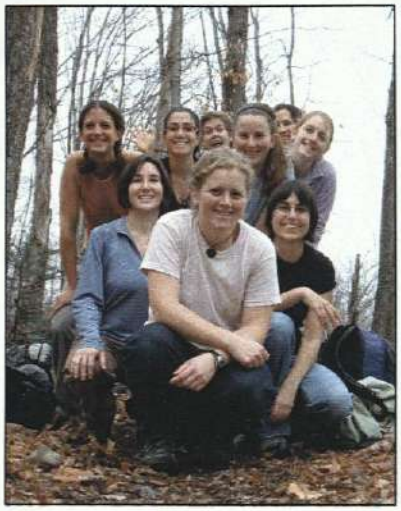
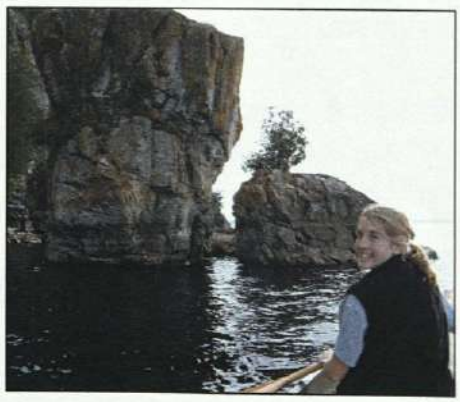
Field Notes & Ecolog

A Publication of
The Field Naturalist & Ecological Planning Programs
at the University of Vermont

Volume 20
August 2009

Table of Contents





Field Notes and Ecolog is an annual publication that encourages the exchange of news and ideas among past and present students of the Field Naturalist (FN), and Ecological Planning (EP) programs -- and friends -- while presenting the programs to audiences beyond the University of Vermont campus.

Editors' Note:

As Field Naturalists and Ecological Planners, we tackle the difficult challenge of describing a landscape's pieces, patterns and processes while situating these discoveries in time. Often, change seems to be the only constant. Things appear to be changing more rapidly these days; for example, we're faced with the complex question of how to make proper conservation decisions in the face of rapid global climate change. With these challenges in mind, we decided to pick "Change" as the theme of this year's newsletter. We hope you'll enjoy these stories of unexpected discoveries, new educational approaches, and creative ways to explore landscapes.

Thanks for reading!

The Z10 Newsletter Editors:
Nathaly Agosto Filión
Autumn Foushée
Caitlin McDonough
Rosemary Mosco

Cover Photo: Autumn Foushée
Photos:
The Y9 team
The Z10 team

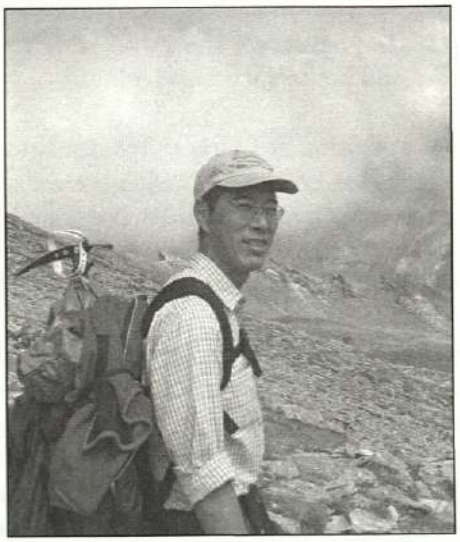
Artwork:
Bernd Heinrich
Rosemary Mosco

Comments? Questions? Feedback? Want to submit something for next year's newsletter? We'd love to hear from you! You can contact us at:

Field Notes and Ecolog
Editorial Staff
c/o Field Naturalist Program
Department of Plant Biology
University of Vermont
Burlington, VT 05405
lreade@uvm.edu

An Ocean of Change

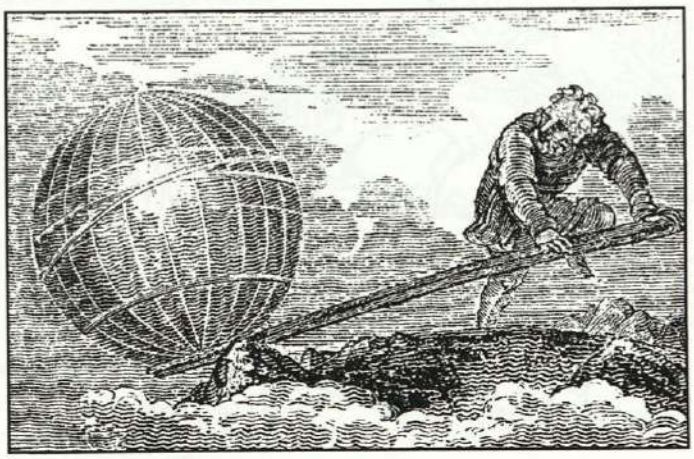
Deane Wang



Feel like you are using a tea cup to bail out the rising waters of climate change? James Lovelock, the brilliant originator of the Gaia Hypothesis, doesn't worry about the planet, just the people on it. Gaia will persist despite short-term setbacks caused by a species out of control. Change will dominate the human experience for the foreseeable future ... and many suspect that it will be a rough ride for humanity; for many it already is.

Responding to, preparing for, surviving—this rough ride should be the task of every educational institution on the planet. With this in mind, the curriculum of the Ecological Planning (EP) and the Field Naturalist (FN) Programs is also in flux. Moving to a June to October 16-month program, and changing the curriculum after a rigorous analysis of what is critical to maintain as the core of the curriculum, the FNEP experience should be more compact, harder hitting, and a better preparation for "saving the world." In developing the new curricular plan, we also need to maintain its flexibility for future evolution around the core instructional goals of cohort-learning, integrated field science, problem-solving, written and oral communication, and project-based service-learning.

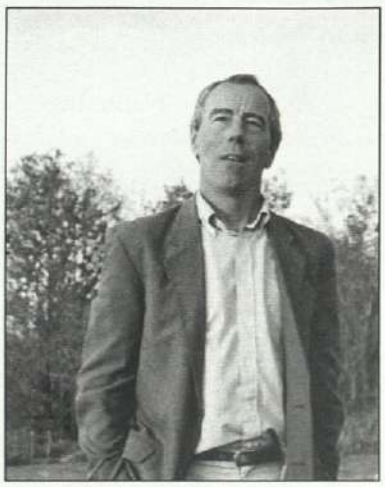
The alumni of these two programs are hard at work leveraging their experience against the growing challenges of a changing world. Each new class of students adds their weight to the effort, with their knowledge and tools forming the fulcrum and the foundation. We hope you'll join us.



Deane Wang is the director of the Ecological Planning program and a professor in the Rubenstein School of Environment and Natural Resources.

The Time Has Come

Jeffrey Hughes



"The time has come," the walrus said, "to talk of many things... of new ideas and latent fears, and how we'll finance things."

We're guessing that Deane's encapsulation (p. 3) of our idea to change the academic calendar for FNs and EPs will generate some angst among alums. We know the feeling all too well. Funding realities, however, have opened our minds to new approaches. As we press forward, we will share details of the revised curriculum with you; we hope you will share your thoughts, ideas, and concerns.

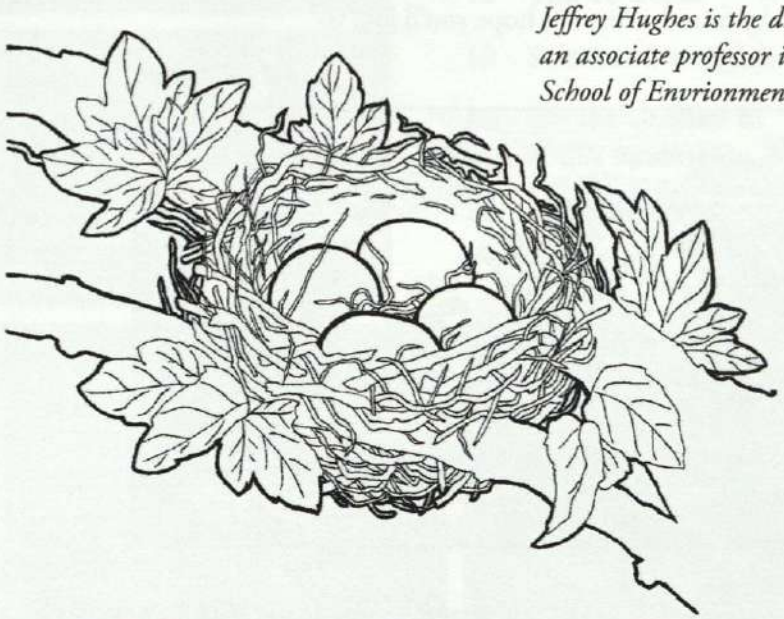
Many of you who joined us at the 25th Field Naturalist-Ecological Planning reunion last May were part of a conversation about the program's funding situation. The most frequently asked question revolved around why we have not solicited funds from alums. As you know, panning for dollars is a given for every other educational institution on earth. That fundraising discussion was eye-opening for me because I realized that my good intentions of "doing it alone" were antithetical to the program's spirit of community and sharing of resources. And so now, a wiser (chastened) Jeffrey is making the ask that he should have been making these past twenty years: please do your part to keep the program alive and well. If we fail to thrive, there is no chance that another Field Naturalist-Ecological program will ever rise from the ashes.

It might seem that establishing an active alumni giving program is only about raising money but in our case, it's more than that. To borrow a favorite expression of Tom Siccama, Deane Wang and I are fast becoming "gray beards," and the day will come when we either perish or retire. What will happen to the program then? Will the university opt to keep this small but expensive program alive if it needs to foot the entire bill? That doesn't seem likely. We therefore need to start building an active support system for the program so that there are strong voices, backed by resources, when Jeff and Deane sail off into the sunset.

