

# Earth Day Every Day

## Proctor Academy's Environmental Programs

BY *Deborah McKew*

Alan McIntyre glances in the rearview mirror, continuing his discourse on agricultural pollution to the eight students on the minibus. The bus becomes his lecture hall as he drives his environmental science class to a local organic garden for today's field trip. He captures his class's attention with the story of a Maine couple who homesteaded in the area, living entirely off the land. The students lean forward in their seats, listening as McIntyre navigates the uneven dirt roads to their destination.

The bus stops in the driveway of a single-story colonial cape; a plaque near the front door reads "Mark Batchelder 1782." No electric meters or water pipes mar the original exterior. Walking round back, the group finds another Proctor teacher, Nelson Lebo, dressed in faded denim shirt and torn jeans standing knee deep in a rectangular pit in front of what looks like an old barn. The structure is actually new, Lebo explains, greeting his visitors with a description of how he's constructing this greenhouse from hand-cut logs, the walls dug deep into the ground to maximize the natural cooling and heat retention properties of the earth, a concept applied in root cellars. The students ask thoughtful questions, trying to grasp the fact that there are no chain saws or power tools of any kind in the near vicinity of this project.

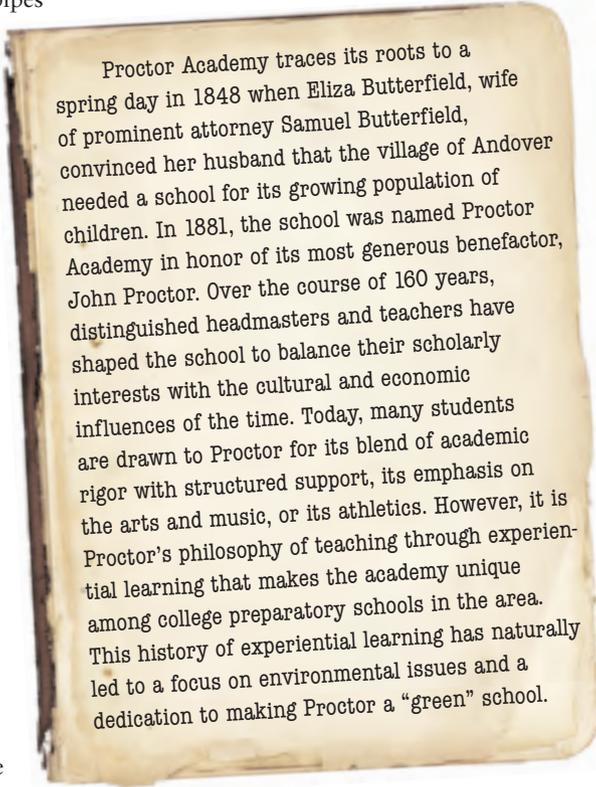
Suddenly, Lebo jumps from the hole that will become the greenhouse

doorway and guides the group to the main purpose for the visit: his organic gardens and a lesson on sustainable agriculture. Maneuvering his way through rows of raised beds, he points out the vegetables still growing on this cool October afternoon (broccoli and kale), and describes how he utilizes the contours of the land and the natural materials around him to sustain the growing cycle long into the shrinking days of autumn. While he talks, he constantly stoops to collect stray stones, dropping them into gaps along the footpaths, never losing the thread of his topic.

McIntyre and Lebo are part of an extraordinary team of Proctor Academy educators whose mission is to impart the message that humans have only one home, planet earth, and everyone is responsible for her. Although Kermit the Frog had something different in mind when he sang, "It's not easy being green," McIntyre and Lebo fully understand the challenges of teaching high school students what it means to embrace a life of living "green." But, how does a high school teach the complexities of local and global environmental issues to students whose focus is on the immediacy of their young lives?

