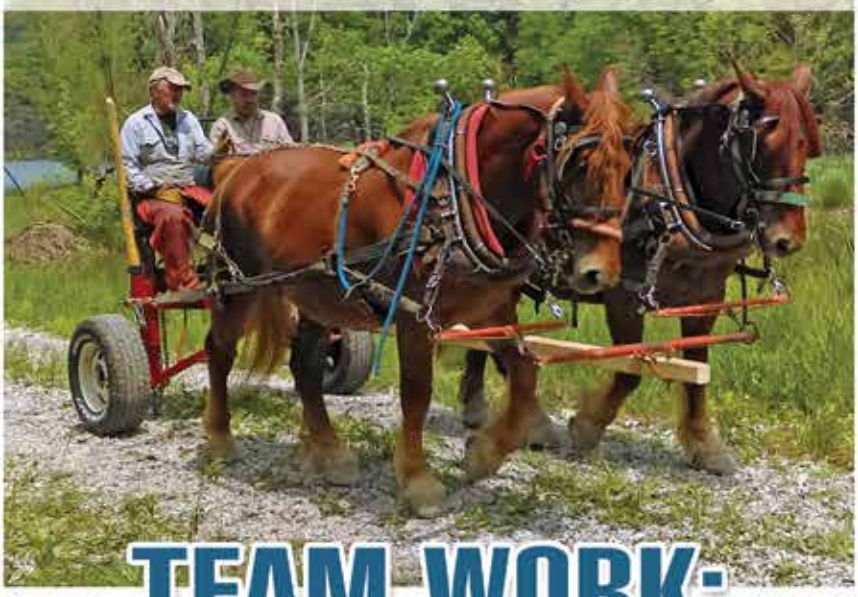
"The field must remember the forest, the town must remember the field, so that the wheel of life will turn ..."
—Wendell Berry, "Healing," What are People For?



TEAM WORK:
Berea College Looks Back & Sees the Future

by Wendy Zagray Warren

A pair of large, rusty-brown Suffolk draft horses lean into their collars, muscles rippling in the sun, their broad hooves seek traction on the rain-saturated trail. A log arch lifts one end of a large section of Poplar which had been selected, felled and bucked that morning. Using line and voice commands, the driver softly directs the team forward, and they move steadily down a path far too wet for conventional logging equipment to maneuver. These drivers, from the Berea College Department of Forestry, are new to this task; skills acquired over the past five days are now being put to the test. Berea College President Lyle Roelofs and other interested members of the Berea College community are in attendance, watching the log pile grow quickly as two harnessed teams alternate their delivery. While Kentucky woodsman Ben Burgess supervises the horse teams, Jason Rutledge, Consultant and Director of the Healing Harvest Forest Foundation, discusses the week's progress with the onlookers as well as possibilities for future collaboration in restoring and sustaining the Berea Forest. Then, Ben invites Dr. Roelofs to join him atop the log arch and off they go. Smiles all around attest to the week's great success.

Set on the edge of Appalachian Kentucky, Berea College is uniquely situated, both geographically and historically. A pioneer of American Forestry, Silas Mason was a Professor at Berea College in the late 1800s. At his prompting, Berea College began purchasing forest lands in 1898, and the College now owns and manages 9,000 acres of it, including most of the watershed supplying water to Berea College and the city (of the same name). Currently, Director of Forestry Clint Patterson and Assistant Foresters Glen Dandineau and Bob Warren act as caretakers of this land.

Berea College is guided by a set of eight Great Commitments. One of them is "to encourage in all members of the community a way of life characterized by plain living, pride in labor well done, zest for learning, high personal standards, and concern for the welfare of others," which translates to a commitment to sustainability. President Lyle Roelofs and Forestry Director Clint Patterson recognize that a sustainable forest plan is an important part of the effort to plan for future generations. Berea's Commitments coincide well with the values of The Healing Harvest Forest Foundation Rutledge directs. Caring for the health of the entire forest ecosystem and nurturing a co-relationship between the forest and human community are the primary focus of the Foundation. Its mission to "develop, implement, and support community-based sustainable forestry initiatives" relies on thoughtful tree selection and modern, animal-powered log extraction. Based on this alignment of values, Berea College invited Jason and Ben to bring two teams of Suffolks and spend a week on the Berea Forest teaching the art and science of animal-powered log extraction.