Over the years, a number of you have volunteered to help lead a fundraising crusade – are you still willing? Please let me know by the end of the month that "Yes! Of course I'm willing to help spearhead such an effort!" My email is jwhughes@uvm.edu; my tel. (802) 656-0708. Thank you.

Future FNs and EPs thank you too.

Jeffrey Hughes is the director of the Field Naturalist graduate program, and an associate professor in the Plant Biology Department and the Rubenstein School of Envrionment and Natural Resources.



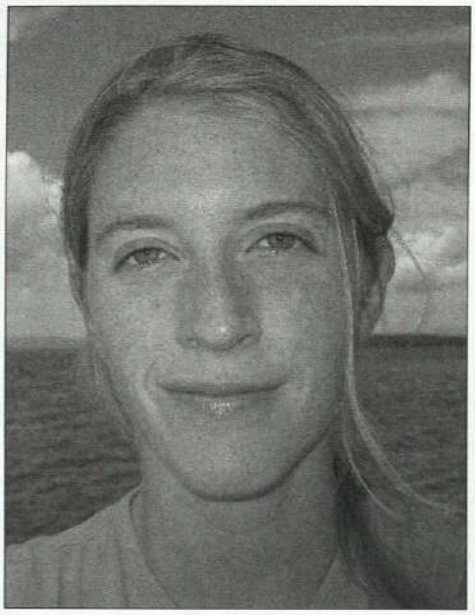
Welcome to the FN/EP Choose Your Own Adventure! Start Here: Your cohort of fellow eco-adventurers is getting ready for a day in the field. Do you take the lovely van, Giselle (go to page 18), or just walk (go to page 10)?

1. Member of the Z10 team
2. Male — **Teage O'Connor**
2. Female
    3. Has lived a significant amount of time in Canada
        4. Absolutely loves birds and writing nerdy comics — **Rosemary Mosco**
        4. Too busy surfing to write nerdy comics — **Jen Wright**
    3. Has not lived a significant amount of time in Canada
        5. Does not currently own a dog
            6. Will continue living in Vermont after she graduates — **Lydia Menendez**
            6. Will move back to the Midwest after she graduates — **Emily Stone**
        5. Currently owns a dog
            7. Does not own a car — **Nathaly Agosto Filión**
            7. Owns a car
                8. Loves the alpine zone — **Caitlin McDonough**
                8. Loves water
                    9. Lives in a yurt — **Kim Hoffman**
                    9. Would like to live in a yurt — **Autumn Foushée**
1. Member of the Y9 team
10. Born in New England
    11. A male New Englader
        12. Ran wild with jaguars in Belize for a summer — **Ashley Bies**
        12. Bakes amazing bread — **Philip Halteman**
    11. A female New Englander
        13. Took her artistic abilities to the woods — **Allaire Diamond**
        13. Worked to protect a sandy watershed — **Mia Akaogi**
10. Born in Washington, New Jersey or Wisconsin
    14. Got married on a mountain — **David Jaffe**
    14. Not married ... yet!
        15. Spontaneously bursts into song — **Isaac Nadeau**
        15. Spontaneously bakes — **Quincy Campbell**

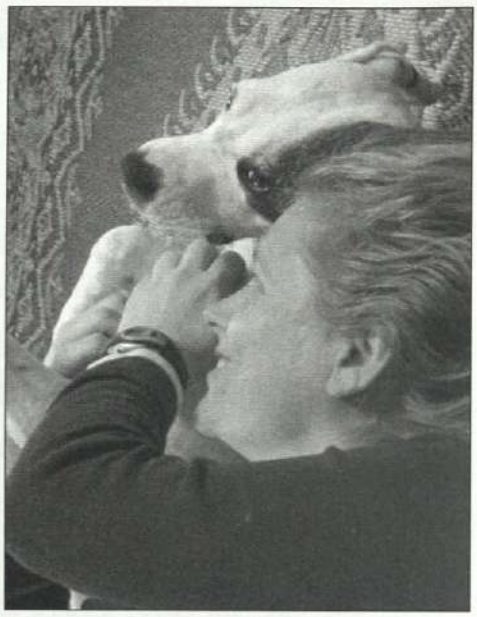
(from page 17) Fully clothed but with prickly-feeling hands, your party continues to hike. Ahead of you is a bog and a talus slope. Do you visit the bog (go to page 22) or explore the talus slope (go to page 14)?

Meet the class of 2010: Z10

Nathaly



Autumn



Kim

Nathaly Agosto Filión

Born in the Dominican Republic and raised in New York City, Nathaly is a Class of 2005 UVM graduate with a BS in Natural Resources (self-designed major in "Outdoor Education") and a BM in Vocal Music Performance (mezzo-soprano). At UVM, Nathaly was active in the leadership of Alianza Latina and several diversity and leadership initiatives around campus.

Upon graduation, she joined the New York City Teaching Fellows as a bilingual, 4th grade teacher where she was promptly chewed up and spit back out of the system, thankfully, before having lost her sense of self and love of children. Later, she joined the CityParks Education team and proceeded to do what she's always known and loved: taking hikes and playing nature games with children of all ages.

Nathaly is passionate about activism and civic engagement; she hopes to focus her career on issues of environmental justice and grassroots organizing for sustainable development. She currently volunteers with the Oxfam Action Corps, sings with the choir at the First Unitarian Universalist Society of Burlington and stays involved in climate change work around Burlington.

Autumn Foushée

The daughter of a fifth generation farmer, Autumn grew up no stranger to dirty, hard work and the concept of conserving resources. Kentucky's rolling hills, tall grass fields and winding streams nourished her love of the natural world. At an early age, she decided that wide open spaces and flowing streams were far more valuable to humans than the overabundance of cookie-cutter shopping complexes and parking lots—it was just a hunch, but one in which she felt confident.

Her hunch guided her throughout her education at the University of Kentucky, where she pursued dual degrees in natural resource conservation and journalism. She tailored her education to her passion—bringing science to the public. After a stint with AmeriCorps in Olympic National Park, she worked for an environmental non-profit as a federal grants specialist. When tides changed in Washington politics, she jumped into corporate America as a managing editor for the Popular Farming Series, Hobby Farms and Hobby Farm Home—national publications geared toward small farmers.

In the afterglow of an unraveling journey in Argentina, she decided it was time to get her hands dirty again. She returned to Kentucky and began work as the field technician for a fire ecology project in the southern Appalachians.

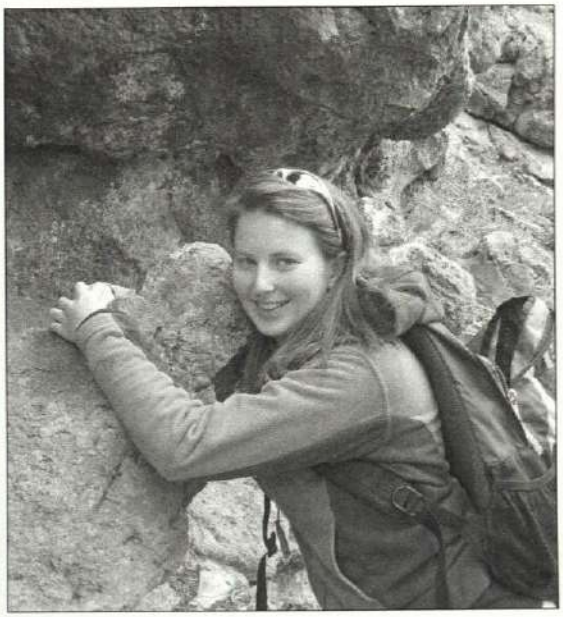
Grateful for the journey that has delivered her to the Green Mountains, Autumn hopes to expand her knowledge and skills in communication, sustainability, and community watershed management and conservation. When she's not thinking about those things, she's on (or in!) the water, playing soccer, reaching the mountaintop, or snapping photos of her two dogs—her most beloved subjects.

Kim Hoffman

I grew up in rural Vermont, where I spent most of my free time playing outside or reading whatever

(from page 18) The amazing Porky not only fixes Giselle, but installs rocket boosters! You arrive in the field in record time. Before you is a Rich Northern Hardwood Forest community on a hill with a stream. Do you climb the hill (go to page 11), or go to the stream (go to 23)?

The Z-10s



Caitlin

book I could get my hands on. As I played in and explored the forests and streams around my house I 'discovered' that all of the things that I saw—pine trees, worms, frogs, blackflies—were connected in some way. This discovery, which I thought that no one else understood, both amazed and fascinated me. As I got older I realized that mine wasn't a unique discovery, but was still fascinated by ecology.

I left Vermont to go to college where, after a brief stint as a music major, I spent two summers and several semesters researching river morphology. I also managed to travel a bit during college, which was great. After college I spent a year teaching education programs at a small nature center. It was there that I decided to become a teacher. The noble side of me wanted to share my passion for science and the environment with the next generation of potential scientists, policy- and decision-makers; the practical side of me longed for summer vacations! Since then I've been teaching high school science, mainly Biology, throughout New England. I returned home to Vermont three years ago and set up a yurt last summer. I live in the yurt with my dog and absolutely love it! I spend most of my free time outside with her, playing fetch and tug-of-war, or hiking or whatever else seems like it will be fun on any given day.

Caitlin McDonough

"Just so you know..." Calvin tells his dad in my favorite Calvin & Hobbes strip, "I am the Downhill Tumble and Roll Champ, King of the Toad Finders, Captain of the High Altitude Tree Branch Vista Club, second place finisher in the 'Round the Yard Backward Dash, and Generalissimo of the Mud and Mayhem Society!"

Calvin and I have similar resumes. In college, I led freshmen orientation trips and played frisbee while studying environmental science and public policy. I loved Harvard, but I found it similar to New Hampshire's alpine zone: a tough place to grow. I spent a semester in Australia, studying the courtship of bowerbirds. I spent my summers working in the Appalachian Mountain Club's hut system: hiking fresh vegetables up Mt. Lafayette, giving nature walks, baking bread, raking compost, and creating whole programs on lichen.