According to Head of School Mike Henriques, Proctor's approach to environmental education begins with dedicated teachers who practice what they preach, fans out across campus in a rich array of course offerings and experiential learning opportunities, overflows into the local townships through community service initiatives, stretches across North America on the Mountain Classroom bus, canvases the seas on Ocean Classroom's sailing schooner and reaches around the world in a variety of international programs.

"Right from the beginning, with our five-day Wilderness Orientation hike for all new students, we send a message that the outdoors, the environment, is important to us," says Henriques. "It is clearly expressed in our mission statement that we have



Proctor Academy traces its roots to a spring day in 1848 when Eliza Butterfield, wife of prominent attorney Samuel Butterfield, convinced her husband that the village of Andover needed a school for its growing population of children. In 1881, the school was named Proctor Academy in honor of its most generous benefactor, John Proctor. Over the course of 160 years, distinguished headmasters and teachers have shaped the school to balance their scholarly interests with the cultural and economic influences of the time. Today, many students are drawn to Proctor for its blend of academic rigor with structured support, its emphasis on the arts and music, or its athletics. However, it is Proctor's philosophy of teaching through experiential learning that makes the academy unique among college preparatory schools in the area. This history of experiential learning has naturally led to a focus on environmental issues and a dedication to making Proctor a "green" school.



*Alan McIntyre (right) shares his enthusiasm for organic gardening with junior Dan Loebr. Produce from the garden is delivered to the school kitchen across campus in a garden cart or on the bed of an industrial tricycle.*

a commitment to being a green school.”

### **An integrated systems approach**

“I try to see the world through systems,” says Lebo, an award-winning environmental educator who has been teaching at Proctor since 1991.

“Everything about the world tells us that all things are interconnected. We try to develop in students a holistic way of seeing the world.” On this October day in his garden, Lebo explains how photosynthesis is the perfect evolution-

ary process: plants absorb sunlight and turn it into sustenance. He demonstrates that by applying the principles of nature, humans can save finite fossil fuels and tap into an infinite source of power —

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the sun. “Whenever we follow the laws of nature to solve problems, we are successful.”

Lebo brought his enthusiasm for gardening to the Proctor campus in 2000 when he assembled a team of student and staff volunteers to transform a weed-filled lot into a prolific garden that now supplies the school’s kitchen with hundreds of pounds of fresh vegetables and herbs each year. The garden is a working classroom, cultivating in students an understanding of the laws of nature and the importance of interconnectedness. “Our organic garden makes Proctor unique in environmental education at the high school level,” says McIntyre, head of Proctor’s Environmental Sciences department.

Lebo’s systems approach is a popular trend in education. The phrase “place-based education” (PBE) has emerged to replace the traditional term “studying the environment.” Instead of thinking of the environment as “somewhere out there,” educators are realizing the importance of interdisciplinary systems thinking — understanding how people are connected to the places in which they live. “It’s really about fully understanding a place,” says Kayden Will, the newest teacher of Mountain Classroom, Proctor’s outdoor wilderness program. The emphasis is on learning through participation, in the classroom as well as through service projects for the school and the greater community.

### Jumping into experience

Five o’clock on an April morning, Proctor parent John Ferris rummages in the dark to light the sauna stove at the Mountain Classroom facility near Proctor’s Elbow Pond. This Spring Family Weekend, parents have been invited to share in polar swim, a weekly student ritual supervised by McIntyre. Just after dawn, a mixed group of stu-



*Mountain Classroom students stopped at Stone Free Farm in Cortez, Colo., a diversified organic farm in a region dominated by large-scale conventional farms. Pictured here, students help farm owner Chuck Berry thin carrot plants in his greenhouse.*

dents, faculty, parents and headmaster gathers at the site, shivering as the temperature hovers around 30 degrees. Someone announces, “Pre-dip!” Before bewildered parents can ask “What?” a student cannonballs into the pond, breaking the thin layer of ice that has formed overnight. Shrieks and gasps follow as everyone takes a turn.

