



forest

WISDOM

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Focus on Regions: Lake States

This issue of Forest Wisdom explores a cross section of the challenges facing Guild practitioners in the Lake States and examples of strategies they are successfully pursuing on the ground.

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The Lake States: Leaders in Utilizing and Advancing Ecological Classification Systems

related to natural communities and habitat, Ecological Classification Systems (ECSs) are used to categorize the environment into small units containing relatively uniform patterns and processes. ECSs help foresters and other natural resource managers understand, manage, and communicate about diverse ecosystems. While the ideas behind them extend back to the 1940s or earlier, ECSs are currently gaining momentum as tools for ecological forestry.

Using ECSs allows land stewards to be more specific about local conditions than relying on a basic forest type or dominant species identification. In this way, ECSs are similar to measures of site index; but more importantly, ECSs focus on the whole ecosystem, not just timber trees. The concept is straightforward, and most people who spend time in the woods intuitively grasp an ECS for their region. The challenge is taking the complex ecological attributes of an area and simplifying them into categories that translate into management possibilities. In fact, this may be the most difficult hurdle to overcome to realize the value of ECSs in forest management. Once linked into management, additional opportunities arise to use ECSs: for instance, to identify preservation priorities or to meet certification standards.

Although ECSs exist for various regions across the U.S. and Canada, the Lake States offer excellent examples of their utility and power. Most of the ECSs in the Great Lakes region are based on common data and analytic methods and share the concept that the groundlayer is a better indicator of site conditions than the overstory because it is more tightly tied to the nutrition and moisture regimes of forest soils. Also implicit in ECSs are the beliefs that trees behave differently from one community to another



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Dear Forest Guild members and friends,

This past year, the Forest Guild strategic plan was revised providing a roadmap that articulates goals and objectives to fulfill our mission and measure our success against. This plan serves as the basis for program development and enables us to better communicate our focus to our members, partners, supporters, and the public. The final version of this document is available on the “Members Only” portion of the Guild’s website or by contacting me. I appreciate the time that many of you took to review and provide input on various drafts of this plan.

One part of the strategic plan that generated a lot of discussion was what term to use to describe the type of forestry that the Guild promotes. Among many terms that the Guild and its members have used, we settled on “excellent forestry.” The Guild has used this term for several years, but it hasn’t seen widespread use outside of the organization. This allows us to apply our own definition to it.

When I began working for the Guild in January 2007, we were using many terms to describe the type of forestry we promote. It was distracting and sometimes confusing for many of our audiences. I came to believe that the best way to communicate our message was to settle on one term as the primary term to describe what we do. After a number of discussions, “excellent forestry” emerged as the broadest term with the least baggage that also set a high standard. The Guild’s board, Membership and Policy Council, and staff—along with dozens of members I spoke with—came to consensus around using this term.

Many terms considered—e.g., nature-based forestry, ecological forestry, naturalistic forestry—were recognized as important components of “excellent forestry” but not selected because they did not capture the community forestry aspect of our work. “Sustainable forestry” was a frontrunner, conjuring up the three interlinked realms of concern for the Guild (ecology, community, and economics), but was discarded amid concerns that it has been frequently misapplied, overused, and watered down. “Guild-style forestry” was also discarded, mainly for being circular (e.g., the Guild practices Guild-style forestry).

We also recognized that no matter what term we picked there would be some who prefer another. In the end, the board and staff felt that we could debate this for months and years—and we probably will—but that it was time to select a term and begin building awareness of it.

Thus, we’ve incorporated excellent forestry into the Guild’s mission statement, subject to approval by our professional membership in a vote this spring:

The Forest Guild practices and promotes ecologically, economically, and socially responsible forestry—“excellent forestry”—as a means of sustaining the integrity of forest ecosystems and the human communities dependent upon them.

We’ve also provided an expanded definition of excellent forestry that draws upon the Guild’s membership principles in our strategic plan and on our webpage (www.forestguild.org/excellentforestry.html). Any term we use will require elaboration since it is impossible to sum up the complexity of forestry considerations and the values expressed in the Guild’s principles in a two-to-three word phrase. Hopefully, “excellent forestry” will open the door for Guild members to talk in more detail about the essential work they do and about the Guild and its principles.

Sincerely,

Howard Gross
Executive Director



An uncut maple and hemlock stand, known as an ATM (*Acer Tsuga Maianthemum*) in Kotar's system.

and that foresters need to understand the nuances of site-driven variability in silvics to successfully manage forests. Not only do the ECSs in the Great Lakes region share a common base, they also work well together. The inter-system compatibility allows the users to combine relevant information to make informed management decisions.

The Minnesota ECS

The Minnesota ECS is tied to a hierarchical mapping scheme and facilitates stand-scale decisions that better fit with the overall direction of a landscape forest plan. As developed by the Minnesota Department of Natural Resources (DNR), this classification is the result of a cooperative effort by the conservation and forest-management communities. In theory it offers a common language among the different disciplines as well as ownership that will foster improved communication. For example, the DNR's Native Plant Communities classification can be connected to the Aitkin County (Minnesota) Land Department's own Forest Ecological System (FES). In a demonstration of ECSs' utility, Aitkin County's use of the FES was cited as one

of its strengths when it was certified by SmartWood.

The Minnesota classification system is being used to interpret natural disturbance regimes and usual stand dynamics and to design silvicultural systems that reasonably approximate nature with regard to soil disturbance, conservation of advance regeneration, and tree legacy, among other factors. The expanding use of ECSs is shifting how people approach silvicultural prescriptions. Previously it was incumbent on the forester to account for the variability in tree growth due to site or geography. With ECSs there is better guidance about what to expect from a given type of site.

