

Conservation on Working Lands

Conference and Annual Meeting of the MN Society for Conservation Biology

February 22-24, 2007
Audubon Center of the North Woods

Schedule and Session Abstracts

Friday February 23rd

8:30 – 9:00 **REGISTRATION - Dining Hall Foyer**

9:00 - 10:00 **PLENARY: Conservation on Working Lands - Crosby Lounge**

Laura Jackson

Who Designs the Working Landscape? A Primer for Conservation Biologists

Working lands can provide significant habitat for conservation of biological diversity but for research to be effective, it is important to understand how land use decisions are made. For years, scientists and others within the sustainable agriculture movement have advised farmers on, for example, soil conservation, cropping systems, and wildlife-friendly practices. However, multiple lines of evidence suggest that, at least for the Upper Midwest, farmers no longer have significant power to make important land use decisions. Strategies for more effective conservation research, education, and policy will be discussed.

Michael Noble

Biofuels: Energy Potential From the Working Landscape

Michael Noble will speak about how advanced biofuels from cellulose can help address some of the world's most pressing concerns: depletion of conventional oil supplies, their concentration in unstable or undemocratic lands, as well as global climate change. Noble believes that a combination of readily available technologies can significantly wean the US from oil while addressing the challenge of global warming. While advanced biofuel cannot be a silver bullet, Noble will show how it must play a critical role in global energy supply.

10:00-10:15 **BREAK – Crosby Lounge**

10:15-12:15 **SPECIAL SESSIONS 1 and 2**

Special Session 1 - *The 2007 Farm Bill: Why Should Conservation Biologists Care?* (Crosby Lounge)

Coordinator: MN SCB Conservation Committee

The 2007 Farm Bill will be the most important piece of legislation affecting conservation in the U.S. this year. Agricultural practices have a major effect on biodiversity conservation, ranging from the 'dead zone' in the Gulf of Mexico to conversion of remaining native habitats and the degradation of freshwater habitats. Yet conservation biologists are just beginning to grapple with the challenges and opportunities of conservation in agricultural landscapes. This workshop explores what's at stake for biodiversity in agricultural landscapes of Minnesota, the challenges and opportunities for 'greening' the 2007 Farm bill, and how conservation biologists can contribute to a 2007 Farm Bill that advances biodiversity conservation.

Introduction (5 minutes): *A Farm Bill Primer*. Mark Muller, Institute for Agriculture and Trade Policy.

Speaker 1 (15 mins.): *What's at stake? Biodiversity status in agricultural landscapes through the lens of MN TNC priority landscapes*. Steve Chaplin, Minnesota Chapter of The Nature Conservancy.

Speaker 2 (15 mins.): *Getting more conservation out of farm policy: Political challenges and opportunities for advancing biodiversity conservation in the 2007 Farm Bill*. Mark Muller, Institute for Agriculture and Trade Policy.

Speaker 3 (15 mins.): *Summary of TNC's Farm Bill platform and Opportunities for conservation biologists to get involved*. Gabe Horner, Minnesota Chapter of The Nature Conservancy.

Facilitated Discussion:

The Farm Bill and biodiversity conservation (35 mins.)

SCB and the Farm Bill: How can conservation biologists get involved? (30 mins.)

Special Session 2 - *A Review of the MN Campaign for Conservation and the LCCMR Statewide Conservation and Preservation Plan* (Crosby International Classroom)

Coordinators: Gerald Niemi, Natural Resources Research Institute, U of MN Duluth; Bruce Vondracek, University of Minnesota Dept. of Fisheries, Wildlife, and Conservation Biology

The Minnesota Campaign for Conservation is a coalition of citizens and organizations committed to developing long term conservation strategies, funding sources and policy tools that will ensure the preservation of Minnesota's cherished outdoor traditions for future generations. The Campaign produced the document "Minnesota Calling: conservation facts, trends, and challenges." The Campaign is currently working on funding opportunities and a 50-year vision for conservation in Minnesota. In addition, the LCCMR recently funded a "Statewide Conservation and Preservation Plan" that includes many University of Minnesota

faculty and several private organizations. This session will be a review of each of these activities and a discussion on how the Minnesota Chapter of the Society for Conservation Biology could potentially interact and contribute to these efforts.

