layer of feathers is usually less than an inch deep. Thickening the insulation layer is accomplished by raising the feathers, which is why a bird may look fatter even as it gets leaner.

Fluffing out to retard heat loss serves little purpose without the constant heat production that is fuelled with food. Cruelly, fuel demand rises sharply in winter just as the fuel supplies start to dwindle. That is why, like us, many winter animals reduce their fuel costs by at times turning down their thermostat and/or huddling and seeking shelter.

Northern flying squirrels bivouac in snug nests made of shredded cedar and birch bark, and may huddle together in same-sex groups (why?) of 10 or more. In contrast, chipmunks gather food stores by fall for individual larders and feed on them in their subterranean dens. And then they enter light torpor, especially when the nuts run out. Woodchucks store energy in body fat instead and hibernate deeply all winter. Those without energy-saving tricks or access to enough food are forced to migrate or to survive in a deathlike frozen state.

Winter Ecology students prepare themselves by bringing a large supply of food- mounds of cheese from Vermont, fruit from Florida, raisins and nuts from California, flour and oats from the Midwest, chocolate made of cocoa, sugar and milk all from I know not where. On any walk into the woods we are laden with munchies, because except for the occasional long horned beetle grub, we don't find anything to eat along the way. Without our imported provender we would not long survive, even if we had spears and bows to procure lunch.

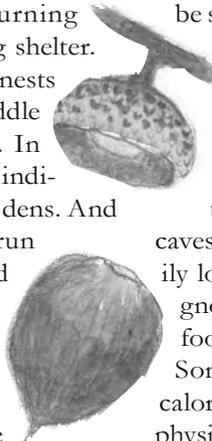
As a teenager I had the romantic notion of staying in these woods for a year and living off the land like an aboriginal hunter. But since then I've often sat up in a tree for hours, for days, very hopefully waiting for a glimpse of a deer because of the many tracks that are everywhere. I now realize that this activity, subsidized by imported calories, costs more energy than

it brings back. My shivering burns off the calories of my candy bars that are all too quickly dissipating into the icy void to leave a cold body and a faint plume of warmed air.

Time is another problem for me. In the winter I usually start getting drowsy at sunset near 4:30 p.m. A candle may keep me up a little longer, but not much. I've learned that I'm able to get by with remarkably few hours of waking time, and they would be shorter still if they were not extended by light at one end and the promise of a cup of steaming hot coffee at the other.

I cannot help but contemplate the strategy that the Ice-Age Neanderthals might have used in the forests of central Europe where they did not have access to the plenitude of walrus blubber and other seafood. Might they have been hairy? Did they huddle and hibernate in caves in a sluggish semi-torpor like bears? (And been then easily located and killed like bears by the newly-arrived Cro-Magnons?). Bears have the ability to gorge and fatten up when food is abundant and then remain inactive for long periods. Some of us seem admirably pre-adapted to store enough calories to sustain life for months. And we share some other physical and mental adaptations along those same ursine lines.

Perhaps I'm a victim of SAD (seasonal affected disorder), with its slowness and melancholy. Medically SAD is now considered a pathological condition, as though it were a congenital defect. I'm more inclined to think instead that it's not a disease. Could it be another vestigial remnant of an adaptive hibernation response? If you live in the woods where the light stays dim and the cabin cold, a naked romp in the snow after a hot sauna may be like strong coffee, just another winter survival trick to shock you back to life. 🐾



Red oak
Quercus rubra



A Gift of Relentless Curiosity
Katie Pindell, FN-W

We leave the van in a pullout on the road next to two plastic bags full of what Bernd calls “raven bait” but look to me like frozen calf carcasses. With sleds and a pile of gear we look up a path that leads to the cabin where we plan to spend the next seven days. I wonder how to begin our relationship with Bernd Heinrich, a naturalist legend, ultra-marathoner, and best-selling writer. The only way we can begin is to move seven days worth of food uphill on a snow-laden trail. The only way we can begin is to walk the ground that he walks.