Using Animal-Power in the Forest Ecosystem

It was a bright, clear Monday morning in May when Ben Burgess and Jason Rutledge first met Berea's Forestry team, Clint Patterson, Glen Dandineau and Bob Warren. They greeted each other near a small pasture they had set up for the four beautiful Suffolks that had traveled with Ben and Jason. Rube and Kate, a team from Jason's herd, grazed beside Ben's team, Blondie and Tuco. Crunching on the hay they had just been fed, their kind brown eyes watched curiously while Jason introduced them to the foresters.

"Suffolks are an endangered breed of draft horse," Jason explained. "There are only about 600 of these horses in North America. While draft horses are still in common use in Eastern Europe and in many Amish communities, the use of horse power dropped off sharply after World War I. As a result, we have not yet realized animal power's capacity. Draft animals are a highly sustainable power source with the potential to not only meet modern energy needs, but to contribute to healthy human lifestyles." Jason cites a recent Cornell study which demonstrates the health benefits when humans and horses work closely together. It is clear that Jason, too, experiences these benefits.

Learning the Reins

Throughout the week, Jason and Ben taught the Berea Foresters specific practices required to work with the horses intertwined with the philosophy behind them. Natural horsemanship, the handling method used by Ben and Jason, relies on building rela-

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Team Work continued

tionships. Strong bonds exist between each team and its handler. As the week progressed, the Berea Foresters also came to know the habits and personalities of each of the horses they worked with, which informed how they communicated with them.

"You've got to think like a horse," Jason said. "Most equines are gang animals. They prefer to work in teams. You can't deny a horse's instincts. You've just got to love them for what they are. They're just going to be horses."

Conversation about restorative forestry practices occurred each morning, as Jason and Ben cared for their animals, preparing them for the day through a routine of feeding and watering. Before the harnesses ever came out of the trailer, the horses were carefully groomed, salve is applied to small cuts or areas of fungal growth, and fly spray is applied to legs and tail, which Jason calls the "automatic applicator".

"The comfort of the horse is of primary importance," Jason says. "I want my horses to be comfortable. I want them to be happy. Horses are prey animals who constantly communicate with body language, Jason explains. They have a fear/flight response. The job of a woodsman is to help the horse be comfortable enough that it doesn't want to flee. At the same time, handlers need to establish themselves as the top of the pecking order, so the horses come to rely on and trust the human's commands. The balance point is mutual trust and respect."

The first day set the agenda for skills that would be practiced over the course of the week until they became routine: preparing the horses for the day; then carefully placing each section of the harnessing system in just the right place for the horse's optimum comfort, and checking to be sure all lines are straight so the messages to be sent through them reach the horses clearly.

"Once the horses are harnessed, they know that it's time to go to work. They're ready, and they get impatient if asked to wait," Jason says, "So let's go."