After graduation, I interned at the Sierra Club as an environmental policy researcher, took a NOLS course in the Tetons, and moved home for two weeks to babysit my youngest brother. I missed being outside, so I jumped at the chance to climb trees for the Nature Conservancy in the Pacific Northwest. I joined a research crew comparing the biodiversity of canopy arthropods in old growth and re-growth sitka spruce forests. When the research was over I wondered, How can I make this my day job? I realized I needed some more book learnin' (and field learnin'). So, here I am. I'm glad to be back in New England am, of course, also psyched to be an EP student and a UVM catamount!

Lydia Menendez

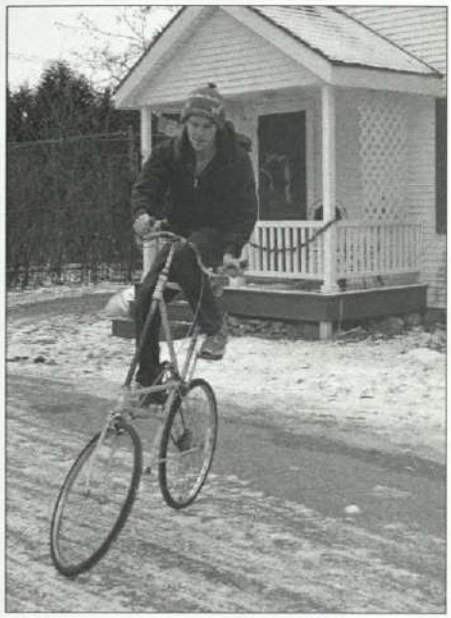
My life began in Norwalk, Connecticut, as a first born daughter of Lydia and Serafin Menendez. I

(from page 16) The day is winding down, and eventually your group returns to Giselle. You head home and eat a sumptuous meal consisting of gorp, a delicious Vermont beer and a tasty hunk of Cabot cheese. THE END

Meet the class of 2010: Z10

Lydia

Rosemary



Teage

grew up next to a tidal salt marsh, and there I first witnessed the beauty of the planet that surrounded me. My family abruptly relocated to Florida in 1992, and there I first witnessed the horrible destruction of our planet. Returning to Connecticut for college, I majored in English at Wesleyan University.

After graduating, I began an AmeriCorps service year with the Maryland Conservation Corps as an Environmental Educator and conservationist. The direct field work we performed in so many different ecosystems across the Lower Eastern Shore fed my appetite for ecological activism! I spent the following 2 years migrating around the country, working in seasonal environmental education positions and exploring the wonders of our continent.

Knowing since age six that I wanted to spend my life in Vermont, I made the move in 2004 and searched for a home and a livable wage. During the last 3 years I have worked with the Central Vermont Solid Waste Management District coordinating a Business Organics Program and helping restaurants compost. I have planted a garden and learned how to maintain a solar photovoltaic system at my home in Middlesex, VT. I can't wait to return to the field, learn more about the vulnerabilities and resiliencies of our planet's systems, and apply the skills needed to make our collective future one to look forward to.

Rosemary Mosco

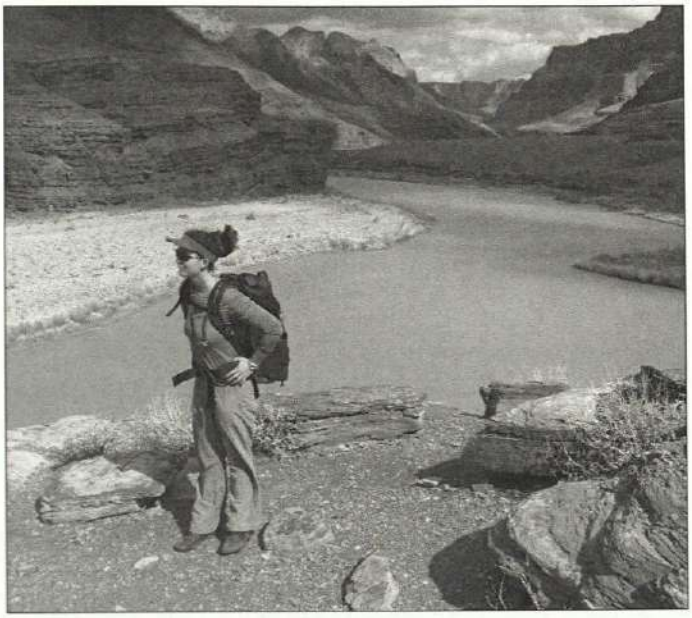
Rosemary grew up in several towns in Canada and the U.S., but Ottawa, Ontario will always be home. From an early age she was attracted to both scientific and artistic hobbies. The nation's capital, surrounded by a broad greenbelt, offered a balance of both.

Rosemary's studies in Anthropology at McGill in Montreal were a further attempt to examine both science and art in a social context. Over the next few years she continued to hunt for this balance, working in the nonprofit sector in a part-time capacity while filling the rest of the time with writing and art. Her employment included a Toronto-based migratory bird charity and a large and diverse public radio station. She also made nature-based comics for print and web publications and traveled to comics conventions. Rosemary is a born nerd, and her many attempts to connect art and science have included a videogame about albatrosses, an environmental podcast, a comic book about the Burgess Shale, and a web-based project in which she drew hundreds of birds for people who made their homes more environmentally friendly. She discovered the Field Naturalist Program in a typically geeky way, by googling the words "naturalist" and "graduate". Rosemary is thrilled to find herself in a program that will give her the knowledge base and skills to successfully combine her interests, and to discuss environmental issues in new and interesting ways.

Teage O'Connor

Teage was born in a magical memory of Alaska, was ousted to southern California, stole away to Chicago, resettled in western Mass, was uprooted to NYC, recruited back to Mass, called to Nevada, taken with southern California, then flapped his wings once, then twice before gliding his weary bones over to Burlington. Big sigh, and he's finally feeling a bit more settled. In Bur-

(from pages 11 & 10) You have eaten poisonous blue cohosh. Sickly, you depart the field and head to bed, where you have nightmares about tree succession. THE END.



Emily

Z10s at Hubbard Brook

lington, he started the Bike Barn, a free community bike shop; cooks and serves for Food Not Bombs; and helps with Burlington's InfoShop. He likes sharing (Neil Young's mantra, "We lose our love when we say the word mine"), idealism (but never absolutism), and hugs (not quite as much as Emily, though). Teage think hugs are more the revolution itself than part of the revolution. In his other free time he runs ultramarathons and explores. He likes animals more than plants, and floating in bodies of water more than either. He prefers story over fact and potlucks over nutrition labels.

In college, Teage took the intro classes for human development, computer science, photography, calculus, and environmental studies. He stuck with environmental studies because it left him free to pursue his diverse interests—he eventually wrote his thesis on environmental education. At times, however, his life seems to be filled with everything but a thesis. He's full of ignorant bliss and pessimistic realism and he's intent on learning as much as he can about a selective reality in the hopes of sharing his excitement over everything with everyone. The FN program is a beautiful forum for Teage to exchange the love of knowledge with others equally passionate about everything.

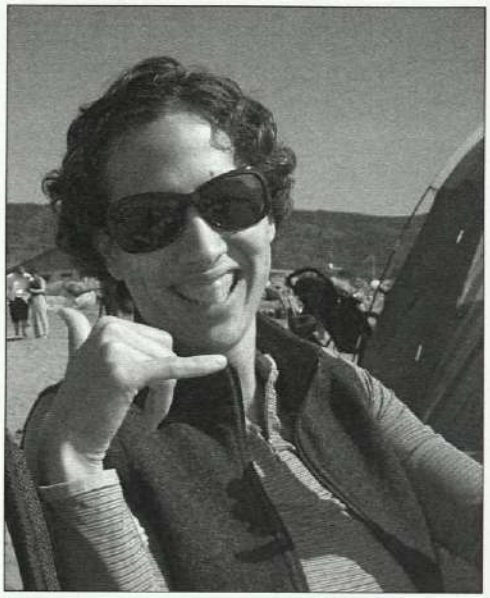
Emily Stone

One of the hardest questions you can ask Emily (besides anything involving chemistry) is "So, where are you from?" Depending on her most recent travels, the answer varies wildly. A simple answer is rural Iowa, specifically the limestone bluffs, silty rivers and contoured cornfields of the Driftless Area. But even though she spent her entire childhood there—mostly making mud pies—it's not so simple any more. College drew her to the shores of Lake Superior and the satisfyingly smooth swish of cross country ski trails in northern Wisconsin. There she studied outdoor education, natural history and geology. Deepening her understanding of the natural world also strengthened her love for it. Some might label her a tree hugger. She won't deny it (there are pictures to prove it), but Emily always adds "I hug people too!" Desiring to share her newfound passion, Emily became a seasonal naturalist and environmental educator, and took off on a whirlwind tour of the country. A Minnesota Audubon Center was her first, fourth and seventh stop, educating college students about the staples on old fence posts, wolves and plants. Teaching is a great way to learn, and Emily has the uncanny ability to be more excited about a subject the ninety-seventh time she teaches it than her first. By that time she's figured out a greater context for the information and can make fascinating connections. How does the piezoelectricity of quartz relate to a water mold killing oaks in California? You'll have to ask her.

As Emily continued on her naturalist adventure, working in Canyonlands National Park, Acadia National Park, the Boundary Waters Canoe Area Wilderness, and even the redwoods of Northern California, she realized that "home" is a place where she can name most of the plants, cavort with chickadees, go canoeing, and, by the light of the stars, read a bit of Mary Oliver poetry. "Tell me, what is it you plan to do with your one wild and precious life?"

(from page 11) You become so entranced watching the spores disperse that you don't realize there is a rageful black bear in a tree above you. Do you try to feed the bear (go to page 16) or spring away like a fleet-footed squirrel (go to page 21)?