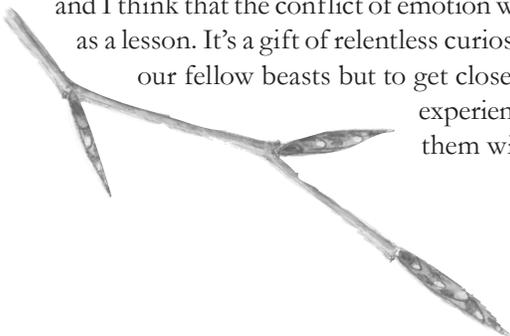


Bernd wears seal-skin gloves given to him in Nunavut for a hunting trip in -40 degree weather. As he speaks, his breath looks like smoke as it drifts across the chilly room. He doesn't favor starting up the stove for warmth. As he talks about tiny golden-crowned kinglets braving the winter night by huddling in a spruce-bound “four-pack”, I feel the heat of legs against mine. I glance around the room at heads under woolen hats and notice that all our legs are touching in a circle reaching around the room. In this time and place we have abandoned traditional notions of personal space. We move slowly and our bodies touch with no recoil. Our lessons here are as much about our behavioral and physiological modification to cold as about the adaptations of other northern dwelling species. Bernd's non-electrified cabin is a place where this kind of learning comes naturally.

In the morning the sun rises across the field. The sky is orange at its base and the clouds bare pink underbellies. There are porcupines out there in dens and they don't yet know that today they're not safe; the man with the seal-skin gloves begrudges them for his damaged chestnut trees. There are tracks telling stories in the snow. And the only way to regain the heat you lost in sleep is to tie up your boots and make new tracks.

If we stay close to each other a verbal relay of information progresses down the trail: red maple by the large size of the buds, sweet carpenter ant larvae near the base of a pileated woodpecker hole. But the details aren't the full lesson. It's also the way Bernd moves through the forest, the tilt of his head and the dart of his eyes. It's his perseverance in collecting *Callosamia* cocoons to check for parasite wasps.

Today we observe his dealings with a miscreant porcupine that naively sought a shallow den. Bernd jams a stick in one side of the hole and yanks on the beast's hind leg from the other side. The porcupine uses leverage to maintain a position between the rock and the ground. Futilely resisting, the porcupine oozes out tail-first and I'm caught somewhere between laughter and tears. The grounded porcupine picks his way up a naked aspen to safety, and I think that the conflict of emotion was intended by Bernd as a lesson. It's a gift of relentless curiosity, to not only revere our fellow beasts but to get close to them, to share an experience with them, to poke them with sticks. 🐾





“Searching for Clues of Vermont’s Cultural History,” *continued from pg. 1*

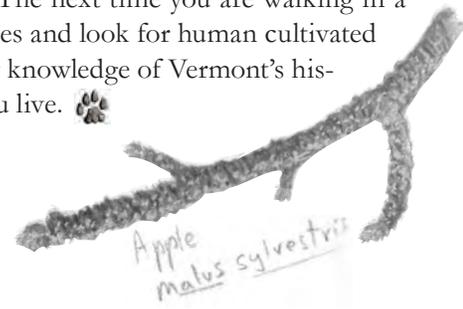
You may find more clues of the landscape’s cultural history by carefully investigating the plants surrounding the cellar hole. A lack of large trees, dead or alive, and the presence of many smaller trees indicates that the area around the house was cleared to provide firewood and make a lawn. Several multiple-sprouting hardwoods, such as red maples or beech, show evidence of past logging activity, since most hardwood trees do not die when they are cut above the roots and will send up many smaller shoots from the root structure.

Nineteenth century Vermonters also cultivated trees and shrubs that provided food or aesthetic value. You might find the crooked skeletons of apple trees and tall butternut trees that were often grown for their tasty fruit and nuts. Their broad, spreading branches tell you that they did not have to compete with surrounding trees for sunlight. You can also look for non-native perennials such as lilac, honeysuckle, and day lilies around cellar holes because the early settlers of Vermont also appreciated a colorful garden in summertime.