12:30 – 1:00 **LUNCH – Dining Hall**

1:10 --2:10 **FIRESIDE PRESENTATIONS (sorry no real fireplaces)**

Fireside Session 1: Crosby Lounge (Moderator, Derric Pennington)

1:10: 1a - A professional master's degree program in ecosystem management (Crosby Lounge)

Laura L. Jackson and Mark C. Myers*
Department of Biology, University of Northern Iowa

What skills and knowledge are needed by conservation science professionals outside of academia? We asked this questions to a variety of science professionals in federal and state natural resource agencies, nongovernmental organizations such as The Nature Conservancy, county conservation board directors, and private businesses providing conservation management and consulting services. Respondents, most with at least some graduate training in research, commonly described their daily activities in terms of managing people, budgets, and projects. While skills in biological survey and monitoring were important, they also mentioned fund raising, publicity, knowledge of environmental regulations, multidisciplinary teamwork and communication with non-scientist stakeholders. Because many of these skills are not addressed formally in a research-oriented graduate program, The University of Northern Iowa Department of Biology is offering a new Professional Science Masters (PSM) in Ecosystem Management. Key elements of the program will be described.

1:30: 1b - What's it worth? Improving land use planning through the modeling and economic valuation of ecosystem services (Crosby Lounge)

Heather Sander
Conservation Biology Program, University of Minnesota, Twin Cities

The development of the American landscape is currently proceeding under incomplete assessments of the true costs of land transformation. Current land transformation is, as a result, endangering the delivery of ecosystem services. Few communities adequately consider these effects in planning, largely because they (1) lack systems for forecasting them and (2) find incorporating environmental amenities into market-driven land use decisions difficult as these amenities usually lack economic values. This project seeks to remedy this by generating a framework for modeling and valuing ecosystem service delivery as a function of land use that is targeted at planners and policy makers. In completing this project, I am taking a case study approach by working with a rapidly-developing community to model and value ecosystem services of interest to them (provision of views, recreational access, songbird habitat, flood control) under different future land use scenarios. This study's results will serve to inform development in this community so that it may occur in a more ecologically-sustainable manner and will provide an example for other communities to

follow in considering the ecological impacts of land transformation in planning their future land use. In this talk, I will present my research to date and welcome feedback.

1:50 1c - Image of the Countryside: Can Biodiversity, Energy, Visual Quality, and Public Policy Concerns Be Aligned for Sustainability in the American Corn Belt? (Crosby Lounge)

Laura Musacchio

University of Minnesota, Department of Landscape Architecture

The image of the countryside is powerful, and the landscape has shaped the public's perceptions and expectations about what constitutes ruralness in the Corn Belt. The appearance of today's Corn Belt rests on a market economy and public policy system that has been relatively stable since the end of World War II. With the reemergence of the fossil fuel energy crisis and emergence of concerns about global warming, the Corn Belt may be at the doorstep of dramatic period of landscape change. The Corn Belt landscape that we know today may look quite different a few decades from now, which will have important implications for biodiversity protection and regional identity. One of the important concerns during this period of change is what role will federal and state policy play in reshaping the Corn Belt's landscape to benefit biodiversity protection and regional identity. This fireside paper will review these issues and concerns by posing this question for discussion: Can biodiversity, energy, visual quality, and public policy concerns be aligned for sustainability in the American Corn Belt?

Fireside Session 2: Crosby International Classroom (Moderator, Mike Rentz)

1:10: 2a - DNR's proposed approach to High Conservation Value Forests Under FSC Forest Certification (Crosby International Classroom)

Kurt Rusterholz and Jim Manolis

Minnesota Department of Natural Resources

We will briefly discuss the concept of High Conservation Value Forests (HCVFs) under Forest Stewardship Council (FSC) forest certification standards. HCVFs are forests with of outstanding significance or critical importance due to their high environmental, cultural, or biodiversity values. To obtain and maintain FSC certification, managers must identify, conserve, and monitor HCVFs within their forests, and get input from stakeholders and scientists in the process. We will outline MNDNR's progress toward identifying and managing HCVFs on DNR lands, and discuss some of the challenges and opportunities involved in the process. We will welcome comments, questions, and input.