The Wisconsin ECS

The Wisconsin ECS is tied to silviculture through a habitat-typing system developed by John Kotar (at the University of Wisconsin-Madison) and colleagues. The Kotar habitat-typing system provides managers with a dichotomous key to first identify the habitat type, a set of habitat names to communicate more exactly with other managers, and a guide to silvicultural alternatives for that particular habitat type. In his publication, *Approaches to Ecologically Based Forest Management on Private Lands* (www.na.fs.fed.us/spfo/pubs/misc/ecoforest/toc.htm), Kotar stated that "understanding natural forest dynamics in a particular region should be the foundation of every management action," and that "landowners and society are better served if forest resource professionals understand ecological characteristics of individual species and forest dynamics in the context of site quality." Of course, silviculture is as much art as science, and guides to ecological options require a professional who can read the landscape and weigh all of the forest values and co-benefits.

The Menominee Tribe in Keshena, Wisconsin, also uses Kotar's habitat-typing system in conjunction with traditional knowledge to guide their silvicultural prescriptions. The habitat typing has helped Menominee tribal foresters to understand the historical impact of fire on the landscape, supported the reintroduction of fire as a disturbance agent, and aided their efforts to

Member Perspective

"I think that the use of ecological classification systems is or would be the single biggest paradigm shift in the past 100 years of forest management. And as I've watched forest and wildlife resource managers in the Certificate Course become adept in the knowledge and technical skills needed to use the Minnesota systems, I've seen them develop an excitement about their work that I suspect is what drew them to their professions in the first place—understanding and using the complexity of forests to create the many resources we need and enjoy."

— Louise Levy
University of Minnesota
Cloquet Forestry Center.



Reference benchmark mixed-pine stand in the Seney Wilderness Area, Seney NWR.

INNOVATIVE FOREST MANAGEMENT

Seney National Wildlife Refuge and Kirtland's Warbler Wildlife Management Area

by R. Gregory Corace III,¹ P. Charles Goebel,² and Nancy E. Seefelt³

established in 1903 when President Roosevelt created Pelican Island (Florida) as a preserve and breeding ground for migratory birds, the US Fish and Wildlife Service National Wildlife Refuge System (NWRS) represents our nation's attempt to conserve, preserve, and restore lands for the wildlife they support. Just over a century later, the NWRS currently consists of 548 refuges that comprise nearly 100 million acres.

Historically, many refuges were established for conserving single species (including endangered and threatened species) or species groups. During the 1930s and 1940s, for instance, many refuges were established for the production of waterfowl through wetland conservation and restoration. Although wetlands still dominate the NWRS, in the Lake States a number of forested refuges are also found, including Necedah National Wildlife Refuge (NWR) (Wisconsin); Tamarac NWR, Sherburne NWR, and Rice Lake NWR (Minnesota); and Shiawassee NWR, Seney NWR, and Kirtland's Warbler Wildlife Management Area (Michigan). However, most of the forest ecosystems of these refuges are considerably altered relative to their pre-European settlement conditions. Fortunately, our national conservation philosophy has developed, and advancements have been made in the fields of conservation biology, landscape ecology, and forest ecology. A new era of ecologically based conservation and restoration now characterizes forest management on these and other refuges. Here we use Seney NWR in the Upper Peninsula of Michigan and Kirtland's Warbler

Wildlife Management Area (WMA) in the northern Lower Peninsula as two examples of current approaches to forest management on refuges in the Lake States.

Seney NWR

At nearly 96,000 acres, Seney NWR (est. 1935) is one of the larger refuges east of the Mississippi River. Due to landscape position, surrounding land uses, and its relative remoteness, Seney is considered one of the more ecologically intact refuges of the lower 48 states. Although many of its forests are altered from their pre-European settlement condition, Seney benefits from having most pre-European-settlement land-cover types represented, a forested matrix that is primarily in public ownership, and few invasive species.

Successional trajectories for the majority of upland forest ecosystems at Seney led to fire-maintained mixed-pine forest type, with an overstory dominated by red pine (*Pinus resinosa*) and white pine (*P. strobus*), and scattered jack pine (*P. banksiana*). High-grading during turn-of-the-century logging, catastrophic wildfires fed by logging slash, and other management actions for early successional tree species, however, have altered many (but not all) of these stands. In some areas where catastrophic wildfires burned very hot, "stump fields" dominated by grasses, sedges, and other perennial ground-flora now persist. Other areas where the natural fire regime has been altered are now jack pine dominated. Slowly decaying white pine stumps provide a glimpse of the mixed-pine forests that once characterized these sites. Both conditions are considerably less structurally and compositionally diverse and require restoration.

Greg Corace

A Forest Guild member since 1999, Gregory Corace is refuge forester, Seney National Wildlife Refuge and Kirtland's Warbler Wildlife Management Area. Research interests include biogeography, conservation biology, ecological restoration, forest ecology, and landscape ecology.

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New woody biomass harvesting technologies such as this slash bundler are helping to make wood-fired heating systems cost effective for schools and other facilities.

BALANCING CONSERVATION AND DEVELOPMENT

Woody Biomass Utilization in Michigan's Upper Peninsula

by Christopher Burnett, PhD



Christopher Burnett, PhD

is the director of BURN-UP and owner of Big Creek Consulting Forestry. He has been a member of the Forest Guild since its inception. For more information, contact burnup@charterinternet.com, 906-226-2461 x122, or www.upwoodybiomass.org.