A culminating discovery in your exploration would be an old cemetery. Rustle around in the leaf litter to find the moss-covered headstones that offer the names of family members who created the cellar holes and door yards you have just seen. The white cedar trees found in many cemeteries were also planted as ornamentals. The true cedars of the Old World are sometimes called “arbor vitae” or tree of life. Although our native white cedar is not a true cedar, it was still an important symbolic addition to the cemeteries of Vermont’s past.

As you return to your car and drive out of Little River State Park, use your imagination to re-create the landscape of 200 years ago. Picture patches of lilies in bloom along the roadsides in the shade of apple trees. Imagine children collecting butternuts in the door yard and men chopping firewood in preparation for the long, cold winter. Vermont’s forests offer a captivating insight into the cultural history of early residents. The next time you are walking in a forest, take a moment to shift your focus away from the obvious natural features and look for human cultivated plants or indications of past logging. It may add another piece to your knowledge of Vermont’s history and bring an exciting new perspective on the place in which you live. 🐾



If you have not done so recently, please visit our updated web sites.

Field Naturalist Program: <http://www.uvm.edu/~fntrlst/>

Ecological Planning Program: <http://www.uvm.edu/envnr/ep/>

Sarah Goodrich, (Botany Department Administrative Assistant), Kristen Sharpless (FN-W), and Sarah Bursky (EP-7) have transformed our aged sites into ones that captures the Programs’ vitality.

Thanks!



From the French Lot
Kristen Sharpless, FN-W

*This is my home.
I have lived here
my whole life
and this morning
I have walked through the woods
to this spot again.
I look out over this meadow
at the forested hills across the valley and
I am in my own Eden.*

*I call it my own
only because I am most
my own self here,
sitting on my bench
at the top of this hill.*

*My grandfather, Billings,
planted the trees to my left -
Lacy Tamarack from Europe.
I planted the Red Spruce to my right,
still young in rows.
I like to imagine myself the gardener of this place
as my grandfather and mother and aunts were before me.*

*A garden of trees.
This we have created
from open fields like the one here now.
Us and Nature together.*

*But this gardener is fading-
A mere point
in a line of stewards.
I wonder how many more years
I will walk up here
to sit and look in this spot.
It can't be many.*

*Then what will happen to my Eden?
My legacy?
My home?
Who will care for it
And the creatures who live in it?*

*I have a plan for this.
No one else knows it yet,
except for me and this stone at my back.
It is a good plan.
I could tell you.*

*I am opening the gates of Eden.
It will be a park.
A place for people to come
as I have
for peace, for quiet,
with their families,*

*alone,
to be in the woods,
to know the woods.
These beautiful woods of Vermont-
Mount Tom.
I like the idea
of this place
living and breathing -
people and forest.
New people to bring what they have here;
to leave their own marks.*

*Those bright minds of the future,
they will likely think me an old bat-
And I am-
Or am becoming one now-
with my old fashioned ideas about
gardens of trees
and Eden.*

*Maybe they will prefer something more modern-
More wild.
Want to leave it to its own will.
Harder and less romantic than my ideas
of tending and nurturing.*

*How difficult to pass on what you love
to the hands of those who are not even yet born.
and yet how perfect.
What a perfect gift
to give someone a place,
a garden -
or forest -
that I and the others in my line planted.
To give something as great as a tree that will outlive
even the unborn and their children after.*

*But eventually,
even these trees will fall
and then those bright new minds -
they will have their own challenges.
Which trees to plant?
Which to cut?
What to do or not do?
I can only hope that they will take this on
like I did
with the hope and excitement of the young
built on the work of those who came before.*

*By then I will be a mere ghost -
a spirit from another time
sitting on this hill
looking at things change
and stay the same.*



*Am. chestnut
Castanea dentata*



Field Naturalist Alumni Interview
Kristen Sharpless, FN-W

MH – Marijke Hecht '02, Executive Director, Nine Mile Run Watershed Association, Pittsburgh, PA