1:30 2b - Effects of harvesting prairie biomass on the native plant community and soil nitrogen (Crosby International Classroom)

Daniel Tix

Great River Greening

The notion of aboveground biomass removal (hay) from native prairie for the production of cellulosic ethanol production may encourage native prairie plantings. However, it is not

clear how removal will impact the diversity of the prairie. We compared plant community diversity, productivity, and abundance of flowering stems over two years after spring haying, prescribed burns, and no removal. In addition, we analyzed several soil properties including nitrogen (N), and N-mineralization. In general, we found haying to be very similar to prescribed burns at the same time of the year. One major difference between hay removal and burning are attributed to lack of heat from the fire, which scarifies the seeds of certain species and kills winter annuals. Also, fire removes vegetation more thoroughly and leaves a darkened surface; this leads to warmer and drier soil that amplifies the changes in soil microbial activity typical after burning, and promotes greater seed germination. Therefore, at least in the spring, the effects of haying are similar to a prescribed burn after two consecutive years of these treatments.

1:50 2c - Biomass and wildlife: the effect of Logging slash removal on small mammals and amphibians (Crosby International Classroom)

Michael Rentz

University of Minnesota Conservation Biology Program

Biomass is emerging as a significant player in energy in Minnesota as exemplified by the Laurentian Energy District's new 35-megawatt biomass power-plant. Under the plan, both closed loop wood grown specifically for the plant and open loop slash and other non-marketable woods from forests will power the plant. Coarse woody debris, the same sticks, branches, and fallen trees needed to power the plant, is of vital importance for wildlife in providing shelter, a moist microhabitat, and a source of insects for food. Removing the logging slash may therefore have an impact upon both small mammal and amphibians through the loss of this microhabitat and insect prey, as well as a general drying of the soil with the removal of woody cover. It is difficult to predict the size or the presence of this effect a priori, however. Presented here is a multi year, four site project to determine the effects of this removal through a Before-After-Control-Impact (BACI) study. The four sites are each divided into three treatments: control (no logging), clear-cut with slash removal, and clear-cut with slash retention. Small mammals, amphibians, litter, coarse woody debris, shrubs and ground-floor vegetation are surveyed for 1-2 years before treatment and 2 years after treatment.

Fireside Session 3: Crosby Science Classroom (Moderator, Bruce Vondracek)

1:10 3a - What is the role of ethics in Conservation Biology? (Crosby Science Classroom)

Adam Zeilinger, Kelly Paulson, Laura Phillips, Nick Jordan

Conservation Biology Program, University of Minnesota

Many ethical issues surround biological conservation, but opportunities for learning about these issues and how to address them in practice are very limited in graduate programs that train conservation professionals. We believe these graduate programs have a responsibility to train graduates in more than just 'how to do good science'; such programs should train conscientious, ethically-minded conservation biologists, because ethical issues are a very real part of the 'environment' in which conservation professionals must work. In particular, some sophistication and skill in ethical reasoning are needed to enable conservation

professionals to work effectively in situations that are ethically charged or controversial. We recommend that opportunities for ethical learning in conservation graduate programs should be significantly expanded. Students should be encouraged to identify individual moral foundations and how these relate to their views and convictions. Curricula should increase students' ability to identify, analyze and discuss ethical dimensions of conservation. In leading this discussion, we aim to foster communication on the ethical issues that conservation biologists face in a wide range of professional fields and, more specifically, what conservation ethics education ought to be.

1:30 3b - Recipe for Resilience: A Theoretical Model of Citizen Stream Monitoring (Crosby Science Classroom)

Eleonore Wesslerle and Julia Nerbonne
Higher Education Consortium for Urban Affairs

During the fall of 2006 we evaluated a citizen stream monitoring program in the Rice Creek Watershed District using interviews and surveys. The evaluation examined the efficacy of technical data, the volunteer experience, and how the program fits into a broader context of local decision-making. Results and recommendations from all three areas of inquiry demonstrated a functional symmetry: accurate *and* immediately relevant data are important for all parties. We will present for discussion a theoretical model to better understand this potential blind spot and the link between data and citizen empowerment.