After the icy dunking, all flee to the warmth of the sauna. Inside, students stoke the fire and pour water on the stove to blast the temperature. Experience has taught them how to do it just right. Parents merely watch, still in shock from the pre-dip. Huddled in the sauna, shoulder to shoulder, conversation comes easy. After a while, someone feels hot enough to take another frosty dip, then quickly returns. It goes on like this for an hour. Relaxed, and happy, the party heads back to campus, reluctant to break the bonds of camaraderie established during this unique experience.

For some, this early morning submersion into icy cold water is crazy, but for those who participate, “it builds a connection with a place and a resource that is more powerful than class theory,” says Will. Polar swim is a metaphor for immersing oneself in a situation that is both challenging and stimulating. The result leaves you breathless at first, but ultimately satisfied that you have



*With the red rocks of Utah’s mountains as his backdrop, Nelson Lebo reads about the ancient civilizations that struggled to survive in this harsh environment.*

achieved a goal, or broken a barrier.

Proctor offers a myriad of experiential programs that take students beyond their comfort levels and puts them in situations where they learn to appreciate that there is always more than one point of view. Only through experience can “we see how everything is a system that is interconnected,” says Lebo, who, with Will, is co-teaching Mountain Classroom.

During the winter term, Lebo and Will accompany a group of 10 students on a small bus (powered by biodiesel

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## LIVING GREEN INSIDE AND OUT

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fuel and sporting solar panels to generate electricity), traveling through the southern states across country to the border of Mexico. In the spring term, the two lead a new group into the Rocky Mountains and meander a northerly route through Indian territory and into Canada on their way back to New England. Mountain Classroom, like all of Proctor's off campus programs, "gives students a huge set of experiences to draw on; to see how others view the world; to ask themselves who they are and what do they believe in," says Lebo.

Britt Plante recounts a moment of revelation on her recent Winter Mountain experience. "We were at a place called Annunciation House, a shelter for illegal immigrants in El Paso, Texas," the senior says. "These people were so grateful to be in this shelter, they thought they were in a good position. I was humbled by that."

Like Mountain Classroom, Ocean Classroom tests students in challenging, real world situations. Sailing a chartered schooner down the East Coast to Puerto Rico, Proctor students crew the research vessel, learning the ropes as they go. Keeping a Navy watch schedule, they have little free time, living and working in close confines 24 hours a day for 10

weeks. "It was really hard for me to get used to the sleeping schedule, but it was worth the lack of sleep," says senior Patty Dansereau.

Crewmate Hillary Creed, also a senior, agrees, "I was pushed to so many limits every day." However, these adventurers learn much more than sailing skills, or how to get along with peers in tight quarters.

"Ocean Classroom made me aware of the imperative need to protect the world's oceans and their biological systems," says Creed. "I learned how I can help protect the ocean from pollutants and other harm by being aware of unnecessary wastes that I produce. I had learned many of these lessons before, in a classroom, but by actually sailing the seas and seeing the harm that we humans cause to the ocean and its systems, I am motivated now more than ever to do my part to protect this valuable resource."

In addition to these semester-long programs, Proctor offers a one-week Project Period at the beginning of the spring term when students choose a par-



*Proctor contracts loggers such as Jack Bronnenberg (pictured here giving a lesson to David Pilla's class) who are technically skilled and genuinely concerned for the future of our forests.*

ticular topic to study in depth with a supervising faculty member. This project may take them to the Carolinas for river kayaking, or to the far reaches of Maine for dog sledding or to Nicaragua to help local farmers plant crops. However, one doesn't need to leave campus to get a taste for an authentic experience.

### **The sweet taste of sunshine**

"Don't waste the sap! Go, get buckets ready — go, go!! It's going to go like gangbusters!!"