JB – Jill Bubier, Professor, Mt. Holyoke College, Hyde Park, VT

PE – Peter Ellis '04, Forest Ecologist, Society for the Protection of NH Forests

MM – Marcy Mahr '93, Science Consultant & Advisor, Yellowstone to Yukon Conservation Initiative, Flathead Valley, MT

MS – Mike Stevens '96, Co-founder and CEO of Pioneer Mountain Group, President of Lava Lake Land & Livestock, Hailey, ID

JC – Jen Cramer '05, Program Director, the Native Comeback Initiative, Institute for Applied Ecology, Corvallis, OR

What skill that you learned in the FN program do you use the most in your current work?

MH: The power of rhetoric. Our first semester assignment to create a 20 minute presentation that profoundly influenced the audience's thinking was the single most relevant assignment for me. It is exactly what I find myself doing—with community members, with potential funders, and with public officials—nearly every day.

MS: The ability to integrate information from a variety of fields into sound analysis and decision-making and... bringing a high standard in written and verbal communications to my organizations.

How did your master's project connect with the work that you chose to do after graduation?

JB: It launched me into peatland science!

MM: The master's project I undertook in the spring of 1993 was like a set of nesting Russian dolls—my fine-scale riparian study of Odell Creek nested within the larger landscape context of the Centennial Valley which nested within the Greater Yellowstone Ecosystem along the border of southwestern Montana and southeastern Idaho... And, to bring this story of nested Russian dolls and landscape scales full-circle, my various study areas in the Centennial Valley, along the Rocky Mountain Front, in Glacier and Yellowstone national parks and central Idaho all currently nest within an even broader continental scale that I have been working on over the last seven years for the Yellowstone to Yukon Conservation Initiative.

What unique preparation did you get through the FN that you couldn't have gotten anywhere else?

PE: Field based learning. Solid field botany and Natural Community-mapping skills. Excellent and caring instructors. A collaborative learning environment. A good balance of academic training and practical natural resource conservation training.



JB: The ability to examine ecosystems using the scientific method to understand interactions among processes rather than dissecting individual processes.

Did your experience in the FN program redirect your professional focus?

MH: The FN program tightened my interests. When I entered I had only a vague notion of wanting to improve my skills and pursue environmental work on a professional level. The program forced me to confront what that really meant for me: making cities healthy environmental spaces that support human needs and reduce sprawl into our limited rural lands.

JC: My mentoring experiences as a teaching assistant helped me to realize that teaching was a passion of mine and that I wanted to find a way to use citizen scientists of all ages as research and conservation assistants. This has guided me in the evolution of the Native Comeback Initiative.

How have your ideas on conservation evolved since graduating from the FN program?

MS: I have been in the trenches of on-the-ground conservation for 10 years now, and my basic views have not changed. We need to increase the number of size of protected areas and we need

Continued on pg. 20



to align the land uses surrounding those formally-protected areas so that they support those natural areas. The conservation issues of boundaries and buffers remains central in my work today and the FN program helped me gain the tools I needed to be able to work in that arena.