We appear to be on the brink of a widespread movement toward greatly increased harvesting of woody biomass for fuel and chemical feed stocks. At the global level, an indication of this trend can be seen in a recent analysis of investments related to climate change in which biomass production schemes play a prominent role. At the regional Lake States level, a large-scale, biomass-fueled power plant (using turkey litter that contains some wood particles) has recently been completed by Fibrominn LLC in Benson, Minnesota. Currently there are multiple plans for the construction of large, wood-fired facilities in Michigan and Wisconsin. Pressure on Lake States wood resources is not limited to regional markets. In 2007 the Kedco Group of Cork, Ireland, announced plans to annually export up to 500,000 tons of wood chips from Duluth, Minnesota, to Europe. Biomass energy conferences abound throughout the country, and major news magazines have had cover stories on biomass fuels. While most of the press has focused on ethanol derived from corn, more astute analysts realize that woody biomass is more likely to be at center stage in future biomass-to-energy scenarios.

To the degree they develop, the expected increases in woody biomass markets will create

new opportunities for better forest management as well as new risks to forest sustainability. Both the opportunities and the risks stem primarily from the new ability to profitably remove wood that was formerly uneconomical to harvest due largely to its small diameter. The opportunities can be viewed as silvicultural tools for forest restoration such as control of invasive species, re-diversification of native tree species composition, acceleration of complex stand structure, and emulation of natural disturbances, especially fire.

The risks are several, with negative impacts on soil, water, and habitat being the dominant concerns. The main soil issues are erosion, compaction, and depletion of nutrients and organic matter. Sedimentation and flashier hydrological regimes are the water impacts of most concern. The clearest impacts on habitat are excessive removal of snags and large woody debris, although many other negative effects can also occur.

The Biomass Utilization and Restoration Network for the Upper Peninsula (BURN-UP) was developed as a response to these challenges in northern Michigan. The project, which is funded by the USDA Forest Service and

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DOVETAIL PARTNERS REPORT *Forest Certification Leadership in the Lake States*

by Kathryn Fernholz

Kathryn Fernholz

is executive director of Dovetail Partners, a non-profit organization headquartered in Minneapolis, MN. A Forest Guild member since 2001, she has worked on community forestry, development, and forest management issues.

This article is adapted from a report prepared by Dovetail Partners and sponsored by the Blandin Foundation's Vital Forests/Vital Communities Initiative. The full report entitled "The Great Lakes Region: A Forest Certification Hub" includes certification information for Canada as well as the U.S. The report is available at: <http://www.dovetailinc.org/reports/pdf/DovetailRegCertReport1107gc.pdf>.

Over the past decade, the Lakes States region has become a hub for leadership and innovation in forest certification and is increasingly recognized for helping to address concerns related to responsible trade and consumption and for informing land-use decisions.

The three states included in the region, Minnesota, Michigan, and Wisconsin, represent 29 percent of all the certified forestland in the U.S., including 50 percent of the Forest Stewardship Council (FSC)-certified and 19 percent of the Sustainable Forestry Initiative (SFI)-certified lands.¹ To gain some perspective, consider that these three states account for less than 10 percent of the forestland in the country. However, Minnesota has the greatest amount

of FSC-certified forest in a single state with more than 6 million acres.

Certification Background

Since the early 1990s, an increasing number of forest managers and forest-product companies have adopted forest certification. (See Figures 1 through 3) The area of certified forest worldwide now totals at least 667 million acres, approximately 7 percent of the world's forests.² The reasons for deciding to participate in forest certification vary and include considerations related to meeting forest-management mandates, serving stakeholder interests, meeting customer demands, pursuing market niches, and other factors that cross the spectrum of social, environmental, and economic concerns.

At the same time that certified forest area has increased, customer demand for certification has also grown. There are 1,227 companies in the U.S. with chain-of-custody certificates to manufacture or distribute certified products. Of these, 61 are in Minnesota, 47 in Wisconsin, and 39 in Michigan. These represent 12 percent of the certificates in the country. Two significant areas of market growth for certified products in North America have been in the paper/publishing sector and the green building movement. The recent growth in the market for certified paper products is perhaps best illustrated by the fact that of the 130 companies with chain-of-custody certificates for paper and paper products in the U.S. today, only 18 (14 percent) of those certificates were first issued before 2005, and at least 70 (54 percent) of them were issued in the first three quarters of 2007.³

Certification Drivers

The forest-certification activity in the region is a result of several factors. The region has a significant amount of public forestlands (state- and county-managed), and these lands are largely certified. Research recently completed by the University of British Columbia highlights the drivers for certification on state-managed forestlands in the U.S. These drivers include: securing the financial resources to address the costs of certification, market opportunities and buyer pressures, regional

economic competitiveness, stakeholder advocacy, and state leadership.⁴ These drivers likely have relevance to other ownerships as well. One of the most significant marketplace drivers for certification in the region is the pulp and paper sector, and specifically the commitment made by Time Inc., the largest magazine publisher in the U.S., to increase the amount of certified fiber that it uses. In 2006, Time Inc. sourced approximately 70 percent of its fiber from sources that met the criteria for its Certified Sustainable Forest program.⁵

Certification Histories and Next Steps

Each state in the region has taken a unique approach to pursuing certification, and each story helps explain the types of commitments and resources necessary to result in the level of participation that is now evident in the region. The states also have new initiatives underway to expand the impact of their efforts.