The frozen valve is forced off as a cluster of students quickly respond to the commands. One right after another, each pushes a bucket under the open pipe, fills the bucket with the clear, colorless liquid, dumps the contents into a 350-gallon barrel, and returns for more. The makeshift assembly line proceeds efficiently; little of the sap is lost. David Pilla, dressed in the uniform of an outdoorsman in early spring — T-shirt, jeans, orange cap and muck boots — gives a hearty laugh as his protégés rise to the occasion. With Ragged Mountain for a backdrop, the sky a crisp clear blue, it's a golden day for tapping at the Blackwater sugar bush.

Back at the sugarhouse, on the main campus, the real work begins. Inside, students divvy up tasks — lighting kindling in the furnace, chopping logs, filling the evaporator tank with its precious cargo. It takes some doing, but soon a fire is roaring and a smoky blend of pine and oak overlays the sweet, earthy pungency of the rustic, dirt-



*At the start of fall term, Proctor students board a traditional schooner in New England to embark on an ocean adventure. They learn maritime history, read seafaring literary classics and apply navigational mathematics.*

floored cabin. As the fire heats up, so do the activities around the evaporator. There's a special art to turning 40 gallons of watery sap into one gallon of liquid sunshine. On first watch, this group of seven freshmen, sophomores and juniors are up to the task — boiling, skimming, testing, waiting. "You need a lot of patience to do this," says sophomore Gardner Kelley, who was surprised at how long the process takes.

Pilla describes Proctor's maple sugaring enterprise as "big enough to be legitimate." A good year yields about 35 to 50 gallons of maple syrup, a third of which is given away during "taste tests" or drizzled over snow cones. The rest is sold faster than it can be bottled; any revenue supports the sugarhouse.



*The diverse terrain of Proctor's 2,500-acre campus is David Pilla's classroom for his wildlife biology and forestry classes.*

However, Pilla is quick to emphasize the educational purpose of the operation. On the rough-hewn walls inside the cabin hang a variety of teaching tools including the cross section of a tree that had once healed itself from holes bored into its bark. "Drilling holes into a tree isn't good for the tree," Pilla remarks, and he is careful not to over tap Proctor's 325 sugar trees. "Being greedy doesn't make good syrup."

In his role as wildlife science and forestry teacher, Pilla wears many hats. His job description includes managing Proctor's 2,500 acres of woodlands, pastures, waterways and recreational areas. He manages these diverse acres under the guiding principles of sustainable use. Wearing his forest manager's hat, he works with loggers whom he subcontracts to harvest wood products

for outside sale as well as for internal use to heat campus buildings. Not just any loggers will do. It's important to Pilla that the tree cutters he hires are technically skilled and "light on the land" — leaving no unnecessary damage. They must also practice ethical, responsible logging that allows for future growth. Oh, and they must enjoy working with teenagers.

John Wright, who graduated in 2006 and is now a sophomore at Warren Wilson College, owes his decision to pursue a career in forest management to Pilla. He remembers Pilla introducing his class to the loggers he had hired, and how conscientiously this crew conducted its business. "Dave embodies the understanding that we need forest products, but also that we need to preserve the forests. He showed me there was a way to balance both."

A certified wildlife biologist as well as a licensed forester, Pilla not only manages the land, he also finds time to conduct research for the New Hampshire Fish and Game Department. Pilla believes that "no matter what is discussed in the classroom, it needs to be applied in the field." To demonstrate this applied education, he pulls out a clear glass jar filled with tiny white worms. "Brain worms," he explains. His students extracted them from the heads of deer hunted throughout the state. Students track the occurrences of these parasites, which are harmless in deer but pose a serious threat

to moose. Wildlife biology à la Dave Pilla is not for the faint of heart.

### **What's physics got to do with it?**

In a corner of Brian Kellogg's physics classroom stands an odd contraption cobbled together from old bicycle parts and a large wooden wheel. "It's a human generator," says Kellogg. Pedals spin the wheel, which acts like a large gear that then spins the electric motor (borrowed from a small electric scooter). The electric motor creates a current which can power a light or small appliance up to about 100 watts (depending on the strength and endurance of the person doing the pedaling). As they begin to pedal, students soon discover that "it's hard to power a 100-watt light bulb and keep it lit."