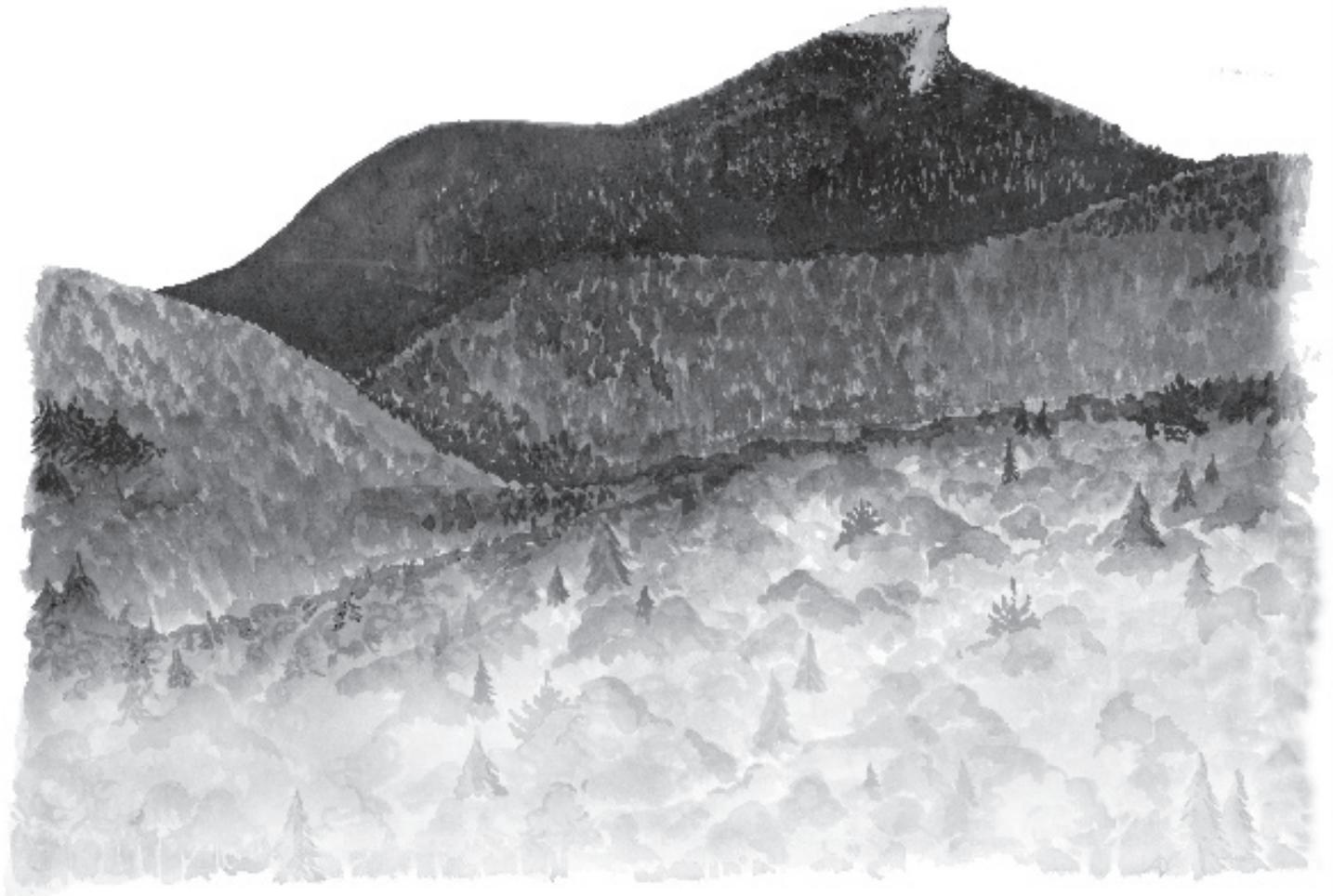
What is one of your favorite experiences from your time as an FN?

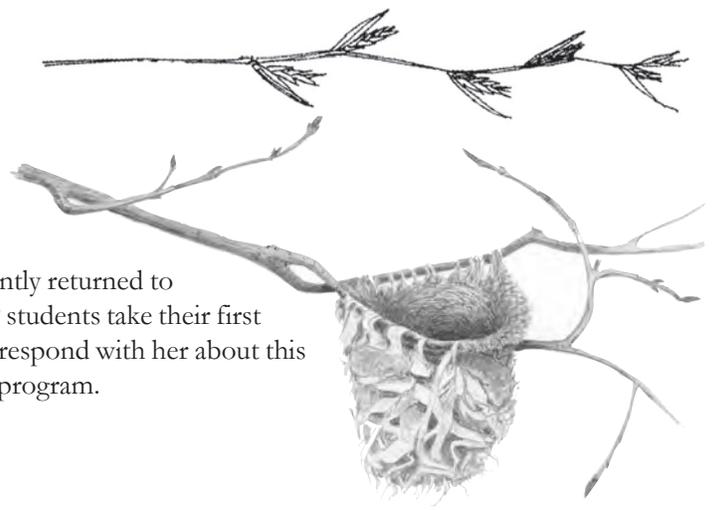
MM: An experience I frequently look back on occurred one sunny summer afternoon during my solo project in Glacier Bay when I came across black bear tracks imprinted in the mucky intertidal zone on an unnamed island in the Beardlees. I was supposed to be looking up watching for bald eagles but instead closely followed, step by step, how my bare feet compared next to those human-like ursid foot prints and pondered our similarities. It wasn't until I moved to Montana several months later and started spending a lot of time living in grizzly country that I realized how meaningful that afternoon had been in deepening my kinship with bears.