Minnesota

Land managers and forest-product companies in Minnesota have been active in forest certification efforts for more than ten years. The Aitkin County Land Department was the first county land manager in the U.S. to become certified, and it celebrated ten years of FSC-certified forest management in 2007. The St. Louis County Land Department in Minnesota is a significant participant in the SFI program with nearly 900,000 acres certified. The Minnesota Department of Natural Resources (DNR) has approximately 4.9 million acres certified to both the FSC and SFI standards. New initiatives in the state include efforts by the DNR to explore group-certification opportunities for family forest owners. Also, a number of additional county land departments are pursuing certification.

Wisconsin

Forest certification programs are being used on state-, county-, and industry-managed lands in Wisconsin. In addition, Wisconsin was the first state to establish a statewide group-certification program for private woodland owners. With this program, approximately 30,000 Wisconsin landowners who have a total of more than 2 million acres enrolled in the Managed Forest

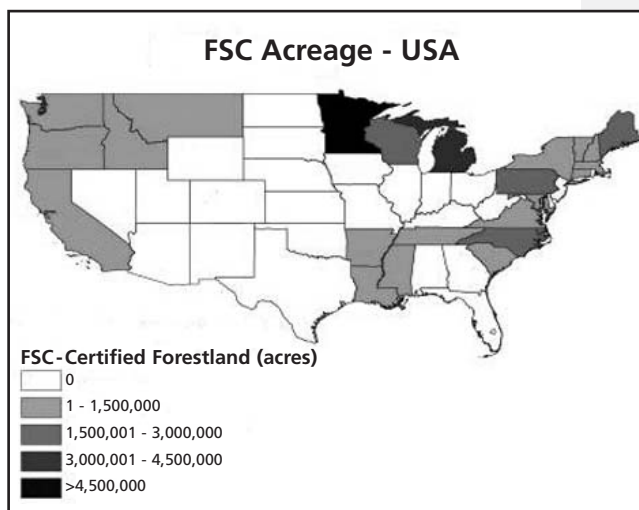


Figure 1: FSC-Certified Land in the U.S.

Compiled by Dovetail Partners, October 2007.
Data Source: FSC-US, August 2007.

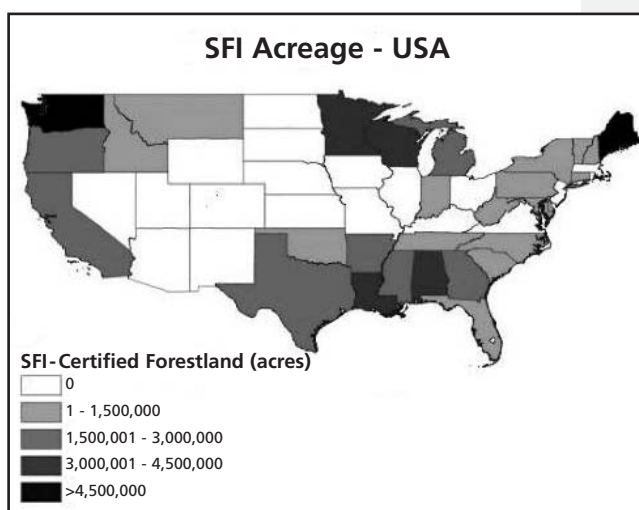


Figure 2: SFI-Certified Land in the U.S.

Compiled by Dovetail Partners, October 2007.
Data Source: SFI, August 2007.

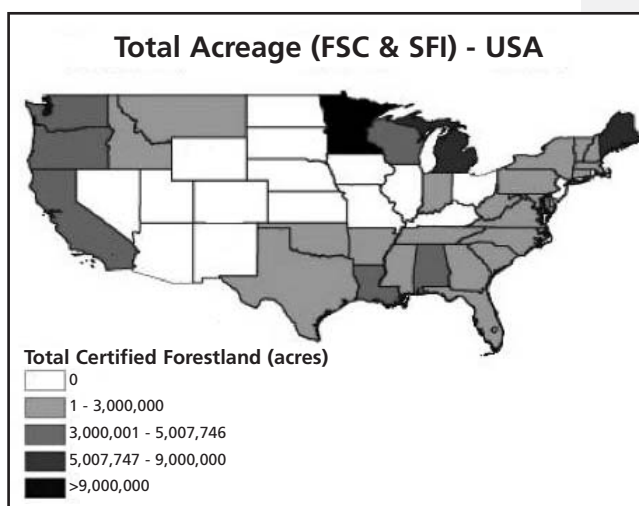


Figure 3: SFI and FSC-Certified Lands in the U.S.

Compiled by Dovetail Partners, October 2007.
Sources: SFI and FSC-US, August 2007.

Law (MFL) program have been recognized as meeting the forest-certification standards of the American Tree Farm System (ATFS). In 2008, the Wisconsin Department of Natural Resources is pursuing FSC certification for the MFL program participants as well.

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This and other wood bridges provide safe access to the Ford Forest for thousands of students, workshop participants, and visitors each year.



PROSPECTIVE MODEL FOREST

Interview with James Schmierer: Manager of the Ford Center and Research Forest at Michigan Technological University

James Schmierer

Guild Professional member and manager of the Ford Center and Research Forest at Michigan Technological University in Houghton, MI.

“The greatest challenges we currently face include biological threats from a changing climate and invasive species, both of which introduce tremendous uncertainty about the future.”