Z10 continued



Jennifer Wright

I graduated from Laval University, Quebec City, in forest management (1999) and have been working in the natural resource management field for more than nine years. I began my professional career working as a forester for a small private consulting firm outside Montreal, Quebec. I implemented the federally funded recovery program for non-industrial forest landowners after the 1998 ice storm. After traveling in Southeast Asia, I decided to take advantage of my dual U.S.-Canadian citizenship (born in southern California) and relocate to the Western part of the U.S. I completed almost seven fulfilling and challenging years working for the Oregon Department of Forestry in the coastal town of Coos Bay. I was fortunate to experience the multiple facets of natural resource management in the Pacific Northwest. My exposure mainly included working with southern Oregon coast non-industrial forest landowners assisting them in obtaining their forest management goals. However, I also coordinated the development of the Elliott State Forest multiple species habitat conservation plan, worked on state project forest fires and most recently, coordinated the Forest Legacy program. These experiences have taught me the strong inter-relation between social, ecological and economic impacts of natural resource policies. Maintaining healthy productive forest land in North America is a challenging task which will require natural resource managers to inform and educate political leaders. I have always enjoyed working with non-industrial forest landowners and I hope to contribute to the development of new tools and/or improve policies to assist landowners in maintaining forest productivity.

Reflection on the FN-EP 25th Reunion

Allaire Diamond

May 31-June 1, 2008

One drizzly morning last May, Porky Reade, Kristen Sharpless (W6) and I gazed around the empty, grubby picnic pavilion at Burlington's Oakledge Park. Reunions are all about change, and since one would shortly commence amid these disheveled picnic tables, the first thing that needed alteration was our shelter. We commandeered a broom, tried to hang cheery posters on damp brick, and set out nametags for the generation of naturalists who would soon populate this space.

The natural evolution of the lives around us is usually so incremental that it becomes background noise, but at a reunion, those steps jolt into one's consciousness, punctuating equilibrium. New spouses, little FNEPlings, achievements and stories of travel, work, and life hit all at once. I didn't have to worry about such potentially overwhelming stimuli, not yet having anyone to reunite with, but I witnessed it later that morning as colleagues and friends from past classes re-encountered each other.

This program creates a niche for a special breed of passionate, practical, innovative conservationist.

The FNEP reunion was also about first-time encounters. For me, it was a uniting of kindred spirits, a whole generation of practitioners who had all felt the pull to this unique program in the upper left corner of Vermont. That weekend, we shared food, conversation, bocce ball, FNEP bingo, music, field walks, and discussions about the future of the program. Though I can't yet look back on my years here, I loved hearing the collective memories of alumni. For me, those conversations brilliantly highlighted the fact that this program creates a niche for a special breed of passionate, practical, innovative conservationist. As a network we have a lot of power, both when we come together on rare occasions like that rainy weekend last spring, and when we're studded across the country and the world, connected through phones, emails, mutual colleagues, and commitments to living thoughtful, balanced lives. I envision more possibilities for networks of FNs and EPs, seeded by our common experiences at UVM over the past quarter century. Though we've long since left that gum-adorned shelter to return to our separate but interconnected lives, the reunion at Oakledge Park was a powerful, tangible touchstone in those networks.

(from pages 4 & 18) Exhausted and sweaty, you arrive in the field, and immediately take a nap on some bryophytes. The day's half over now! What do you want to do? You can explore a bog (go to page 22) or eat some tasty-looking blue berries (go to page 8).

Bristol Cliffs Redux

Quincy Campbell

In truth, I recall being quite miserable on the day the Y9 class visited Bristol Cliffs. It was far colder than I had anticipated on the toe slope. (If you have ever been on the walk to Bristol Cliffs, you can understand the irony of my situation, though I wasn't enjoying it at the time.) To add injury to insult, I tripped on the hike down, cutting a gash in my knee. Cold, in pain, and sort of hungry, I felt less than enthusiastic about learning that day.

Despite those feelings and accidents, I knew the moment I climbed up to that Cold Air Talus Woodland and spotted the ericaceous ground cover that I wanted to return the next year, holding onto the secret of this place, to share it with the new FNEP group (though hopefully better prepared). Like watching any good suspenseful film a second time, going back to Bristol Cliffs with the Z10s provided an opportunity to notice all the things I missed the first time around while I was focused on finding the clues and solving whodunnit.

Alicia Daniel and I knew the answers, but by the end of the afternoon the first-year Z10 class would be the teachers.

During my first visit, I was so occupied with looking at, and thinking about, the ground that I missed that inspired view. During this second visit, the unobstructed vista from the naked, geometric talus spreads out into the Champlain Valley in a jumble of October foliage, eskers, moraines, pasture and grazing animals. The boulders were warm and reassuring in contrast to the crisp and dark cover of spruce, hemlock, and striped maple. From my sunny seat, I could still hear or see most of the Z10 investigators dispersed out along the thin foot of the talus slope, or above me at the top of the slide, making guesses about why, what, and how. Alicia Daniel and I knew the answers, but by the end of the afternoon the first-year Z10 class would be the teachers.

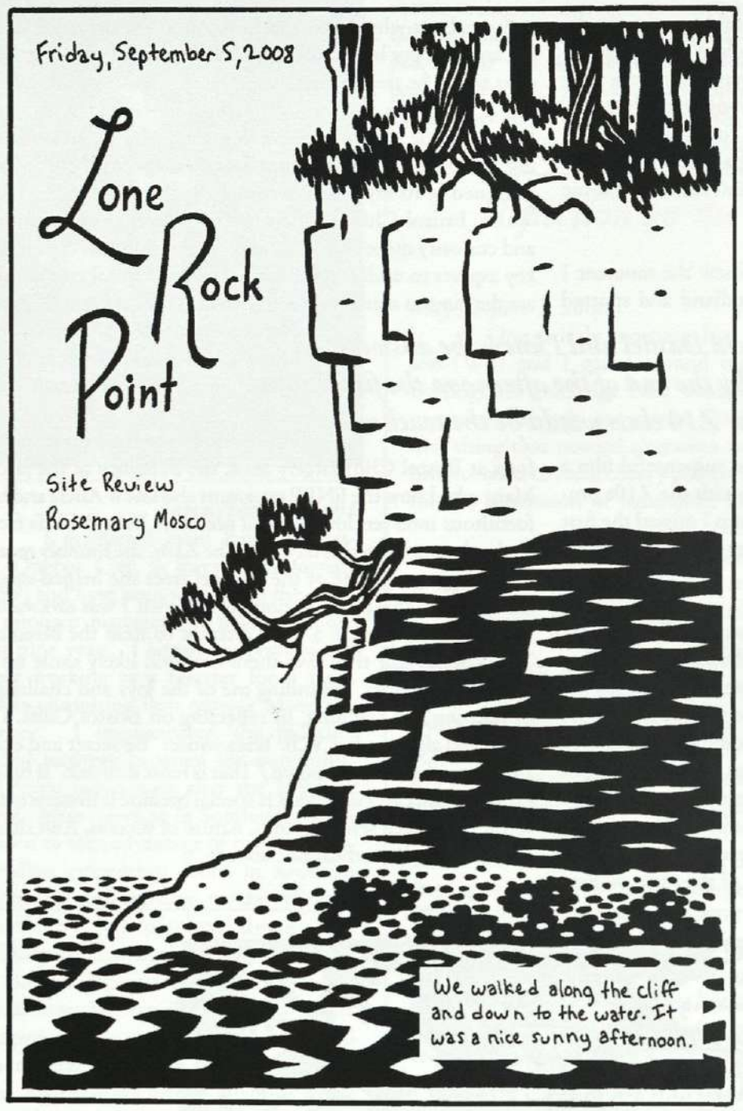
Being a guide is nothing new to most of the FNEPs -- sharing interpretations of the natural world comes easily to anyone intrigued by its mystery. But for my experience of Friday Field Walks, Bristol Cliffs has continued to capture my attention and curiosity more than any other destination. Of course, the key aspects to understanding this unique natural community are the same as many traditional Field Walks. A good Walk is a formula of complex, layered natural history, which is often compounded by a background of human use.

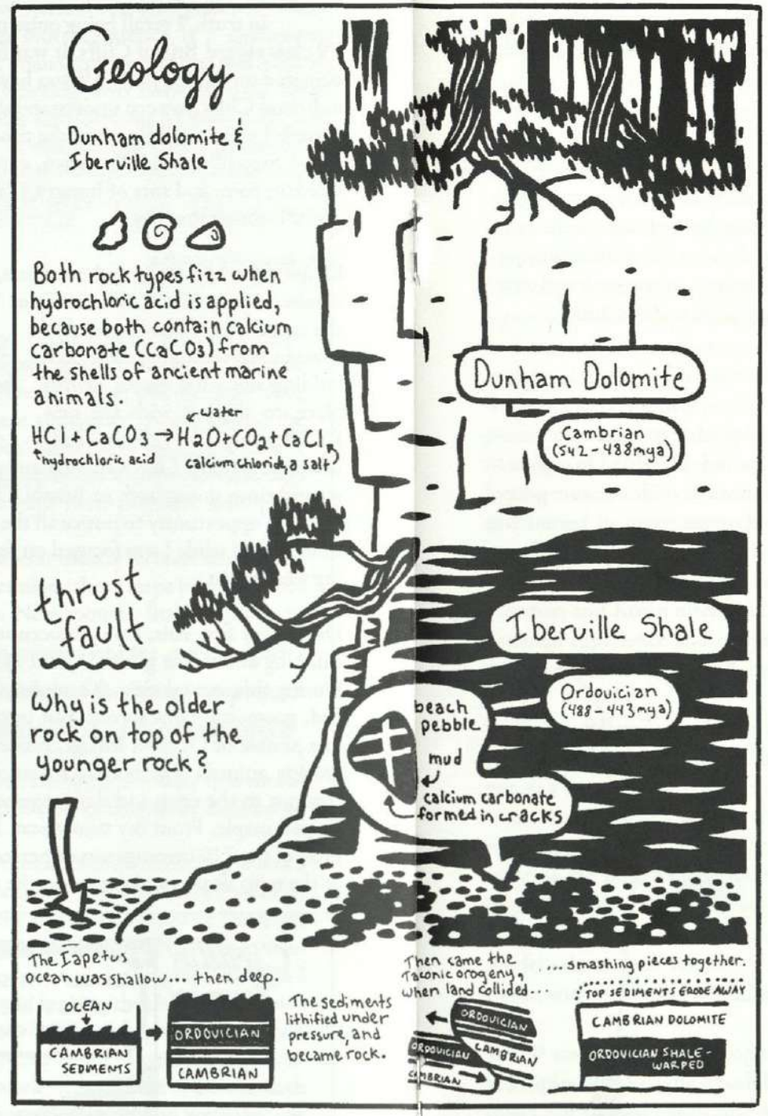
However, recent conservation efforts at Bristol Cliffs largely mask the influence of the latter. Many who know the FNEP programs also know Alicia and her fortuitous intervention that still preserves Bristol Cliffs from timber harvest. On this day, with the Z10s, she humbly recalls that story next to one of the sentinel trees she helped save. I remember at this point during my first visit I was awkwardly bandaging my knee in a futile attempt to stem the bleeding. The crescent scar that lives there now will likely smile up at me for many years, reminding me of the joys and challenges in learning and teaching. In reflecting on Bristol Cliffs, I'm reminded also of what W.B. Yeats wrote: "Be secret and exult / Because of all things known / That is most difficult." If for no other reason, this Field Walk is special because it illustrates the subtle, and often serendipitous, nature of success. And that is something to be enthusiastic about.