If you could have changed something about your FN experience, what would it be?

PE: The financial intricacies of the FN support package created much consternation for me when I was there...I hope that UVM and other potential funders will eventually come to appreciate the value of [the FN program] so a stable and reliable funding source can be secured. The number of professionally-trained conservation leaders generated by this program over the years is truly astounding.

JC: The FN experience was intense to say the least. There is a lot to absorb and integrate into your world view. If there is one thing I would change, it would be to add more time and space for personal reflection. Maybe a mandated nap time would be nice too.





**Interview with Kerstin Lange, EP-3
Sarah Bursky, EP-7**

Kerstin Lange, a graduate of the 2003 Ecological Planning class, recently returned to the program to co-instruct the Friday Field Practicum, which FN/EP students take their first fall semester. The newsletter team recently had an opportunity to correspond with her about this experience, her current work, and her reflections on her time in the program.

When did you graduate, and what are you doing now?

I graduated in 2003, and I still live in the Burlington area; since I had lived in VT for six years before entering the program, I didn't want to leave afterwards. For the last few years, I have been creating my own job -- offering landscape analyses from a natural history perspective to private landowners and conservation organizations. Inspired by Walter Poleman's PLACE program -- which is designed for towns -- I decided to see whether private landowners might also be interested in discovering the "story of their land", i.e. understanding their land from a long-term perspective based on natural and cultural history. It's a slow process -- people are not used to thinking about their land in these terms (I often get mistaken for a landscape architect or landscape designer), so I spend a lot of time explaining what I do and why it's useful; in addition to satisfying people's curiosity about their land, an integrated understanding of a landscape's history can also inform land use or management decisions. And, especially for people without long-standing family ties to their land, it can help them feel more connected with their land and develop a sense of place. My time is divided between getting the word out about my services (e.g. by giving presentations), writing proposals, and actually working on some projects, as well as continuing to work part-time in my old job (tour planning and -guiding). So, no boredom in sight!

What is your fondest memory of the program?

The amazing synergy of our team work and the feeling that our work was/is useful in the real world - especially in LIA and our master's projects.

What skill or concept that you learned in the EP program do you use the most in your current work?

There are several -- the emphasis placed on communicating our work, and the ample practice in public speaking (in different contexts and formats, and for different audiences) have proven very useful. Also, the need/ability to get my head into different disciplines, talk to people in different fields, and integrate their findings is something that comes up a lot.

How do your ideas, now that you're in the working world, about conservation/environmentalism differ from how you saw them upon entering the program?

I have developed a much better 'on the ground' understanding of conservation issues - a more structured way of thinking about them -- and of the 'tools' of conservation.

You've had the unique experience of returning to instruct the field practicum piece of the program - how did reading the landscape seem different this time around? What reflections or insights did you gain in being an instructor? What did this experience mean to you?