Over the past several years, Kellogg has been "morphing his physics class to include environmental topics" so that the science is relevant in the context of an environmental problem. On a late spring day, the class presents projects on heat engines and thermodynamic cycles. Steam engines, air conditioners, internal combustion engines, rotary engines — each group demonstrates the design and efficiency of its chosen machine.

"What they are learning is that there are hard limitations to these designs," says Kellogg. "A gasoline engine will never do any better than 40 percent efficiency. I'm encouraging students to take a critical look at these technologies and make informed decisions about what they choose to use."

One member of the group presenting on the Wankel rotary engine

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(which has a 50 percent efficiency rate), remarks: “We are learning about what not to do environmentally.”

Kellogg believes that by giving students the knowledge to make informed decisions, they will be more conscientious about how their choices affect the environment. “My mission is not to create an army of physics majors,” says Kellogg. “I want to help these kids become healthy skeptics and learn to make decisions based on facts rather than political agendas.”

### Environmental activism on campus

Students drift in, taking seats around the table; latecomers sit on the back ledge. Some carry their dinner on trays, a few squeal with delight when they notice the plate of homemade whoopee pies awaiting them. Tonight, 16 students gather with several faculty advisors to assess the progress of Proctor’s Environmental Action team. An agenda is written on the whiteboard. The first order of business is the recent candlelight dinners.

An open dialogue begins: “The dining hall was too dark. No one could see their food,” says one student.

“Perhaps we could leave a few lights on,” suggests another.

“Did we really save a lot of energy by turning off the lights at dinner?” asks one.

“Do the costs of the candles negate the energy saved?” asks a faculty member.

“It’s not about the actual savings; it’s about making people aware of what



*Recycling efforts at Proctor kicked into high gear last year when students like Alex Duane committed themselves to collecting and sorting cardboard and other paper products twice a week for disposal at the Andover Transfer Station.*

we are trying to do,” responds a student from the back.

Clearly there are kinks to iron out, but the decision to continue the candlelight dinners is unanimous.

Proctor’s Environmental Action (PEA) team promotes conservation and sustainability throughout the school community. Members work on subcommittees — such as food, waste, energy and public relations — where they brainstorm and develop ideas for projects and activities that will encourage community members to think and act “green.”

One such effort is the “change a bulb, change everything” campaign Samantha Veysey helps promote. As a member of the PEA energy subcommittee, she collaborated with the NH Electric Co-op on a project to encourage faculty and

staff to convert from incandescent bulbs to compact fluorescent light bulbs (CFLs). Although CFLs are more expensive than incandescent bulbs, they burn 75 percent less energy and last longer. According to the Web site 18seconds.org which tracks usage of these bulbs by state and town, Proctor Academy’s hometown of Andover has saved millions of pounds of carbon dioxide from being released into the atmosphere, thanks in part to Veysey’s efforts. “I get really excited about it,” says the day student who graduated in June. “It’s great that I could actually do something to make a difference on campus.”

Veysey is far from alone in that score. Junior Tim Meehan and senior Alex Duane, both on PEA’s waste committee, take time out of their busy Saturday mornings to pick up recyclables around campus and deposit them at a central dump site where the refuse is collected then transported to the local transfer station. “I see people really making an effort to recycle,” says Meehan. “We make it easy for them to recycle.”

Duane also collects the used coffee grinds from Jake’s Market in town and delivers them to one of the designated compost heaps around campus. “The worms love the coffee grinds,” grins

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Duane. The compost stations provide a constant supply of nutrient-rich soil for the school's organic garden. Members of the food subcommittee not only help tend the garden, they collaborate with Proctor's kitchen staff to incorporate more organic options into the daily menu.