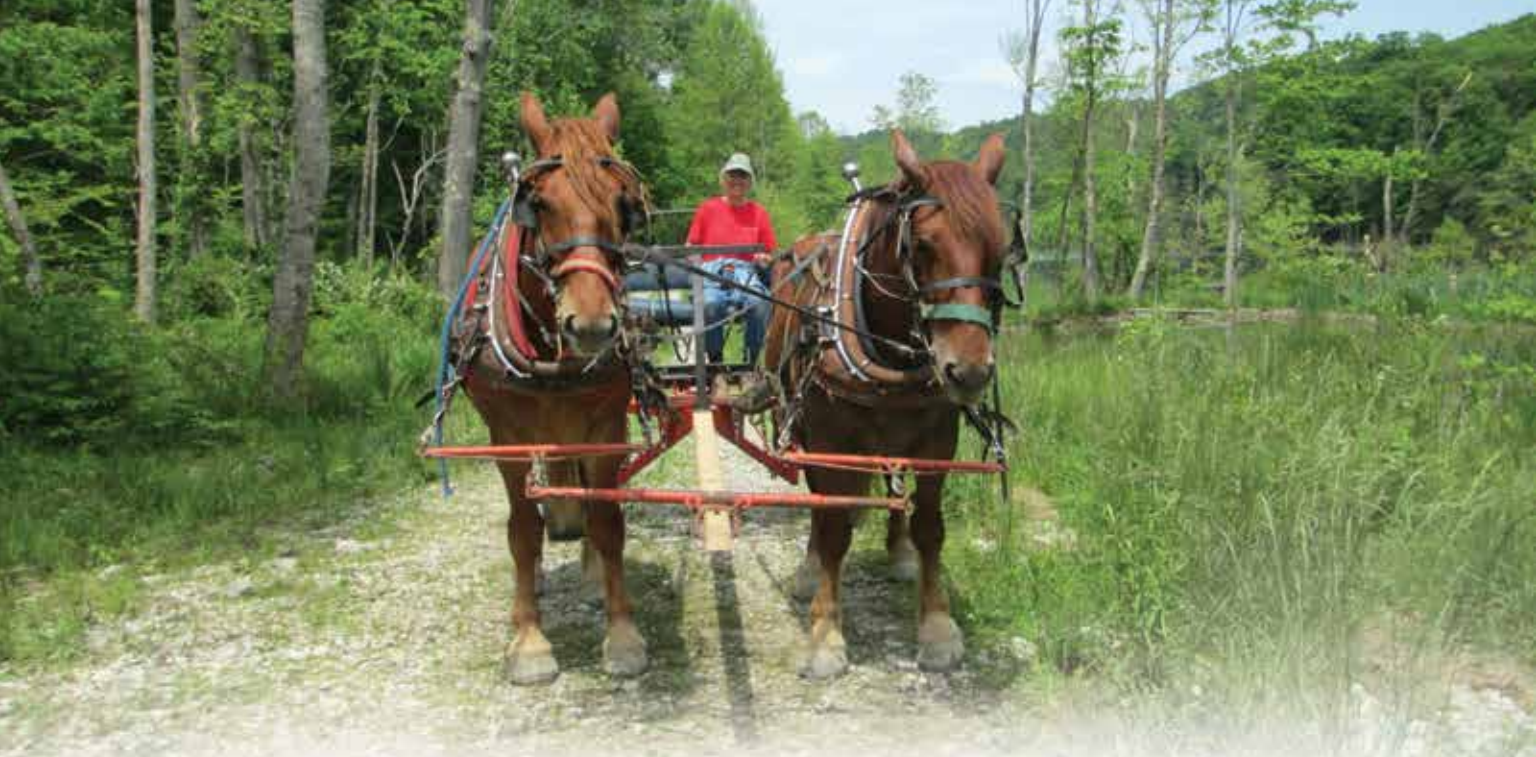
On the first day, "let's go" meant practicing five line cues and the gentle voice commands that should accompany them. Horses hear ten times better than humans, so loud voices communicate anger or fear. A quiet even tone and relaxed movements are comforting. Ben modeled this interaction with his animals, who responded to voice commands given almost at a whisper.

The foresters began by walking behind a single horse, using the lines to communicate what the handler wanted the horse to do. Later that morning, the horses were paired, and each forester practiced guiding a team. The sounds of hooves and soft voice commands mingled with the songs of forest birds.

The Berea team listened attentively and absorbed information quickly, always eager to learn more. The careful concentration needed to work with these magnificent animals showed in their faces, as did their joy. After carefully assessing the morning's work, Jason announced after lunch that they were ready to practice driving a team hitched to the log arch. The arch would eventually be used to pull logs out of the woods, but first each forester would ride the cart and practice driving the team down a gravel road, turning the cart around and driving it back.

As the week progressed, it became clear that relationships were not only forming between horses and handlers, but also between teachers and students. These are the relationships that lie at the heart of any ideal learning situation. This group of woodsmen clearly enjoyed each other's company.

Just as humans need to build and



value relationships amongst each other, we also need to recognize and nurture our relationship with the earth. "Forestry was the country's first industry," Jason explains. "Trees were felled to clear the land for agricultural use. Although forestry and agriculture are often treated as separate fields, the two are actually inseparable. Yet throughout the Appalachian region and elsewhere, much of the land is not suited to anything but forestry. Great damage has been done when people tried to clear land that was meant to be forest. [Poet, novelist and farmer] Wendell Berry reminds us we must read the land just as we learn to read the horses. This requires us to be visionary about restoring damage that has been done when mountain areas have been damaged by unsustainable practices like clear-cutting. We need to repair the damage and design plans that will enhance these forest lands for future generations. This is where modern horse logging comes in."

By Tuesday morning, logging operations were ready to begin. The next four days were spent carefully selecting, felling and bucking trees with Berea Foresters driving the teams that pulled the log arch and the logs out of the woods. Storms rolled through the area each night, dumping three inches of rain during the week. Commercial loggers would not have been able to run their equipment on the narrow, rain-soaked trails. The horses, however, took it all in stride, and by the end of the week, the log pile had grown to an impressive size.

A Vision for the Berea Forest

The demonstrated ability of the College Foresters to drive the horse teams and the large pile of logs extracted were tangible evidence of the week's success. Perhaps the greatest impact, however, was intangible: a new vision of what might be possible for the future of the Berea College Forest. Following practices of Restorative Forestry can be a way of meeting both economic and ecological needs. The third part of the equation is to imagine new ways to enhance forest/community interactions.

