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Forest Stewardship in Athens

On a sticky hot afternoon in August 2006, a group of weary but determined volunteers of diverse ages and backgrounds, brushing gnats from their eyes and sweat from their foreheads, planted native wildflowers into the Wayne National Forest—plants that they had spent the morning digging out of another forest stand that would soon be sacrificed for a new highway. On an unseasonably cold day the following April, some of the same people (and others) braved subfreezing temperatures and blustery snow squalls to pull a weed called garlic-mustard from the forest floor of Ohio University's Ridges Land Lab. What motivates people to volunteer their time and endure discomforts in order to rescue plants and "weed the woods" (as one passerby wryly put it)?

The biologically rich forests of Appalachian Ohio are, for me and many other people, a source of profound joy and tranquility. Solitude in wild places has a soothing and rejuvenating effect that is essential to my sense of who I am and my place in the world. Having grown up in open farm country, I feel privileged to live amongst the hills and forests of Athens County—to be able to walk out of my back yard and hike all day in continuous forest interrupted by only a single road crossing.

Sadly, though, this precious natural heritage is threatened. The most obvious concern is destruction of forests in order to build highways, malls and housing developments. Two less obvious but more insidious threats are deer overpopulation and the succession of invasive Eurasian weeds that are spreading into southeast Ohio. Rather than destroying the forest suddenly and completely, as development does, invasive plants move in gradually, unnoticed at first, and spread like a cancer. Crowding out the native plants and in some cases poisoning them with chemicals produced by their leaves and roots, they change the composition of the forest floor, replacing the multitude of species with a few very competitive ones. It may not be obvious to the casual observer, but to the botanist or anyone else who knows and appreciates native woodland plants, the cumulative effect of these invaders is nearly as devastating as complete loss of the forest.

Some species, like Japanese honeysuckle, have been here for a century or more, but most have arrived in the past 50 years. In the 26 years I have lived in Athens, I have seen garlic-mustard transition from rarity to ubiquity. In the past decade, Asian bittersweet (dubbed "the kudzu of the north") has greatly expanded its presence in the Athens area, and Asian stilt-grass is now rapidly spreading along roadsides and streams. Unfortunately, most of these species are seldom eaten by deer, which instead are decimating some native species such as trilliums and hydrangea. (Hunters have a critical role to play in protecting our native flora, since the natural predators such as wolves that once controlled deer populations have been exterminated.)

How did these weeds get here? Many Eurasian plants that are now known to be invasive were brought to North America intentionally for horticultural use; some, such as burning-bush, are still widely planted. Others were accidentally introduced. It is people who brought these plagues to

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America's forests, and it is people who must now work to limit the damage they are wreaking. This is an important element in our stewardship of the Earth. For me personally, it is a moral imperative.

When one sees the extent to which invasive plants have taken over our forests, despair can lead to inaction. One person commented to me that pulling garlic-mustard is like trying to bale out a ship with a teacup. To attempt to eradicate this pest entirely would, indeed, be a hopeless goal. But this is not the objective of mustard-pulls. Using a triage approach, we target selected stands of publicly owned forest that particularly deserve protection because they still have a diverse native flora. In most cases, garlic-mustard has only recently moved into these stands and is not yet as abundant as it will soon be if we ignore it. Eliminating it entirely from these areas is a realistic objective, but it will require persistence over a period of years, because new plants grow each spring from seeds that are already in the soil.

Because many invasive species have arrived relatively recently, much of our local forest is still in excellent condition. For example, there are many parts of Strouds Run State Park away from roads and trails where the flora is almost entirely native. (A botany colleague at Yale University was amazed and envious when I told him that I have a teaching resource of this quality only 20 minutes drive from campus. Most east-coast woodlands are already overrun with invasive plants.) We have the opportunity to maintain the diversity of these high-quality forests through watchfulness. It is easy to remove the first colonizing weeds if they are discovered early enough, but once there is an infestation, it is a much bigger job.

What is the long-term prognosis? New invasive species continue to spread into our area, so the challenge is great. But although these plants are abundant, so are people. If everyone spent an hour a month removing invasive plants, the problem would be solved. Of course, universal commitment to this goal is not realistic, but many more people are aware of the problem now than a few years ago, and the number who participate in forest weeding increases each year. A former student who helped me pull mustard along the Hockhocking-Adena Bikeway several years ago is now doing the same near her new home in Pennsylvania—with the help of her young daughter. The next generation is learning about stewardship. There is hope.