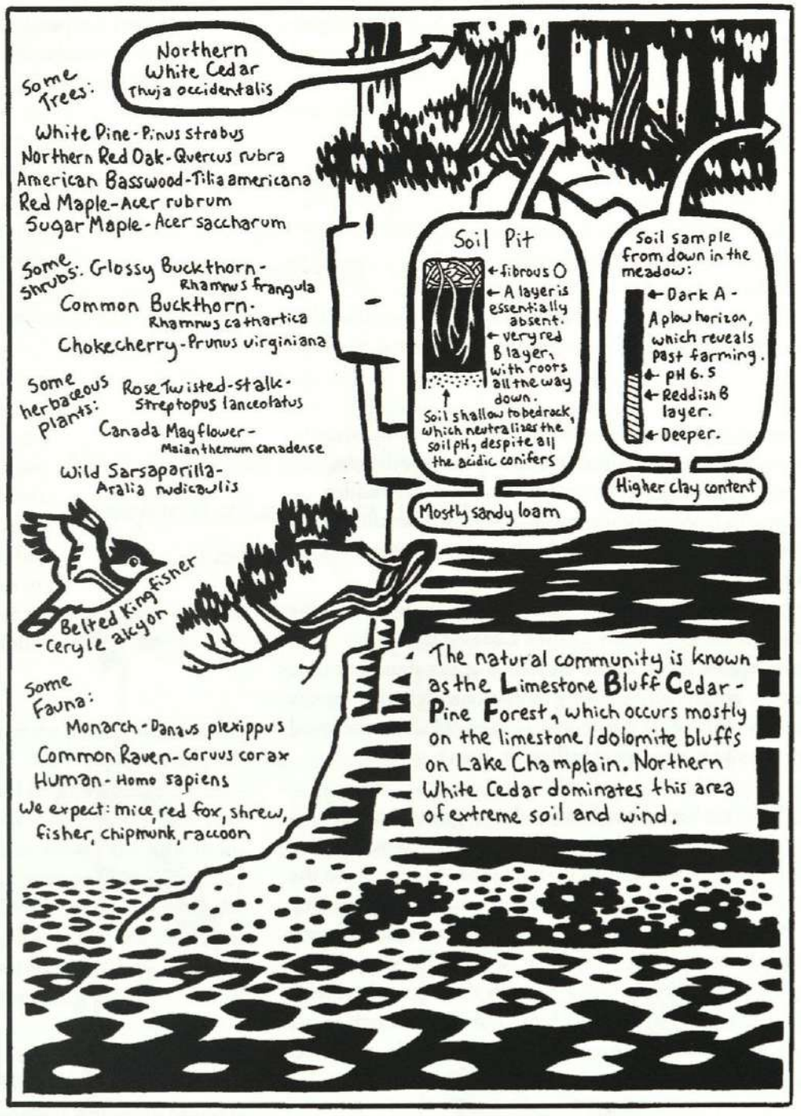
Cicadas

Rosemary Mosco

(from page 6) You climb up the hill. Before you are some delicious-looking blue berries and some big puffballs. Do you eat the berries (go to page 8) or poke the puffballs (go to page 9)?







Wall Rue Fern

At the annual fern celebration,
this fern was an aberration.
It looked more like a rue,
so the whole ferny crew
left it out of the hybridization.

White Cedar

We saw you in a fen and now you're on a cliff?
Not a pine or hemlock, this conifer's leaves are way diff(erent).
Small and stunted trunks may hide
super-old trees with small rings inside,
for this *Thuja* out-competes at extremes of harsh condit(ions).

(from page 16) You start to identify the ferns. But wait, is that one twice-divided or thrice-divided? What's the deal with those sori? Better get out your hand lens. (go to page 19)

Maidenhair Spleenwort

The old Europeans believed
that the sori shape meant you could ease
spleen-related concerns
with this small pinnate fern,
which is why they all died of disease.

Hepatica spp.

There once was a plant near the ground
with leaves that could be sharp or round.
Classed as herbaceous,
and Ranunculaceous,
its love for limestone was profound.

(from page 17) You enjoy a pleasant nature hike au naturel, but spend the next week itching mosquito bites in places you've only learned to name from biology books. THE END.

Look at your fish

Teage O'Connor

As naturalist Louis Agassiz asked one of his prospective students to look intently at a fish, so too were we asked earlier in the year to look intimately at a 'fish' of our choosing. My prompt: ". . . Look at it; we call it a *Juglans nigra*; by and by I will ask what you have seen."

Well, it's tall, and it's big, and it billows out at the top, stands a bit wobbly in the wind, it's got some tinge of lime nestled in its leaves, and one of the trunks was sawed off a while back. It is at this point that I'm no longer looking at a walnut tree, but rather at this walnut.

It becomes a thread weaving together my experiences in Burlington.

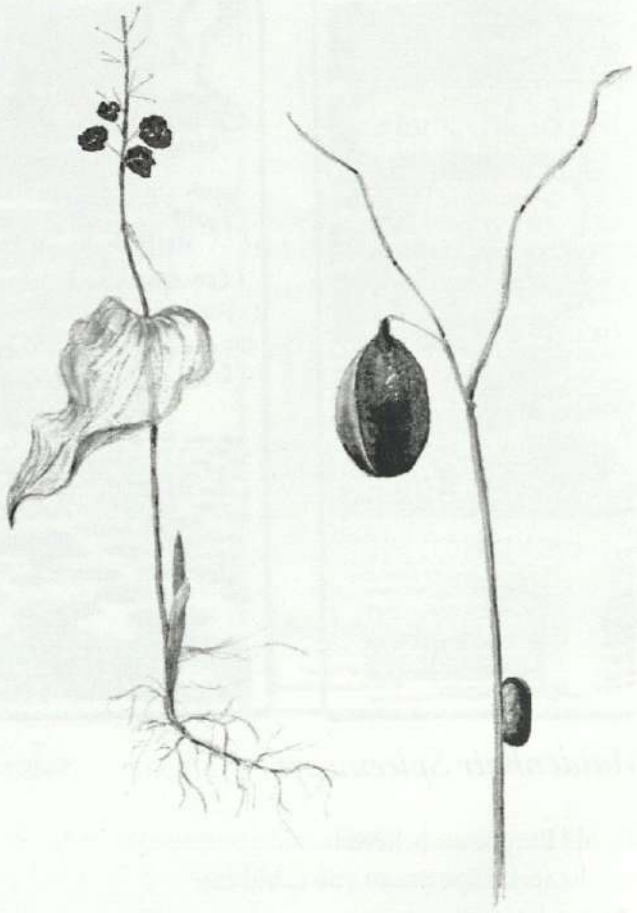
When thinking of the walnut it becomes a thread weaving together my experiences in Burlington and the possibilities that came together to create that very moment of the sudden acquiescence to understanding, when a tree becomes this tree. It starts with the wind. Or maybe back further, so it starts with the fall ...

Taking out the compost I walk the breeze lines behind the Bike Barn towards the black walnut. Looking up I see an opossum staring back down at me. We look intently at one another, his body heaving slightly. Losing interest, he begins licking the fence, maybe for bugs? A minute later a bug lands on the hood of my sweatshirt, then quickly flies off. Bugs!

I can feel leaves beneath my feet and, crumpling them ever so gently with my toes, I watch the opossum's head perk up attentively; he can hear that something is off. He can sense the airplane roaring overhead and ignore it - nothing threatening there - but the slightest, softest rumple of leaves tears chasms in his food-focus and he realizes himself as prey. Stepping between the leaves, I creep closer towards the fence where he is perched, and stand right under him - not close enough to pet with my hands, but close enough to see his toenails and to feel his hairs bristle out in the soft wind.

Later, I will wonder if I had stared so intently at the opossum because I knew that if I closed my eyes for long enough he would disappear. I knew that animals only promise you the moment, while plants their entire lives. Then I saw that I had missed much of the leaves dropping away from the black walnut. I remember now looking at the fuzz of the fruits and the deep angular furrows creeping diamonds down the bole, all wet from rain. But it will be almost a year before I can see this again. Had then the plant not made the same promise of the moment? Plants change, albeit slowly, but they do change and when I didn't stop to look, I missed it.