Co-leading (with Alicia Daniel) the Field Practicum was a very rich experience. What I appreciated most was the energy, spirit, and amazing diversity of backgrounds, personalities, and talents of everyone in the team. This also applies to the second-year students -- in fact, I think I

gained a much greater appreciation of their role by working with them from the instructor perspective. Being involved in an instructor role also served as a continuous reminder that being a naturalist is an ongoing process -- even if you think you know a place pretty well, you can always ask different questions, focus on different 'pieces' and 'processes', go deeper, take a different perspective... 🐾



A Masters Madlib

By Chris Nytc, EP-7, with help from the first-year FNEPs

It was a scintillating Friday morning, and the weather was furry and putrid. The first-year Ecological Planning and Field Naturalist students
 (adj.) (adj.) (adj.)
 were fragrantly assembling for their weekly Friday Field hoedown.
 (adverb) (noun)

“Who’s driving the corncob?” J-L asked vehemently.
 (noun) (name) (adverb)

“Did anybody pilfer the doublewides from Porky?” piped in George Battell.
 (verb) (noun pl) (name)

“I baked them yesterday afternoon,” burped George Bush.
 (verb past) (verb past) (name)

“We better get waddling before the reagent N turns finicky,” said Angus.
 (verb +ing) (noun) (adj.) (name)

And they were off.

The crew of 2001 obtuse students set out to spank the history of the bus stop. 99 hours later, the group ignited themselves at the base of a
 (number) (adj.) (verb) (place) (number) (verb past)
gossamer double-seater outhouse. They felt incredible passion. It was fluffy and calcareous and looked like a hamburger. In fact, this double-

(adj.) (noun) (emotion) (adj.) (adj.) (noun)
seater outhouse was more melodious than any other double-seater outhouse the FNEPs had ever breached before.
 (noun) (adj.) (noun) (verb past)

“What the sugarbush is going on here?!” exclaimed Snuffleupagus.
 (expletive) (name)

“I can’t believe there are so many Carharrrts, shrieked Tiny Tim. A mystery indeed. But this group of first-year FNEPs were not pork rinds
 (noun pl) (name) (noun pl)

who were easily pickled. The crew knew that in order to stink up this landscape, they would have to sacrifice the manila envelopes,
 (adj.) (verb) (verb) (noun pl)
clinometers, and the thneeds, and see how they all fit to together to tell a sinuous story. They divided up
 (noun pl) (noun pl) (adj.)
 into teams of 5 factorial. Each team was charged with the task of frollicking one particular breath mint
 (number) (verb +ing) (noun)

of the mystery site. They set to squeezing hastily. Suddenly there was a loud squeent.
 (verb +ing) (adverb) (sound)

“Bulbous Bouffant!” shouted Ira Allen. “I burst the sheep. How am I going to
 (expletive) (name) (verb past) (noun)
caulk the marimba?”
 (verb) (noun)

“It’s easy,” tickled Bruce Springsteen. “All you have to do is bemire your igloo in the
 (verb past) (name) (verb) (noun) pot sticker.
 Then you’ll know what the tune is.”



Team W7: (from left to right) Scarface, Joan of Arc, Kitty Dukakis, Clifford the Big Red Dog, Ira Allen, Tiny Tim, Snuffleupagus, George Bush and J-L. Missing from photo: Angus



“Tracking Team W-7,” continued from pg. 1

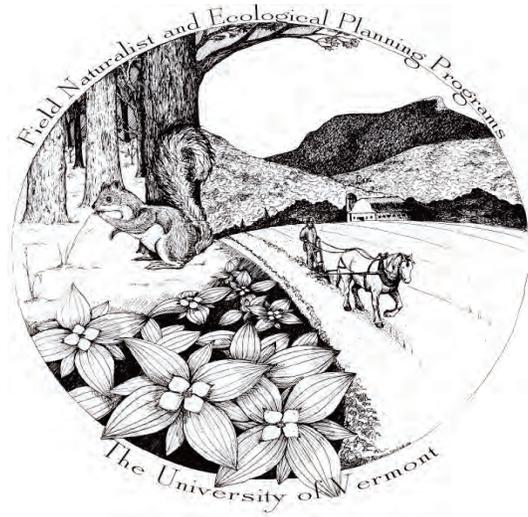
At step number 1,742 we came across a profound discovery: scat. Nothing gets us excited like discovering animal scat. Its pudding-like consistency and shiny texture suggested carnivore. As Chris (EP) moved in to identify the scat by its smell, Kristen (FN) piped up with her friendly warning, “Don’t forget about brain parasites.” Raccoon scat can carry harmful parasites transmitted to humans through nasal passages. With a shrug of his shoulders, Chris took a chance. He informed the parasite wary group that it did not have the skunky odor of red fox scat. After some discussion regarding the scat’s origin, we decided on fisher. Matt, an experienced tracker, confirmed our identification. Larger male fishers, he said, tend to deposit their scat visibly in trails as territory indicators.