1:50 3c - Land conservation in practice: Attitudinal correlates of southeast Minnesota landowners' conservation behavior (Crosby Science Classroom)

Jeremy T. Bruskotter, David C. Fulton, Bruce Vondracek
USGS, Minnesota Cooperative Fish and Wildlife Research Unit, Department of Fisheries, Wildlife, and Conservation Biology, University of Minnesota

Southeastern Minnesota contains many high-quality cold water streams which are vital to local ecosystems. As the majority of these streams are on private land, landowner's decisions regarding conservation practices can impact stream health and quality, and thus are important to the Minnesota DNR (MNDNR). This study's objective was to examine the attitudinal correlates of landowners' conservation behaviors, focusing on the perceived effectiveness of conservation practices and programs as well as the constraints to the use of these programs. Data for this study were collected via a mailback survey of southeastern Minnesota residents who owned property adjacent to designated trout streams (n=375). Results indicated a majority of respondents (69.2%) held biocentric viewpoints and were more supportive of sustainable agriculture (65.2%) than conventional farming practices. However, neither of these factors was strongly related to landowners' conservation behavior ($r < 0.18$). Participation in conservation programs was most strongly related with respondents' perceived effectiveness of programs ($r = 0.28$) and their perceived constraints to conservation behavior ($r = -0.25$). Similarly, use of land conservation techniques was most strongly related with participation in conservation programs ($r = 0.29$) and perceived constraints to conservation behavior ($r = -0.23$).

- a) *Sustainable Forestry Tour – With Don Arnosti, Audubon Center Board Member*
- b) *Sustainable Energy Tour – With Mike Link, Audubon Center Director*

3:00 – 5:00

SPECIAL SESSIONS 3 AND 4

Special Session 3 - Biofuels Workshop (Crosby Lounge)

Co-coordinators: Meredith Cornett, Julia Frost Nerbonne; *Moderator:* Tom Landwehr, The Nature Conservancy.

The workshop will consist of three speakers (20 minutes each), and a facilitated discussion (45 to 60 minutes). We will brainstorm a list of conservation-related questions that must be addressed as biofuels production increases in the Midwest. What are some specific actions that MNSCB can take to ensure that the conservation of biological diversity is a central part of the larger discussion?

Introduction – Tom Landwehr (5 minutes) – Mr. Landwehr will give a brief introduction on the complexity of the biofuels issue, and the focused role that conservation groups can play as society moves forward.

Speaker 1 – Brendan Jordan/Great Plains Institute- Mr. Jordan will present findings from a four-year, collaborative research project. The Institute has partnered with the University of North Dakota, University of Minnesota, South Dakota State University and the Department of Energy in researching the development of models for economically viable ethanol production from native prairie grasses. Such models can provide new revenue potential for arid regions and improve environmental benefits of ethanol production. The Great Plains Institute’s recently released report will be discussed.

Speaker 2 – Clarence Lehman/University of Minnesota- Dr. Lehman will discuss the findings of his recent Science paper, “Carbon-negative biofuels from low-input high-diversity grassland biomass” (Tilman, Hill and Lehman 2006; Science 314:1598-1600). Their results suggest that biofuels from diverse mixtures of native perennials have numerous environmental advantages over corn grain ethanol or soybean biodiesel. In addition, high-diversity grasslands yielded over twice the bioenergy of monocultures during the decade-long study period. Implications for agricultural production and biological diversity will be discussed.

Speaker 3 – Don Arnosti/Institute for Agriculture and Trade Policy- Mr. Arnosti will discuss elements of the Clean Energy Minnesota Bill before the Legislature this session. He will touch on each of its four elements, but with an emphasis on biofuels and demonstration projects for the next generation of clean fuels. He will also address the contentious issue of biofuels generated from forests vs. grasslands.