It is misleading to think only of black walnuts or opossums, or even truth in general. There are individuals, each with its own story and processes that have brought it into the present and connect it with its unique past. The walnut in my backyard may be a walnut, but unlike other walnuts, it is *this* walnut.



(from page 5) During your talus scramble, you inadvertently begin a rock slide and destroy a large patch of rare Green Mountain maidenhair fern. Go directly to environmental jail; do not pass go, do not collect $200. THE END

Natural History Education

Caitlin McDonough

Walter Poleman and Matt Kolan have answered the call for a natural history renaissance and an educational system that will foster ecological imagination. Writing in the new, online, and free Journal of Natural History Education, this pair of FN graduates (Poleman was a member of the K team, and Kolan the T team) embrace the challenge of re-imagining natural history education. No longer will natural history be defined as a former branch of knowledge. Poleman and Kolan's "Revitatalizing Natural History Education by Design" makes the case that faced with climate change, a growing wealth gap, rising rates of clinical depression, war and violence, we need a relevant and contemporary approach to natural history education to ground us and re-connect us with the earth. But where can we find a relevant and contemporary approach to a discipline mired in images of nerds with binoculars, collecting museum skins of exotic animals, and buried in inane research of some long-lost moss in a remote valley? This is where the By Design part comes in: Poleman and Kolan offer nine core principles gleaned from personal experience and ethnographic research of other innovative and effective programs.

No longer will natural history be defined as a former branch of knowledge.

I talked to Poleman and Kolan about the pieces, patterns and processes of writing "Revitalizing." Their piece initially began as a survey of successful natural history education practices, examples of programs already in existence. But they noticed that papers on best practices answer the how to instead of the how and offer very narrow guidance. So they began to explore the principles behind vibrant programs, the design elements that supported and breathed life into these model educational systems. Unsurprisingly, they began at home, with the Field Naturalist Program.

FNEP students should recognize Poleman and Kolan's core principles in their daily schedule. We "Start in Place" in Poleman's Place-based Landscape Assessment course on Monday afternoons. We "Reintegrate the Whole" every Friday when we read the landscape from clues in soils, hydrology, vegetation, geology and wildlife. But "Revitalizing" is not just a distillation of the FNEP curriculum. Poleman is interested in the ripples that well-designed natural history education can create, from EP graduates bringing the PLACE program to Costa Rica, to elementary schools encouraging outdoor classrooms. The point of "Revitalizing" is not to say "Here is the Great Field Naturalist Program of UVM, Go Forth and Multiply." Instead it is a tool, a stepladder to new perspective -- Poleman and Kolan hope that educators will stand on its shoulders.

Both Poleman and Kolan are environmental educators and faculty members of the FNEP program. Their partnership on this years-long collaborative project sounds like an exercise in exhaustingly expansive thinking and big idea brainstorming. When asked to reflect on their own professional use of the principles, they were thoughtful but eager to answer. Poleman loves the idea of "Designing for Emergence" and seems to practice it almost unconsciously. In the writing process, he found a challenge to live the principles; though "Lead with Values" was the hardest to write (and he fears the easiest to misinterpret) he ranks it as the most important. Kolan also hopes that the practice of natural history can inspire feelings of care for the land, a critical step to a sustainable future. Kolan wonders how we can regenerate a community paradigm that is deeply connected. He cites the loss of rites of passage from our society as an example of the missing "Make Regenerative" principle. Referring to our beloved FNEP program, he surprised me by saying, "I'm not tied to the notion that the program go on forever, but rather that the spirit of the program and the intention around connecting people to nature be carried forth and valued." And this, I think, is the wise core of the core principles.

(from page 23) You develop Giardia and perish, surrounded by snickering beavers. THE END.

The Y9 Team

Mia

Ashley

Mia Akaogi

Hidden from view, groundwater is often an undervalued resource. However, in rural areas groundwater can be the only source of clean drinking water. Furthermore, because the majority of groundwater resources are replenished by precipitation that percolates through the soil, pollution on the land surface can potentially contaminate drinking water. Consequently, groundwater protection has become an important environmental issue globally, as well as nationally.

My project focused on the Ossipee Watershed, a 379 square mile region in east-central New Hampshire, where virtually all the residents get their drinking water from either public or private wells. This project involved a partnership with the Green Mountain Conservation Group, a non-profit that works with residents from the six major watershed towns of Effingham, Freedom, Madison, Ossipee, Sandwich, and Tamworth. Since sources of pollution from the land surface are a concern, the first part of the project involved identifying these potential contamination sources.

Over the summer, with the help of many community members, I collected GPS coordinates of all the businesses and facilities that are known to handle hazardous substances. Using GIS software, these potential contamination sources were mapped along with the aquifer and the locations of public water supply wells in order to prioritize which of these sites would be most important to focus on for drinking water protection. A second part of the project included doing a vulnerability assessment to determine where in the Ossipee Watershed has the highest risk of groundwater contamination. This information will be used to initiate a groundwater quality monitoring program by the Green Mountain Conservation Group.

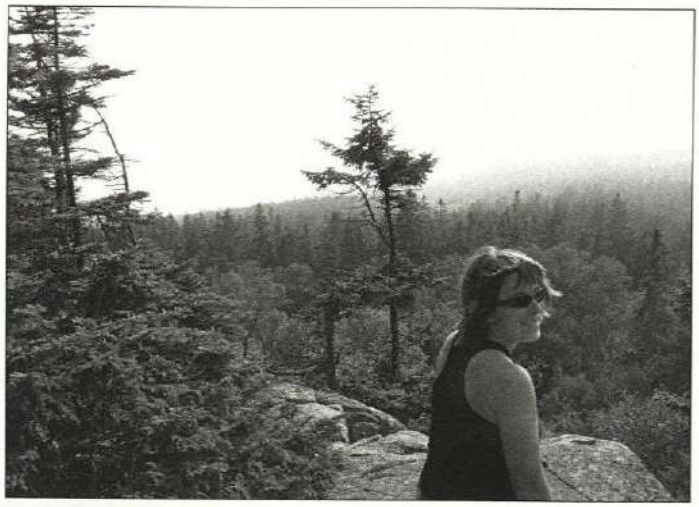
Ashley Bies

Ashley grew up free, homeschooled without electricity or running water in the forest of western Maine. But National Geographic and NPR stories of devastating biodiversity losses world wide compelled Ashley off to college, exchanging his treasured lifestyle for the mission of preparing to initiate conservation work by pursuing a Ph.D. Graduating from the teeming metropolis of Marlboro College's 300-student campus, Ashley returned to the reprieve of the field for 2 years while planning for graduate work. Unable to find a Ph.D. opportunity in applied conservation work, he came to the Ecological Planning M.S. program here at UVM to make contacts for the connectivity conservation work that had been his dream since the first semester at Marlboro.

After a year of futility, Ashley's first attempt to contact the Jaguar Conservation Program (JCP) following his acceptance to the EP program produced a meeting invitation that developed into a collaboration for his project. Ashley spent the summer developing Jaguar (*Panthera onca*) prey abundance monitoring techniques in Cockscomb Basin, Belize, playing host to 136 Bott Flies (*Dermatobia hominis*), and developing a relationship with the JCP. Ashley returned weary, but with a 100% complete dataset and a preliminary invitation to return for Ph.D. work on *P. onca* connectivity. He has also received a full fellowship to work with Dr. Reed Noss, his first hero in conservation biology, at the University of Central Florida beginning this fall. Ashley wishes for the chance to hike his way down to Florida, but hopes to return to Belize or gain some additional telemetry field experience this summer.

(from page 9) You appease the black bear with some of yummy looking berries (see page 8) and continue on your walk. Ahead of you is a patch of various ferns. You have a fern finder with you; do you try and identify them (go to page 12) or keep walking (go to page 7)?

Quincy



Allaire

Quincy Campbell

The economy and environment have recently undergone major shifts that will, in due course, vividly change our daily lives. This is a time for environmentalism to take another look at the working landscapes that keep life manageable and meaningful. Those landscapes–where human resources and natural resources intersect in stewardship, aesthetics, and conservation–are endangered, even in Vermont.

For me, the 5000 acres of forest and farm land belonging to Smokey House Center has illuminated solutions to both economic woes as well as the threat suburbanization and unsustainable management pose to that land. My role as a forestry consultant, helping to elucidate the best potential of that landscape, has also challenged and bent my beliefs of conservation in unexpected directions. The land use options I eventually outlined for Smokey House in light of their stewardship, job skill training, and education goals reflect the dynamic nature of land use. A native of the Pacific Northwest, I am an adamant supporter of wilderness, though I see now that working landscapes can equally, or better, provide ecosystem services, education, recreation, and conservation opportunities. In the near future, we will all be looking to organizations like Smokey House for the answers to managing a balanced, sustainable community.

Allaire Diamond

A black ash basketmaker or a mushroom dyer taking a walk in the woods will perceive features and elements of the forest that most of us simply miss. When looking for the perfect black ash tree or a reliable spot for a particular dye mushroom, their senses are even more finely tuned. For my master's project, I sought to describe the ideal gathering sites for black ash, three dye mushrooms, and other basketry and dye species from New England's forests, with the goal of translating the expert knowledge of skilled artisan-gatherers into information that non-experts can use.

I combined interviews with artisan-gatherers with ecological field data taken on visits to gathering sites. In the process of interviewing 14 master artisans, I got a new perspective on New England, visiting bubbling woodland springs in southwestern Massachusetts, acidic pine plantations in New Hampshire, swampy streamsides in western Maine, shale beaches on Lake Champlain, a garden of dye plants bordering a Maine salt marsh, and a lonely cemetery in East Calais, Vermont. Using preliminary data, I located and mapped additional sites for high-quality basket materials on lands owned by my sponsor, the Vermont Land Trust, and completed a model site assessment of artisan forest species for two landowners whose property has a Vermont Land Trust conservation easement.