Q. Would you tell us about the history of the Ford Forest?

A. The Ford Center and Research Forest is a field station and satellite campus affiliated with the School of Forest Resources and Environmental Science (FRES) of Michigan Technological University (MTU). The 3,600-acre forest was acquired as a result of the initial donation of 1,800 acres from the Ford Motor Company in 1954, followed by a donation of about the same acreage from the then Michigan Department of Conservation in 1957. These lands had been subjected to several heavy cuttings in the late 1800s and early 1900s, but after acquisition by the Ford Motor Company the beginnings of a partial-cut system were employed to provide a sustained yield of forest products. Since its inception in the 1950s, the forest and facilities have been dedicated to research, teaching, and demonstration. A philosophy of forest improvement and long-term stewardship have been followed ever since, including proper road construction, establishment of reserve areas, and studies across a variety of topics from growth and yield to quality development, ecological relationships, and wildlife habitat interactions.

Q. What are the short- and long-term goals for the Ford Forest?

A. In the short term, goals include forest certification under the Sustainable Forestry Initiative (SFI), the Forest Stewardship Council (FSC), and the American Tree Farm System (ATFS), as well as designation as a Forest Guild Model Forest. Our long-term goals include the development of a forest water-quality best-management-practices demonstration area and applications of renewable energy from wind, solar, biomass, and micro hydro.

Q. Why is the Ford Forest so important as a model for ecological forestry and sustainable management practices?

A. The Ford Forest receives large numbers of visitors because of its high visibility along US Highway 41 in Michigan's Upper Peninsula. Recreation—snowmobiling, hiking, biking, hunting, and fishing—is one of the primary uses of this forest, and it offers an ideal opportunity to expose users to management systems and techniques that not only preserve these benefits, but enhance them over time. We also offer a variety of educational and outreach

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programs that expose people to forest stewardship and sustainable management. I have also conducted several forestry and ecology programs for youth and worked with our other forester, Jim Rivard, and numerous MTU forestry students to conduct a series of maple-syrup and sugarbush management workshops for over 600 participants in the spring of 2007. Cumulatively these programs have impacted thousands of people since 2001.

Q. What are your greatest challenges?

A. The greatest challenges we currently face include biological threats from a changing climate and invasive species, both of which introduce tremendous uncertainty about the



James Schmierer shown in a small inclusion of eastern white pine/eastern hemlock at the Ford Forest.

future. Related to that is the challenge of maintaining and enhancing forest biodiversity over the long term in the face of incomplete knowledge and understanding of many of the interactions that are occurring. An example of this would be restoration of eastern white pine to northern hardwood systems. We have begun

a series of enrichment plantings to reintroduce eastern white pine on appropriate sites. Another challenge is balancing the variety of forest uses that sometimes conflict with each other and that also change over time. Examples of this would be deer overabundance, browse pressure on regeneration, and hunting. To further investigate this interaction, we have installed several deer exclosures on the Ford Forest, and are working with MTU faculty and graduate students to determine the effects of continued herbivory on forest regeneration and composition.

Q. What have you discovered during your tenure as Ford Forest manager that has really surprised you about forest resilience?

A. One of the most surprising findings recently has been the ability of large trees (20-inch DBH and greater) to maintain relatively high rates of growth under traditional uneven-aged management of single-tree and group selection. This relates to some of the long-term northern-hardwoods management that began on these lands in the 1930s. In the beginning, many of these stands were heavily cut over and had cull exceeding 50 percent. In 50 years under an uneven-aged, stand-improvement regime on an approximate ten-year cycle, most of these stands are now fully stocked, have a balanced diameter distribution, and contain about 60 percent grade two and better trees. This is likely the result of maintaining relatively well-stocked stands (80 square feet of basal area post-harvest) and of foresters using careful evaluation of trees to determine the potential for continued good growth and quality development. There is no substitute for a discerning eye and full understanding of tree- and log-grading rules when marking hardwood timber.

Q. The phrase “useful concepts that have been placed in context and rendered operational” is found on the Ford Forest website. Would you describe one or more examples of useful concepts that have been placed in context and rendered operational in the Ford Forest?

A. Current knowledge regarding the importance of vertical structure and snags has been applied and rendered operational. We have included

“One of the most surprising findings recently has been the ability of large trees (20-inch DBH and greater) to maintain relatively high rates of growth under traditional uneven-aged management of single-tree and group selection.”

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Altered stand formerly comprised of mixed pine, but now dominated by jack pine, Seney NWR. Note white pine stump in foreground.

“Whereas forest ecosystems within the NWRS were once either ignored or viewed as habitat for single species or game species, land managers are now beginning to grasp how forests on refuges can function in a broader spatial and temporal context.”

In conjunction with colleagues at The Ohio State University (OSU), the USDA Forest Service (USFS) Northern Research Station, and MTU, research funded by the federal Joint Fire Science Program is being conducted to better characterize the variability in the pre-European-settlement, post-settlement, and post-Seney establishment fire regimes and their impacts on mixed-pine forest structure and composition. Isolated mixed-pine stands that repre-

sent the pre-European-settlement condition in the 25,150-acre Seney NWR and the associated Strangmoor Bog National Natural Landmark allowed for comparisons across a gradient of altered forest conditions. Results suggest strong linkages among fire history, management intensity, and stand structure, composition, and fuel loadings. Currently these results are being analyzed to help develop more ecologically based restoration guidelines.

Kirtland's Warbler WMA

Whereas the primary goal of forest management at Seney is to restore composition and structure in many stands to pre-European condition, forest management at Kirtland's Warbler WMA (est. 1980) primarily provides early successional jack-pine breeding habitat for the endangered Kirtland's warbler (*Dendroica kirtlandii*). The Kirtland's warbler is a ground-nesting, neotropical migrant whose primary breeding range encompasses the sandy outwash plains associated with the Kirtland's Warbler WMA. Although most management actions are in concert with a multi-agency recovery plan for the warbler, habitat management on the 125 tracts totaling nearly 6,900 acres can also be conducted for broader, multi-species and ecosystem benefits. In fact a recent study conducted with OSU demonstrated that each of three different age classes of jack pine provide benefits for many bird species of conservation priority, from openland species in recently harvested stands to species of mature, close-canopy forests in older stands. Along with

timber harvesting and the re-planting of jack pine, research and management is now looking at methods for better emulating other stand structural attributes that develop following the natural disturbance regime—wildfire—in these forest ecosystems. For example, research conducted with Central Michigan University involves documenting the efficacy of mechanically creating snags and quantifying the multi-species use of this enhanced structure.