A mere 57 steps later a cry of “Pass me the acid” echoed through the forest. A bedrock outcrop stood before us, and I was excited to test it with a few drops of hydrochloric acid. Calcareous rocks react with acid, causing a visible fizz. Here, contrary to our expectations, there was no fizz. We climbed over the rock surface, inspecting it with our ever-ready hand lenses. We learned that the rock is a non-calcareous quartzite conglomerate, igniting a firestorm of geologic questions directed toward today’s facilitators, Matt and Alicia Daniel (FN-E).

One step later we stood at the base of a huge talus rock formation where we found plants more characteristic of a bog than of a hillside. These ericaceous shrubs indicated acidic soils, unlike those just down slope. We scrambled up the rocks, getting to a pedometer count of 1,920 steps, where we settled in to lunch while peregrine falcons soared above us. A nearly neutral pH, warm soil and rich site indicator plants near the top of the slope were reminiscent of what we had seen below.

At step number 2,063 we sat down and put our heads together to try to tell the story of this landscape. We figured out that the open talus slope acted as a heat conductor to provide this high elevation warmth generally reserved for lowlands. The talus slope also acted as a sieve to filter cold air to the base of the slope. Matt and Alicia revealed that the site was a Cold Air Talus Community - one of only four in Vermont. I was surprised at the relatively short distance recorded on my pedometer this beautiful October day. We felt we had covered quite a bit of ground and were able to get a perspective on the greater talus landscape, while still having time to stop and smell the scat. We do often become engrossed in the landscape, covering only a few steps in hours, but sometimes these small steps with our feet lead to large steps in elucidating the story of a place. 🐾

Field Notes and Ecolog



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The Field Naturalist (FN) and Ecological Planning (EP) Programs provide graduate-level science training for environmental professionals. EPs and FNs learn a “pieces, patterns, and processes” approach to landscape analysis, acquire powerful environmental problem-solving skills, and hone their abilities to communicate effectively with a broad spectrum of audiences.

Field Notes and Ecolog, an annual publication, encourages the exchange of news and ideas among past and present FNs, EPs, and friends, while presenting the programs to audiences beyond the UVM campus. We welcome all comments and submissions.

Field Notes and Ecolog Editorial Staff
Field Naturalist Program
Department of Botany
University of Vermont
Burlington, VT 05405

Masters Project Call for Proposals

Do you need technical assistance with a high priority field research project? Once again we seek to match Field Naturalists and Ecological Planners from the class of 2008 with Master's projects sponsored by environmental organizations on the cutting edge of conservation science.

We are looking to link FNs and EPs with projects that challenge them to use their intensive training in integrated field science to its fullest. The relationship between sponsor and student is far more than that of intern or consultant. We expect that the design, implementation, analysis, and problem-solving phases of the projects will result in a high level of creativity and professional output on the part of the student. Students work closely with their committees and sponsors throughout the process to ensure that the product directly addresses the sponsor's needs.

In return for the services provided, we ask sponsors to contribute \$5,000 to our Sponsored Master's Research Project Fund. This contribution is used in its entirety to help defray tuition expenses through a research assistantship.

We plan to match students with projects by January 2007 so that students can work with sponsors during the spring (2007) semester to plan for the summer field season. Data analysis and report writing will continue into the fall semester, with products delivered to sponsors between December 2007 and May 2008. If you are interested in having an FN or EP work with your organization, please contact Jeffrey or Deane.

Thanks!

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