Special Session 4 - Conservation Leadership: Exploring Ideas for Increasing Impact With Emphasis on Forest Conservation in Working Landscapes (Crosby International Classroom)

This participatory workshop focuses on several questions: 1) What are the key leadership challenges involved in better integrating conservation science with management and policy? 2) How can principles of “Adaptive Leadership” help us reflect and improve? 3) What are the implications for extending the impact of MNSCB? & 4) How can we keep learning and continue the dialogue? The workshop will begin with a brief presentation on principles of “Adaptive Leadership,” an emerging concept first introduced in Ronald Heifetz’s Leadership Without Easy Answers. This approach turns conventional leadership thinking on its head, and provides a helpful framework for enhancing the impact of conservation science and practice. The presenters will emphasize and connect principles to “working forest” conservation examples. Following this presentation, we will break into small groups to react to the concepts presented and share insights from our own experiences. We will then convene as a large group to summarize key discussion points and get reactions and comments from a small panel of “wise integrators” representing academia, government, and non-profits. Finally, we’ll conclude with brainstorming action steps that will help build leadership capacity in our chapter and beyond.

Coordinator: Jim Manolis, Minnesota Department of Natural Resources, Section of Policy, Research, and Planning, Office of Management and Budget Services.

Facilitator: Brian Stenquist, Minnesota DNR, Ecological Services Division

Format/Agenda

- Intro and Adaptive Leadership Principles (20 minutes-- Jim Manolis & Brian Stenquist)
- Small group discussions (25 minutes)
- Large group discussion (25 minutes)
- “Wise Integrators” panel (30 minutes: Kristen Nelson, University of Minnesota; Katie Fernholz, Dovetail Partners; Keith Wendt, Minnesota DNR)
- Reactions/discussion (15 minutes)
- Action steps for continuing the dialogue: (5 Minutes)

5:10 – 5:40 **HIKE TO YURT – Meet in front of Dining Hall**

5:30 – 6:30 **SOCIAL, AUCTION & POSTER SESSION - Dining Hall**

6:30 – 9:00

BANQUET AND KEYNOTE ADDRESS - Dining Hall

Integrating Science and Policy for a Sustainable Future: How Will We Set Direction and Who Will Steer?

Rod Sando

The management of natural resources is entering a time when a rethinking of how the large management systems are operating and how they should be changed is essential. The role of Science in the policy making process needs to be addressed as well as better ways to accommodate the effects of fundamental natural processes. Recommendations for improving management and governance will be presented as a means of meeting the enormous challenges facing our Nation.

Saturday February 24th

8:00 – 8:30

BREAKFAST – Dining Hall

9:00 – 11:00

MNSCB AT YOUR SERVICE – Crosby Lounge

Hear from a panel of MN Environmental actors who will help us explore our strategic agenda and how we can work together to promote conservation on the ground. (Presenters: *Rod Sando, Dana Jackson, Nick Jordan, Keith Wendt*)

11:30 – 12:30

LUNCH AND ANNUAL MEETING – Dining Hall

Special Session and Keynote Speaker Bios:

Keynotes:

Laura L. Jackson received her BA in Biology from Grinnell College, and a PhD in ecology (minor in Agronomy) from Cornell University. She teaches courses in ecology and conservation biology at the University of Northern Iowa, and serves on the advisory boards of the Iowa State Preserves System and the Leopold Center for Sustainable Agriculture. Recent research explores methods of limiting post-planting seed predation in prairie restorations. She is co-editor with Dana Jackson of *The Farm as Natural Habitat: Reconnecting Food Systems with Ecosystems* (2002).

Michael Noble is the executive director of St. Paul-based Fresh Energy (www.fresh-energy.org), a non-profit organization focused on the transition to a clean energy system by harnessing research, advocacy and community engagement. Michael has been engaged in numerous energy policy

initiatives and public campaigns over a 28-year career in energy and the non-profit sector.

Rod Sando is now retired and living in the Willamette valley in Oregon. He finished his career as the Executive Director of the Columbia Basin Fish and Wildlife Authority in Portland. Prior to that assignment he was the Director of the Idaho Department of Fish and Game and prior to that he was the Commissioner of the Minnesota Department of Natural resources. He has held several other positions and spent the first fifteen years of a forty-five year career in forest fire research and management where he learned first hand about the powerful forces of nature.