Many of the students involved in PEA live in the dormitory known as "Eco Dorm." The residents of Eco set the standard for living green on campus. They sponsor a year-long Green Dorm Challenge designed to educate and encourage other dorms to conserve more and waste less. "Environmentalism



*Student volunteers collect over 100 pounds of recyclable containers each week.*

comes down to respect and responsibility," says Vanessa Emery, a former resident of Eco Dorm who is now studying environmental policy at Warren Wilson College in North Carolina.

Students don't have to be on a path to an environmental career to be involved in Proctor's green leadership. Aspiring actress Mackenzie Hancock decided to live in Eco Dorm because she wanted to get more involved as well as "to inspire other students to be more 'eco' aware."

PEA members estimate more than half of the student body is making a serious effort to be environmentally active in some way. "I think a lot of people are aware of the issues; there are different levels of knowledge and different levels of activism," says Duane, who

may pursue a career in architecture to design green buildings. "But until it affects people directly, most won't take action. The more interest PEA and Eco Dorm stir up, the more awareness they promote, the more people in the community will talk about it. And that's powerful."

### **Drenched in a rich heritage**

All sit silent as the first seven fire-heated stones are brought into the domed hut. Dried sage and cedar chips sizzle on the stones, delivering thin plumes of sweetened smoke to the 13 students sitting cross-legged around the center pit. The canvas flap closes, darkening the space like nightfall; the only light a red glow emanating creative energy from the stones. Cool water, ladled over the hot rocks, turns the lodge into a steam bath. The ceremony begins with a prayer to the seven directions. Then, a deep, clear song transports the students to an ancient time, to faraway places; high pitched tones blend with bass sounds reminiscent of beating drums connecting the students to the four points on the compass, to the earth, and to the sky, while the sweat pouring from their bodies grounds them in the here and now.

For history teacher Bert Hinkley, this Lakota purification ceremony in Proctor's sweat lodge, or Inipi, at Elbow Pond is just one way he demonstrates to his students that "we are more than just ourselves. We are part of a community, connected to each other, to those who came before us and to the Earth." Hinkley, a 30-year veteran Proctor teacher who has studied and experienced many Native American traditions, shares this sacred Indian ritual with students as part of the Earth Day celebrations held across campus on a bright April morning.

Proctor's connection to the Lakota Indians dates back more than two decades when then history teacher George Emery offered Native American studies at the prep school. He reached out for expert advice from Albert White Hat of the Rosebud Reservation and John Around Him of the Pine Ridge Reservation, both located in South

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Dakota. They not only offered advice, the two men spent an entire spring semester at the Academy helping Emeny develop his course as well as build an authentic Inipi. In the process, they forged a unique relationship that has broadened and deepened Proctor's commitment to its mission of teaching young people not only about the value of diversity, but also about the necessity of protecting the environment.

### The right approach

McIntyre describes a four-step approach to teaching environmental issues: develop an appreciation for the environment, become aware of problems, understand how ecosystems work and take action to achieve solutions.

One solution is a new dormitory "that will be as green as we can make it," says Henriques. Scheduled for a December completion, the building will replace the old Morton dormitory, and offer rooms for 16 students and two faculty families. The new dorm is designed to meet the Silver environmental standard established by the Leadership in Energy and Environmental Design (LEED) Green Building Rating System. The LEED rating is determined by the United States Green Building Council, a coalition of leaders from every sector of the building industry that promotes environmentally responsible building projects.

Proctor's mission is clear, says Henriques. "How you choose to move forward on your mission statement is what differentiates one school from another." When one examines the breadth and depth of Proctor's environmental programs and initiatives, "there's not another school that can touch it." 

*Deborah McKew is a freelance science writer turned teacher whose passion for words led her to develop Words in Play Writing Workshops in which she immerses her students in the creative writing process. Proctor Academy offers its students, her son Jack included, many opportunities to explore and discover their own passions.*