To guide land-management decisions within the NWRS, the 1997 Refuge Improvement Act calls for refuges to manage within an ecological context and restore habitats to historic conditions where and when possible. Whereas forest ecosystems within the NWRS were once either ignored or viewed as habitat for single species or game species, land managers are now beginning to grasp how forests on refuges can function in a broader spatial and temporal context. Increasingly, forests on refuges in the



Aerial view of Kirtland's Warbler habitat. Note intensively planted and relatively uniform jack pine with small canopy openings to the right, and the heterogeneous habitat produced by prescribed fire to the left.

Lake States are being managed for a broader spectrum of stand conditions to provide wildlife habitat and accomplish broader ecosystem goals and objectives. ■

Acknowledgements: Other investigators involved with the Joint Fire Science Program-funded mixed-pine restoration research include David Hix (OSU), Igor Drobyshev (OSU), Marie Semko-Duncan (OSU), Robyn Wilson (OSU), Brian Palik (North Central Research Station), and Kimberly Broszofski (MTU). The authors wish to thank Tracy Casselman and Dave Olson of Seney NWR for their edits and suggestions.



*Left:
Ham Lake fire burn
of new planting with
unscorched conifers
in the background.*

*Right:
Mature red pine
after a cleaning.*

ON THE GROUND

Profile of a Forest Practitioner

by Peter P. Bundy



Peter Bundy

Forest Guild member Peter Bundy is the president of Masconomo Forestry, a private forestry consulting firm based in Minnesota. His current work is primarily helping other professional resource managers solve restoration management challenges in the Lake States.

here in the Lake States, most of our forests are beat up. They are beat up from past agricultural practices like farming and grazing. They are beat up from past forestry practices like highgrading and commercial clear cuts. They are beat up from recent wind storms and ancient fires. They are also beat up from diseases, bugs, and drought. Due to all of these travails, our forests may appear to be a lost cause.

But, in fact, the contrary is true. Past abuses afford those of us who work in the woods an opportunity of wonderful proportions. In Lake States forests, almost every landscape we visit holds a silver lining: a chance to change the trajectory of the curve. We might call it, as ecologist Bill Drury does, enlightened intervention. I prefer the term *restoration forestry*.

Restoration forestry, as I see it, encompasses many different actions and strategies. Some of them are ecological and silvicultural. Some of them are economic, and many others are social in nature. It is the combination of these strategies that offers the greatest rewards and returns to both the landowners and the land.

The ecological and silvicultural aspects of restoration forestry for my clients (and on my own lands) focus on returning health and productivity to the land. Since ecology studies the interaction of the parts of the forest, it helps to begin this process with an ecological classification system such as the ones developed by John Kotar for Wisconsin and John Almendinger et al. for Minnesota. Such systems, while imperfect at interpreting all local conditions, help us gain an understanding of the potential of many of the working parts. With this knowledge, we make fewer mistakes such as trying to grow hard pines on mesic sites. Ecological considerations also help us determine which way the forest wants to go. Lines of succession are more clearly understood. If there is a nice red oak stand on an end moraine with strong sugar maple regeneration in the shrub layer, I may do well not to maintain the site to red oak for the next generation. Ecologically, the site wants to move forward, and if I wish to nudge it backward, I am in for a lot of work and a significant financial investment (to say nothing of the strong possibility of failure).

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Member Perspective

"Certification has been called the most exciting development in forestry in more than a decade because it is influencing forest management decisions and forest managers. The impacts have helped enhance public support for forestry and an increased understanding of the benefits of forest stewardship and responsible management. As forest certification continues to grow, it is increasingly important that foresters engage in the movement."

– Kathryn Fernholz,
Dovetail Partners
Minneapolis, MN

Forest Certification, from page 7

Michigan

Michigan is the only state that has established a law requiring forest certification for state-managed lands. In 2004, the governor signed the Sustainable Forestry Act that required the Michigan DNR to seek and maintain forest certification by January 1, 2006. Michigan has more than 4 million acres certified, including the 3.9 million acres of state-managed land that is certified to both FSC and SFI standards.

Certification Benefits

After ten years of certification experience in the region, participants and stakeholders are increasingly interested in evaluating the benefits of certification. Just as the drivers for certification are highly variable, so too are the potential benefits. Research of benefits for state-forest certification has found that the list of benefits includes: the development of improved public communications, increased investment in forest administration and state-forest practices (e.g., continuous improvement), improved departmental coordination, improved access to state funds, improved staff morale, increased market access and chain-of-custody participation, and improved state forest management leadership.

The Bottom Line

In order for forest certification to deliver benefits, a critical mass of the available supply of certified raw materials, participating manufacturers, and customers who preferentially purchase a range of certified products needs to be reached and maintained. In many ways, this critical mass has been achieved in the Lakes States region. Several challenges remain, including engaging family forests and federal forest lands in certification and expanding chain-of-custody participation. In fact, the achievements to date provide a positive indication of what is possible. The region is a hub of forest certification, and the regional scale of efforts has helped increase the benefits and impact. ■

¹Forest Stewardship Council (FSC); for more information: <http://www.fsc.org>. Sustainable Forestry Initiative (SFI); for more information: <http://www.sfiprogram.org>.