Last summer, a group of people with similar concerns formed the Athens Forest Stewardship Club. Partnering with other local organizations such as Rural Action and the Athens Conservancy to help protect the biodiversity of public forests, this club brings together an amazing diversity of people: OU students and local farmers; young professors and aging tree-huggers; international students and lifelong Appalachian residents; young children and seniors. There is a sense of camaraderie and the satisfaction of making a tangible improvement in the world.

In addition to removing invasive weeds, the club salvages native plants from construction zones and transplants them into young woods or disturbed sites that need restoration. The primary goal of plant salvage projects is not simply rescuing individual plants from the bulldozers. Rather, the plants are used as genetic stock to start new populations of native species that don't have an effective means of long-distance dispersal. Many of our forest wildflowers are dispersed by ants, or the seeds simply fall near the parent plant. OU forest ecologist Glenn Matlack dubbed this phenomenon "slow plants in a fast forest". Although many trees have seeds that are spread by wind or birds and are therefore able to colonize new territory quite quickly, it takes far longer for some of the forest herbs to follow. Consequently, forests that grow up on abandoned agricultural land may have a species-poor flora long after the trees are mature. It is people who destroyed the

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original forests, but people can also help the forests recover--by planting native forest wildflowers that will grow well in young forests that they cannot easily reach without our help.

In addition to the club's work sessions, members are encouraged to "adopt" tracts of forest that they monitor regularly for invasive species to remove, just as groups adopt roadsides that they keep clean of litter. As well as making our forests more beautiful for everyone, adopting a forest stand instills a feeling of "ownership" of a particular natural area and a commitment to good stewardship of public lands. In the year since the club was formed, five tracts of public land have been adopted by members.

Some people ask why we should care if invasive plants colonize our forests. After all, change is inevitable. The species that are native to today's forests are not the same ones that grew here 20,000 years ago, when the edge of the continental ice sheet was only about 50 miles away. So why not welcome the latest newcomers to our flora? In fact, most introduced species co-exist well with our native flora and do not take over. But a few Eurasian species, having been introduced without the insects and other factors that control their population where they are native, are extremely effective competitors. The species in a forest ecosystem have a complex network of interrelationships that has evolved over thousands of years. When a diverse plant community is replaced by a few non-native species, the impact on other species of plants, animals, fungi, and microorganisms can be both large and unpredictable.

Although I am a biologist, my strongest motivation for trying to control the spread of invasive species is not a matter of science, but of values. Although we trot out justifications based on protecting species that may be medicinal or benefit humanity in some other unspecified way, I dislike relying on these arguments because of the underlying assumption that biodiversity is only worth protecting if it benefits people in some way. Such anthropocentrism is at the heart of many environmental problems the Earth faces today. In my view, other species have as much right to exist as *Homo sapiens*, and it is our responsibility, as the dominant species on earth, to do what we can to protect them—good stewardship, in other words. This is not to say that I would oppose exterminating a species (some kind of bacterium, for example) that is a direct threat to our own survival, but most of the damage we do to other species is not a matter of our survival but simply of catering to our pleasures. For example, consider the amount of open space that is devoted to golf courses, a biologically sterile environment that is typically maintained through the extensive use of pesticides.

Protecting biodiversity is also a matter of esthetics. If one finds wildflowers and ferns beautiful, protecting them becomes imperative. Conversely, people who don't spend enough time in wild places to develop an appreciation for the beauty of other species aren't going to know or care if hundreds of native species are replaced by a dozen very competitive exotic ones. My own values and esthetics were heavily influenced by having spent vast amounts of time in the woods and fields as a child. Most children today spend too little time exploring nature, for a variety of reasons that are explored in Richard Louv's thought-provoking book, *Last Child in the Woods*.

I have found that many people who are intensely motivated to save special places from anthropogenic threats suffered the loss of special places that they loved as children. In my case, two woodlots where I spent countless happy hours as a child were destroyed in my late teens, one for a housing development and the other to expand the sports fields for the high school. The intensity of my feeling of loss was comparable to what I would have felt at the death of a friend. At the time, I wrote a bitter letter to the local paper pointing out how much more I had learned through observing nature in those woods than I learned in the high school science classes. In retrospect, I have realized that this loss was a formative experience for me and was instrumental

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in motivating me to protect natural areas later in life. I have heard similar sad stories from quite a few other people—not surprisingly, because the relentless growth of the human population is leading to the loss of more and more special places. Fortunately, there are some communities where there is the collective will to protect natural areas. Athens is such a place.