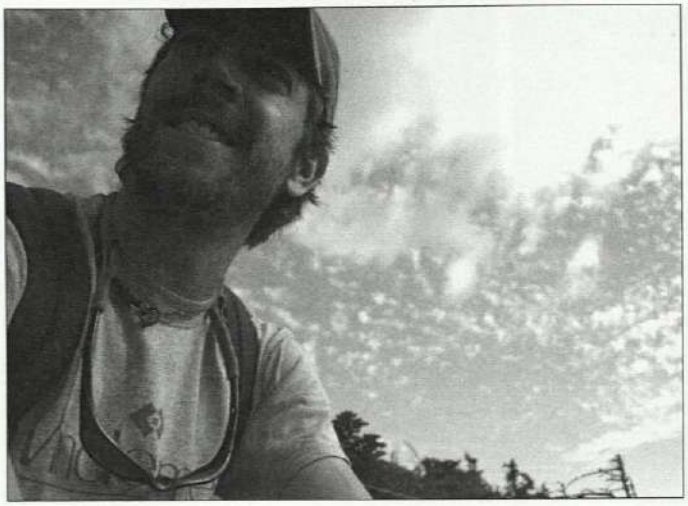
Artisan-gatherer knowledge is ecologically-detailed, place-based, and culturally important, and linking beautiful, unique craft objects with land conservation has exciting potential to engage a wide audience. I hope that one of my project outputs, *Art from the Forest: A Guide for Landowners*, to be published by the Vermont Land Trust later this year, will contribute to such a movement.

Philip Halteman

Over the past ten years, hundreds of Vermont farmers have enrolled thousands of acres of land in federally sponsored conservation programs. Under these ten- to fifteen-year contracts, the government pays farmers to stop farming streamside land

(from page 23) Your team takes a skinny dip, only to discover that your clothing has been ripped apart by a coyote and used as nesting material by an eastern bluebird. Do you mend your clothing with stinging nettle (go to 5) or continue on your walk, scantily clad (go to 13)?

The Y9 team



Philip

David

to help reduce the amount of sediment and nutrients entering Lake Champlain, and to provide wildlife habitat. Despite the hundreds of completed projects, very little effort has been spent trying to figure out whether these conserved buffers have actually done what they were intended to do. I undertook my Master's Project in an effort to find out if these "riparian buffers", as they're called, actually enhance water quality in nearby streams. Do they act as habitat for migratory songbirds? How can we make them more functional?

The good news is that these buffers are really good at addressing the first issue. If allowed to grow, tall grasses and wildflowers will trap most of the sediment and nutrients that would flow from pastures or cornfields into the stream, leading to big gains in water quality. However, providing high quality bird habitat is more difficult. Most species of trees grow very slowly in the stressful conditions found in retired pastures, delaying the development of habitat features birds need.

In addition to taking a first shot at answering the "what works?" question, I've also provided recommendations on how to both speed and monitor the recovery process, so that future opportunities to learn from our successes and failures will not be lost. My findings and recommendations will help the Partners for Fish and Wildlife Program and the Vermont Natural Resources Conservation Service to refine how they go about restoring riparian areas in Vermont.

David Jaffe

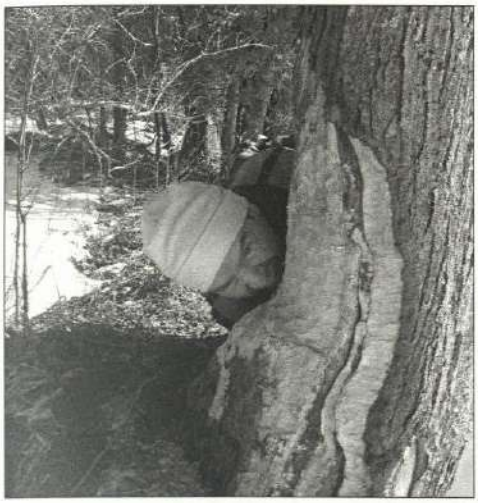
Many of the Lake Champlain watersheds are characterized as "mixed-use," meaning that sundry activities occur in the same sub-basin. These include pastures, sugaring operations, crop production, public recreation, urban centers, and managed timber tracts, to name a few. The Little Chazy River on the New York side of the Lake is no exception. It has all of the above-mentioned, plus a water treatment plant. With the increased interest in water quality, all watersheds within the Lake Champlain Basin are candidates for research.

I participated in a "3-tiered" project in the Little Chazy River watershed. The Nature Conservancy was interested in water quality and biodiversity. Two of the 3 tiers, headed by SUNY Plattsburgh professors, looked at nutrient loading and natural communities in or along the river. My part of the project focused on the interface of riparian corridor functionality, agricultural landscapes and avian species richness. I assessed various riparian forest attributes and attempted to determine how they influence avian species richness. The goal of the project was to develop strategies to maximize the function of riparian zones and to maintain, protect or enhance biodiversity, specifically as it relates to birds. The idea is that the information and the strategies I developed for the Little Chazy are applicable beyond this one watershed, and can be used in other mixed-use watersheds in the region.

Isaac Nadeau

Isaac Nadeau grew up on a busy street atop a filled-in wetland at the base of a drumlin in Madison, Wisconsin. After a year washing dishes and poking around in the Cascades in Washington, he moved to Prescott, Arizona to attend college. With excellent teachers and motivated peers at Prescott College, Isaac's interests in both natural history and creative writing took shape, and he graduated with a double major in those disciplines. After college, he spent several years back

(from page 4) Unfortunately, you find Giselle has a dead battery. Do you call Porky for help (go to page 6) or just walk (go to page 10)?



Isaac

in Madison, working for four years at a non-profit dedicated to the development of cooperatives, including organic farm co-ops and small-scale sustainable forestry co-ops. A summer working as a natural history guide at a remote, fly-in lodge in interior Alaska confirmed that being outside is where it's at. For the next four years, Isaac worked as the Ranger at the University of Wisconsin-Madison Arboretum, a 1,200 acre center for restoration ecology and environmental education founded by Aldo Leopold and others in the 1930s.

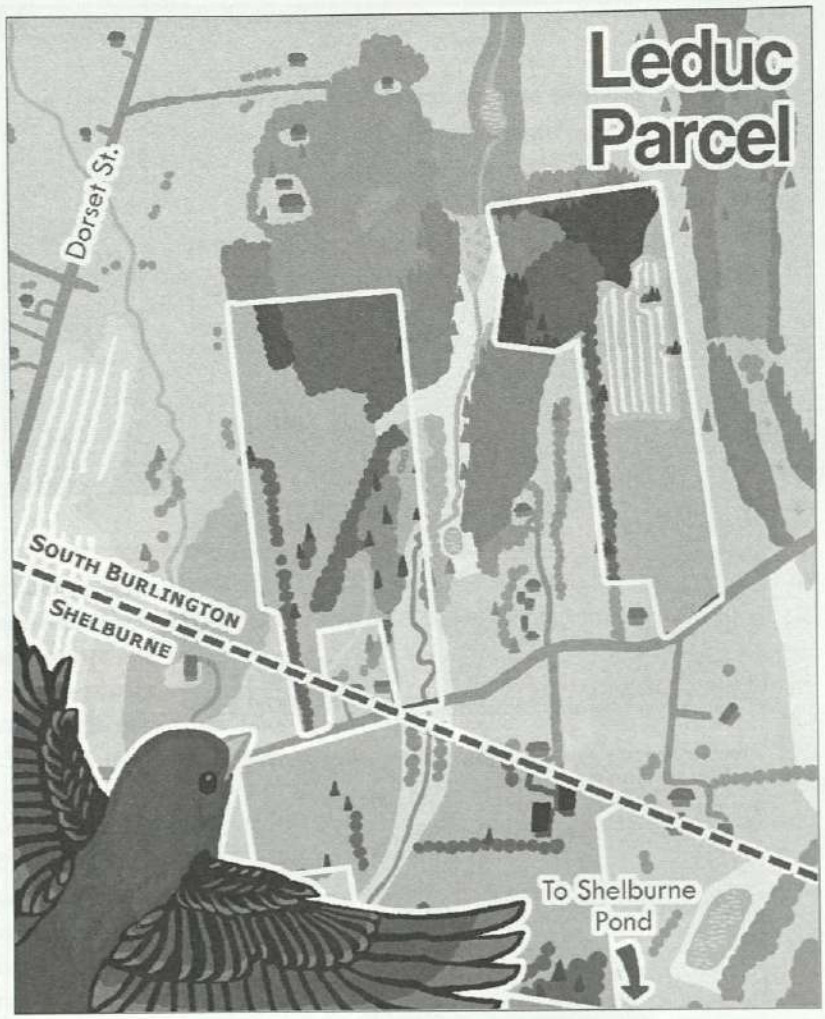
Isaac is thrilled to be in the Field Naturalist Program. His goal is to contribute—through field work and education—to our species' understanding of how to live without unnecessarily encroaching on the niches of other species. Currently, he is putting together a natural history overview and management plan for a small stand of mesic old-growth forest in southern Wisconsin.

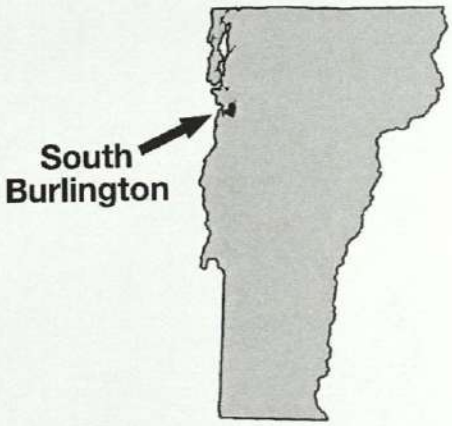
Salamander Nights

On wet spring nights, Vermont salamanders emerge from their secret dens and travel to breeding ponds. Sometimes the route takes them across our roads. Armed with flashlights, local students, researchers and other amphibian enthusiasts stake out popular crossing spots to help the salamanders avoid cars.