²UNECE/FAO Forest Products Annual Market Review, 2005-2006 <http://www.unece.org>

³Source: Forest Certification Resource Center, data search November 9, 2007 <http://www.certifiedwoodsearch.org/searchproducts.aspx>

⁴Lister, Jane (2007), The Certification of U.S. State-owned Forestland, Institute for Resources, Environment & Sustainability, University of British Columbia, Vancouver, Canada.

⁵<http://www.timeinc.com/community/sustainability.php>

Ford Forest, from page 9

the creation and retention of snags in our management plan and in our timber sale contracts. In jack pine regeneration harvests, we have also included legacy tree retention (primarily large red and white pine) as well as snag retention and green tree retention to improve the habitat quality and vertical structure. We have also used irregular polygons and varied-age class distribution to increase the diversity in jack pine, which is a forest type not normally known to be very diverse. Under this system, nearly all large red and white pine co-occurring with jack pine are left as reserve trees, and we look to position modified, irregularly shaped clearcut areas next to areas of advanced regeneration or pole timber to maximize vertical structure across the area.

Q. The Forest Guild is currently evaluating the Ford Forest for designation as a Guild Model

Forest. What is it about the Ford Forest that you think will make it an exemplary Guild Model Forest?

A. The range of forest and habitat types as well as the variety of management regimes make the Ford Forest an ideal candidate for a Forest Guild Model Forest. We have examples of long-term northern hardwoods improvement, individual and group selection, gap treatments for the regeneration of mid-tolerant hardwoods and eastern hemlock, extended rotation red pine management, and even-aged management in jack pine. The highly visible nature and relatively large amount of public exposure, as well as the long history of education and outreach activities, also make the Ford Forest an excellent addition to the Forest Guild Model Forest program. ■

More information on the Ford Center and Research Forest may be found on their website:

www.fordcenter.mtu.edu



Courtesy of UPM Blandin

UPM spruce plantation established in 1985 on the wrong habitat type for spruce. Photo taken in 2005 shows the site is understocked, with poor tree growth and survival.

encourage blueberry production—a culturally important nontimber forest product.

Another example of utility of Kotar's habitat-typing system and the compatibility of ECSs comes from the Grand Rapids, Minnesota, area where the UPM Blandin Paper Mill owns 197,000 acres of forest. Before UPM (a Helsinki, Finland corporation) purchased Blandin in 1997, the needs of the mill drove forest management decisions. Thus for a 30-year period, trees on Blandin land were harvested and replanted for the purpose of growing mostly spruce with very little management for other tree species.

Using Kotar's system has promoted better forest management and addressed environmental concerns at UPM Blandin. When UPM became certified under the Sustainable Forestry Initiative standard, they agreed to manage the land for biodiversity and wildlife as well as timber. They now manage for all tree species and for all the successional stages of each habitat type. Managing trees by habitat types allows their foresters to work with nature to establish trees on the right sites and at the right time, thus capitalizing on the trees' biology. This has reduced costs and increased tree survival and growth.

Ecological Classification Systems across North America

ECSs are being developed and used across the



Courtesy of UPM Blandin

UPM spruce plantation established in 1985 on the right habitat type. Photo taken in 2005.

U.S. In the Southwest, Forest Guild member Mary Stuever has taught habitat typing for more than ten years. Because of the advantage of on-the-ground learning, her ECS classes focus on field work, and her southwestern habitat-typing guidelines provide red flags to help identify issues that managers should be thinking about. For example, blue spruce/dryspike sedge habitat type has some aspen considerations in the management guidelines. However, in some stands the aspen has been overshadowed and only exists as small seedling-size plants that are actually decades old, waiting for a chance to be released. Without acknowledging the habitat type, the silviculturist might not have thought to look through the understory to see if aspen was indeed a component.

Another area with a well-established ECS is British Columbia, Canada. Their Biogeoclimatic Ecosystem Classification (BEC) is the result of a government research effort that began in the 1970s and has been built into their current Forest Practices Code. However, there is still room for improvement. Often used just as a guide to select tree species for reforestation, BEC has the potential to help forest practitioners make better management decisions for a range of forest values.

In other regions ECSs are a much more recent addition to the forester's tool belt. For example, *Wetland, Woodland, Wildland* (published in 2005) is a guide to the natural communities of

“Understanding natural forest dynamics in a particular region should be the foundation of every management action... Landowners and society are better served if forest resource professionals understand ecological characteristics of individual species and forest dynamics in the context of site quality.”

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Vermont. It covers a wide range of habitat types including wetland species that would have been excluded if timber were the sole focus. However, it does not include a dichotomous key, and some Guild foresters have found that omission to be limiting since having a key facilitates the identification of the habitat type of a stand.

As ECSs are developed and utilized by natural resource managers across the country, they present an opportunity to expand ecological forestry because they emphasize both the importance of nontimber species and the individuality of each site. As more people from many different natural resource fields use ECSs

as a common language, forest management will be able to better provide for the needs of all species including humans. ■

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MEMBERSHIP

Professional Membership

in the Forest Guild is open to all forest professionals whose work is directly related to the stewardship and protection of forests, whether that work occurs through on-the-ground management, policy, advocacy, or research.

Other individuals who share a concern for forests and forestry are invited to participate as **Supporting or Sustaining Members.**

Students are also encouraged to join and become involved.