Restorative Forestry

Animal-powered timber harvesting ensures the lowest possible impact on the forest. Jason attributes this to several factors. Because a team and logging arch require only a narrow roadway, there is no need to build logging roads throughout the forest. Horse hooves greatly reduce the amount of soil compaction, so little remediation work is required. An added benefit is that while waiting for the timber to be cut, the horses will eat some of the area's invasive species and occasionally deposit some fertilizer as well.

From an energy standpoint, the hay and grains that horses eat fuel a solar powered energy system that results in little energy loss. Unlike heavy equipment, animals are also a truly renewable resource that reproduce themselves and are often self-repairing.

Much of modern American thinking focuses on what is good for us right here, right now. Sustainability, however, requires thinking for the long-term, generations into the future. Something that can bolster an economy today might bring about starvation in the long-run. "The only sustainable timber production," Jason said, "is labor-intensive, low-volume animal extraction because it runs on 'earth time.' Clear-cutting is fast, but it destroys entire ecosystems that take generations to recover, if recovery is even possible. Restorative forestry, on the other hand, leaves ecosystems intact, allowing some of the trees to continue to grow. In addition, the low cost of animal power makes it economically feasible to harvest timber from small tracks of land which would be impossible to harvest with heavy machinery. Animal-powered tree extraction sets up a rotation that allows for continuous, economically and ecologically sustainable timber harvesting over the life of the forest."

Carbon-Positive Benefits of "Worst First" Timber Selection

Trees absorb carbon from the atmosphere, so forests act as a giant carbon sink. The longer a tree lives, the more carbon it absorbs. At some point, however, trees die, decompose and release this carbon back into the atmosphere. If a tree is harvested at its peak, however, two things happen: the tree is milled into lumber at the point of its highest economic value, and its carbon is sequestered into long-lasting lumber products.

Restorative forestry maximizes a forest's capacity for carbon sequestra-

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tion by allowing trees to reach their maximum potential before harvesting. At that stage, carbon is stored in long-lasting wood products. When a forest is sustainably managed, the trees continue to sequester carbon as well as produce lumber for the community. By harvesting a tree toward the end of its growth cycle, carbon sequestration is optimized.

Not only does clear-cutting destroy forest ecosystems, but if replanted, it sets up a scenario for even-aged tree stands. Selective timber harvest, on the other hand, allows for large forested areas to be harvested on a rotating basis and for smaller lots to be logged on a more frequent basis. With careful tree selection and harvesting, forest ecosystems are maintained and forest health can be improved.

Jason coined the term "worst first" tree selection. While he worked with the Berea Foresters, he explained. "Consider the forest a garden," he said, "where the goal is to produce the heartiest possible crop. Certain trees are selected for thinning to create the best conditions for the healthiest and most desirable trees to grow. Removing damaged and diseased trees leaves the entire forest less vulnerable to disease. It used to be that fire did much of this work. Certain trees, like oaks and hickories are more fire-resistant than smaller, fast-growing trees. Oaks and hickories are also the most sought after for lumber, they are often the trees removed from the forest first, before they have reached their prime. This allows the fast-growing understory to take over, leaving the forest less healthy and less economically viable."

Following the worst-first method, on the other hand, the goal is to restore a forest to its natural diversity, nurturing the oaks and hickories to allow them to reach their prime, while carefully tending to the next generation of trees, preparing them for the next harvest-cycle.

A focus on producing high-quality timber, rather than simply on the quantity cut, creates a scenario that benefits the health of the forest and the economic viability of the harvest.

Community/Forest Interaction

Sustaining a human community and sustaining a forest both depend upon considering long-term benefits for the system as a whole. In addition to Restorative Forestry practices, new possibilities arise in thinking of these lands as a Community Forest. Berea College is a labor college; every student works for the college ten-to-12 hours a week. Students could therefore be involved in every step of the process of restoring and maintaining Berea's forest lands: learning skills of animal husbandry, how to drive a team, and selective timber extraction. Berea Foresters also operate a portable mill, so they can process the trees on-site. This lumber can then be used for projects campus-wide, as well as in the community.

Other possibilities include establishing a volunteer program which invites community members to engage in forest work; arranging field trips for local schools so students begin to learn about sustainable forestry practices at an early age, or establishing caretakers who live on various parts of the forest land, growing and gathering food and simultaneously modeling and teaching sustainable practices for subsistence living.

As Jason points out, the use of draft animals in forest management is not a return to the past; it, instead, enlarges our thinking to future possibilities yet to be imagined. Most importantly, it puts our focus right where it needs to be, on creating holistic, sustainable systems that not only benefit today's communities, but those of our grandchildren and great-grandchildren, as well.