(from page 12) The dichotomous key is failing you. This doesn't make any sense. Have these ferns hybridized? You reach into your bag and pull out your biggest plant books. (go to 20)

On the ground in South Burlington, VT





This year's Place-Based Landscape Analysis class focused its efforts on **South Burlington, Vermont.** Class members performed a landscape analysis of a small collection of adjacent properties in the town's Southeast Quadrant. The main focus was on the Leduc parcel, but they also examined the Bandel-Dopp property and the city-owned Scott parcel. The class explored these properties in terms of interconnected layers, and tied its pieces, patterns and processes to the larger town.

South Burlington is located at a unique rural-urban interface. From streams to shores, communities to farms, the city is full of important natural and cultural features.

The **Cultural Layer Team** looked at the town's prehistory, early settlement history, and changing demographics. They conducted interviews and examined historical documents. They visited buildings portrayed in old photographs and postcards and took new photographs for comparison. They also noted cultural features at the Southeast Quadrant properties, such as this old stone wall (below), which stands as a testament to the parcel's agricultural past.

The **Vegetation Layer Team** divided the properties into natural communities, including rare Valley Clayplain Forests. In the early Spring they relied on their knowledge of bark and buds to identify the plants in the area, from alder to red oak to enormous beeches. Later in the season they were rewarded with an incredible display of flowers, such as this beautiful patch of yellow marsh marigold.

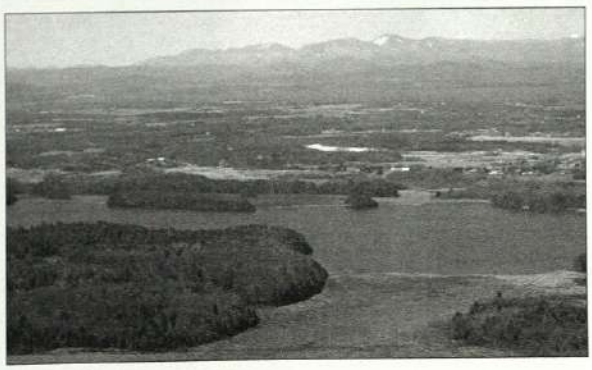
(from page 19) Even your largest, heaviest plant books can't solve the mystery. You become obsessed with the intricacies of fern identification, and spend the rest of your life in the fern patch, muttering words like "indusia". THE END

The **Substrate Layer Team** examined the bedrock, surficial geology and soils of the properties. Much of the soil has a high clay content. These clays can be traced back to periods when the area was submerged. Ancient Glacial Lake Vermont, blocked by a retreating glacier to the North, covered the region and blanketed it in sediments. Clay soils are highly fertile, but they can prevent deep rooting, causing trees to tip over.

The **Wildlife Layer Team** focused on the mammals, amphibians and birds of the Southeast Quadrant properties, as well as of the larger town. When snow covered the ground, they tracked bobcat, fisher, turkey, coyote and other animals. They took note of birds returning as spring advanced, and found amphibian eggs in a vernal pool on the property, including the first official evidence of wood frogs for South Burlington in the past thirty years. One team member began a phenology blog that invited members of the community to submit their wildlife sightings. South Burlington proved to be tremendously rich in wildlife.

The **Hydrology Layer Team** found a wealth of important hydrologic features in South Burlington. They explored the effects of urban development on the region's water bodies, from swamps to ponds to streams.

All of the teams were able to **fly over the landscape** thanks to pilot and professor Ian Worley. This view gave the teams a new perspective on some of the landscape's patterns -- and made for incredible photographs!

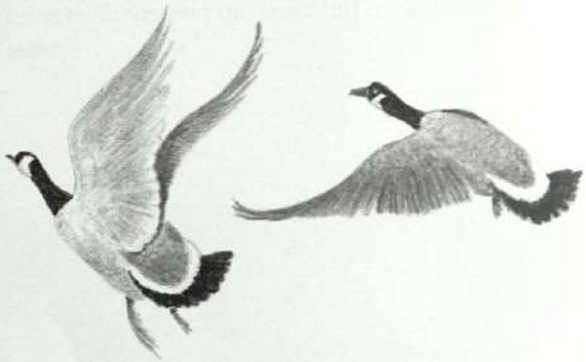


The class members also developed their own **independent projects**. Some created school curricula, while others explored the region's indigenous cultures and plants. Team member Isaac Nadeau navigated the entire length of Muddy Brook, walking on it when it was icy, and using an inflatable raft when the weather warmed.

(from page 9) You get ready to take a giant leap, but immediately trip and fall. You notice your shoelaces are knotted together with burrs. The bear leans down and gives you a big juicy kiss. It trundles off to its cave, leaving you covered in blueberry-scented slobber. THE END

Wind Gap

Hummocks and hollows of unknown composition
to be discovered by careful investigation.
Cliffs and spruces; mosses and moose browse.
Where did these giant boulders come from?
Birch trees rooted in soggy soils,
sphagnum moss of every color in thousands of tiny stars.
Moose emerge through the fog,
their footsteps left bright green in the bog.
Mysteries rise from the mist and rush down the slope.
Sharp wings catch our gaze—it's a peregrine,
this time I'm sure.
Look at those wings.
Evergreen spires and wizened birches
hush my mind and soften my step,
reminding me of gravity.
Mossy streambeds under shady conifers,
ducking through them I lose sight of the cliffs
and the pond...
How does this puzzle come together?

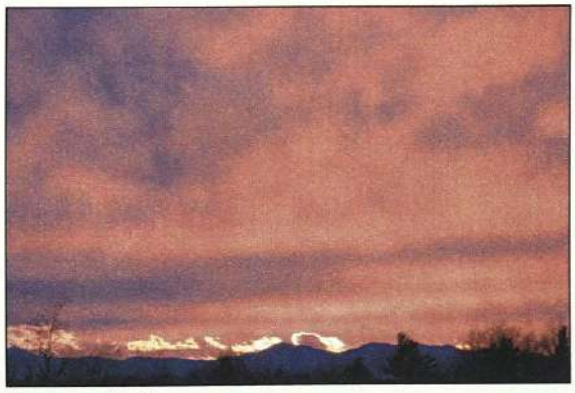


Molly Bog

Quiet and still in thought and life.
This is a place full of mystery and wonder.
It is spongy and lovely and strange.
Fall reds covering the ground in the late-summer sun,
all the colors of all the plants and trees match each other.
Nature's perfect detail, not quite quiet.
Mystery. Why? Unique.
Delicate and resilient,
a small plant only its berries held above the sphagnum.
Beautiful at all scales,
but the bright and shining wonders are best seen
when you look closely, really closely.

(from pages 10 & 5) When entering the bog's peaceful space, you discover a mama moose and her mooselet nibbling some plants. Due to a strange, magical force of wonder, the moose walks up to you and her baby nuzzles your hand. Welcome to naturalist nirvana.THE END.

Frond Memories
Sunlight sends a warm glow through a sensitive fern. Field Naturalists and Ecological Planners receive a thorough grounding in all things fern-related.

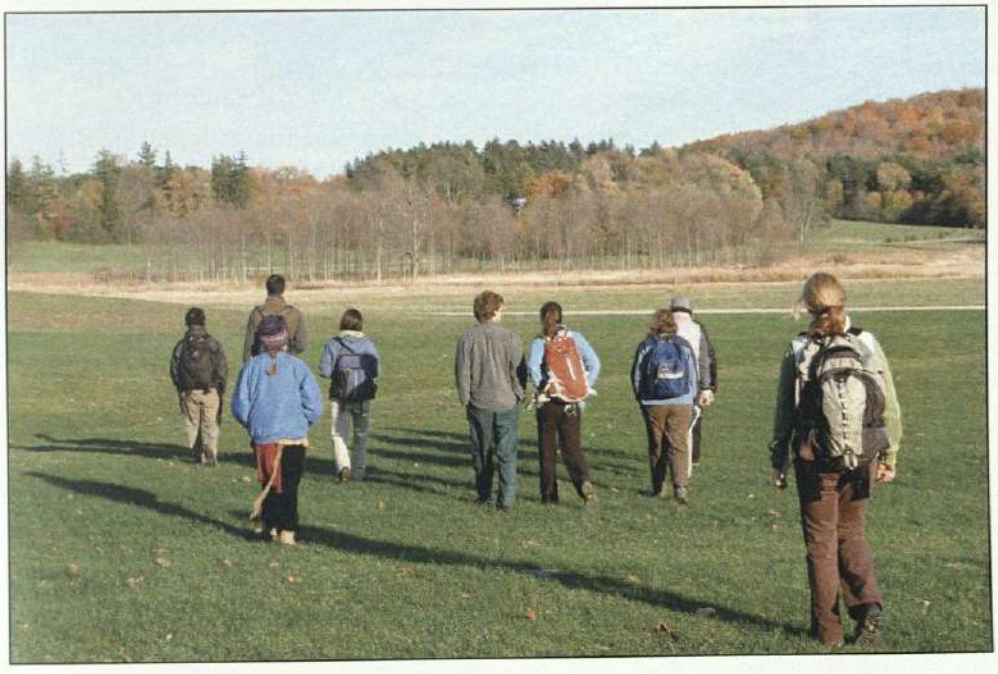


Spectacular Sunset
An incredible sunset blooms over the Leduc property in South Burlington, Vermont.

Beaver Fever
Field Naturalist Teage O'Connor demonstrates the proper way to chew a log, beaver style.

Ephemeral Spring
Hepatica, one of the earliest wildflowers to bloom, peeks out of the forest duff.

Field Methods
Ecological Planner Caitlin McDonough shows off her GPS skills at the Leduc property.



Happy Trails
Field Naturalists and Ecological Planners hike off into the sunset at Shelburne Farms.

(from page 6) The stream is beautiful and looks crystal clear. You're feeling hot. Do you drink the water (go to page 15) or take a swim in it (go to page 17)?