JOIN TODAY

www.forestguild.org/join.html

Woody Biomass Utilization, from page 5



Currently, chipping slash is the most common method of harvesting woody biomass in the Lake States.

administered by the Upper Peninsula Resource Conservation and Development Council, is simultaneously promoting greater utilization of woody biomass and developing guidelines to limit harvesting to sustainable levels. The overall purpose of the grant is to highlight examples of landscape-scale partnerships involving forest restoration and the use of woody biomass. Accordingly, the project has numerous public- and private-sector partners throughout the Upper Peninsula to demonstrate how fuel-wood harvesting can be used to restore forest health.

The BURN-UP project is addressing both the demand and supply sides of the equation. On the demand side, the project is providing technical and financial assistance to schools and other mid-sized facilities that could realize substantial savings by converting to wood-fueled heating systems. There are a few places (e.g., near large wood-processing mills) where large wood-fired plants make sense. However, due to

the geographically scattered and low-energy-density nature of most biomass resources, small- to medium-scale facilities offer the best opportunity for developing demand where it can be supplied from “primary biomass” (i.e., biomass directly from the woods), the utilization of which directly influences forest conditions. On the supply side, the project is conducting demonstration-harvest workshops that include various forest types, harvesting equipment configurations, and levels of biomass removal. The purpose here is to interest more loggers in biomass harvesting by providing first- and second-hand information on harvesting equipment and methods.

The conservation component of the project emphasizes the site-specific nature of forest ecology as it relates to limitations on biomass harvesting. The approach being taken is a GIS suitability analysis primarily based on soil fertility, soil depth, organic matter, and physical site factors such as slope and proximity to riparian areas. Additional factors for some fish and wildlife concerns will be included.

In addition to the balancing act of promoting biomass utilization while simultaneously developing harvesting limitations, BURN-UP's third main component will be a website for information on woody biomass production and utilization in the Upper Peninsula. The site will include a biomass exchange for sellers and buyers of woody biomass, success stories of wood-heated facilities, harvesting guidelines, and more. ■

This brings me to the economic side of restoration forestry: almost all of my clients, particularly those in the private sector, care about the financial return on their lands. While they are sensitive to the abstract goal of “returning forest health” (Who doesn’t want a healthy forest?), it is a much easier pitch if I also talk about potential long-term financial returns. In the Lake States, this often means intermediate treatments: harvests that remove a portion of the working capital and leave the longer-lived and better-formed species to grow into greater value. For some family forest landowners (the do-it-yourself types), these harvests may focus on fuelwood for their stoves in the winter or a lumber pile for their next building project. My job is to demonstrate, with the ubiquitous paint gun, how to think about the trees to cut for a warm stove or a wood shed. Silvicultural considerations are much better understood by landowners when we stand under a suppressed tree on a walk than when I talk with them at their dinner table.

“ *It is clear to me...
that the ecological aspects of
restoration forestry require an
economic leg to support them.
Similarly, a social strategy is also
necessary for success.* ”

As an example of this process, I have helped two local forestry cooperatives in central Minnesota with their management. About eight years ago, both cooperatives agreed to have many of their members certify their lands to Forest Stewardship Council (FSC) standards. Their members were interested in “a better way,” and I was already certified under the FSC program. At first, the members were enthusiastic about the new program. We initiated inventory projects to give them a clearer idea of their resource base. We talked about coarse woody debris, wetland habitat restoration, and invasive species. As time passed, however, many members grew restless. Markets were slow to develop for their certified woodland products, and they wanted to see a return on their investments.

After years of patience and some frustration, each cooperative has chosen a different path to economic viability. One has started up a dry kiln and markets its wood products locally. Although its members maintain high standards in the woods, they have dropped their FSC certification. Who could blame them? They bought into the program for more than the ecological benefits, and the economic benefits never appeared.

The other forestry cooperative still has members who have maintained their certification through FSC. They felt that it was important to be a part of an international movement for better forest practices. At the same time they started up an enterprise to purchase a portable sawmill for members. Their approach to economic vitality was to bring the sawmill to the woods and to their members. Now their sawmill partnership is in the black and supports other cooperative activities.

It is clear to me from these examples that the ecological aspects of restoration forestry require an economic leg to support them. Similarly, a social strategy is also necessary for success. This may be as simple as earning the trust of the landowner and his or her family. More often, the involvement of a larger community enters into the picture. One neighbor may have a better access road to the work site. Another neighbor may be concerned about property lines or hunting habitat. Or perhaps the land abuts onto public land, and off-road vehicles are a concern.

The forestry I practice is, in a nutshell, a balancing act. Sometimes the emphasis falls heavily on economic investments and rates of return. At other times, silvics and ecology drive the decision-making process. Finally, there are the social considerations that begin with family members and stretch out to neighbors, communities, and government agencies.

All of these elements create a fascinating and complex stew. Sometimes the challenges are daunting. However, the opportunities for creative solutions abound. That is what keeps me motivated as I try to put restoration forestry into practice in my own backyard. ■

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Mission

The Forest Guild promotes forestry that sustains the integrity of forest ecosystems and the human communities dependent upon them.

The Guild provides training, policy analysis, and research to foster excellence in stewardship, to support practicing foresters and allied professionals, and to engage a broader community in the challenges of forest conservation and management.



"The Ford Forest and the Guild's Model Forest Program are an exemplary match since both strive to bring excellent forestry (ecologically, socially, and economically minded) to the attention of both natural resource professionals and the public at large. Furthermore, the Ford Forest as currently managed is a prime example of how thoughtful forest management can offer many educational and recreational opportunities."

— Eytan Krasilovsky,
Coordinator, Model Forest Program