Farm Bill Session

Steve Chaplin, Minnesota Chapter of The Nature Conservancy (www.nature.org). Steve's main professional interest is land conservation and the preservation of biological diversity. He is currently a conservation lobbyist at the Minnesota legislature working on issues of interest to The Nature Conservancy and the Minnesota Environmental Partnership. In addition, he is Director of Science for the Central U.S. Region of the Nature Conservancy.

Gabe Horner, Minnesota Chapter of The Nature Conservancy (www.nature.org). Gabe is Senior Policy Advisor for TNC's Central U.S. Conservation Region. She does federal government relations work for MN, ND, SD and coordinates federal policy issues such as Farm Bill, WRDA (Upper Mississippi River Restoration) for TNC's Central Region (Upper Mississippi River, Great Lakes, and Great Plains).

Mark Muller, Institute for Agriculture and Trade Policy (IATP) (www.iatp.org). Mark is the director of environment and agriculture policy for the Institute for Agriculture and Trade Policy. He works on a wide variety of issues, including agricultural diversification, nutrient management, agricultural transportation, regional food systems and renewable energy production. He has been involved in both regional project-based efforts and national policy development.

Campaign for Conservation and the LCCMR Statewide Conservation and Preservation Plan

Gerald J. Niemi is Director of the Center for Water and the Environment (CWE) at the Natural Resources Research Institute (www.nrri.umn.edu) and is a Professor in the Department of Biology, University of Minnesota Duluth. CWE is focused on basic and applied research on forests, soils, water, wetlands and associated landscapes in the Upper Midwestern U.S. region, primarily Minnesota. Research interests include the effects of natural and human-induced disturbances on natural resources, sustainability of natural resources, biostatistics, vertebrate ecology, conservation and landscape ecology.

Bruce Vondracek is a Professor in the Department of Fisheries, Wildlife and Conservation Biology at the University of Minnesota and Assistant Leader, Minnesota Cooperative Fish and Wildlife Research Unit. His research interests include stream ecology, stream restoration and land use effects on aquatic communities. He teaches courses in Fish Habitats and Restoration of Aquatic Ecosystems.

Biofuels Session

Don Arnosti is Director of Forestry at the Institute for Agriculture and Trade Policy (IATP) (www.iatp.org). Over the past 15 years, Don has held a number of leadership positions with Minnesota conservation organizations. Most recently he served as the Water Campaign Coordinator for the Minnesota Environmental Partnership, an association of more than 80 large and small non-profit conservation organizations. Prior to that he served for ten years as Executive Director of the National Audubon Society's Minnesota office. Audubon Minnesota, under Don's leadership, became involved in the earliest efforts to tailor Forest Stewardship Council standards to the Great Lakes region and were early supporters of the first public lands certifications in the region in Aitkin County.

Clarence Lehman is Adjunct Professor, Dept. of Ecology, Evolution, and Behavior at the University of Minnesota. During summers, he spends much of his time at the Cedar Creek Natural History Area, helping to manage all the bustling research and other human activity that goes on there. During winters, he turns to theoretical ecology -- effects of biodiversity on stability and other ecosystem properties, simplified models of ecosystem operation, ecology's interface with evolutionary theory. More generally, I am fascinated by computer applications to biology where computation is not only the tool but the very paradigm for understanding the biological system. This includes application of artificial neural networks to problems of animal behavior, application of computer state-space searching concepts to evolution in complex fitness landscapes, and other interesting things. He also conducts several well-replicated field experiments that are part of an adaptive management strategy for his own native prairie and savanna restorations.

Brendan Jordan joined the Great Plains Institute (www.gpisd.net) part-time in January 2004 to provide technical guidance and research for the Powering the Plains Initiative while he worked on his MS in Science, Technology, and Environmental Policy at the University of Minnesota's Humphrey Institute of Public Affairs. Brendan is also now working to develop GPI's Native Power Plants Initiative. While in graduate school, he has researched energy policy and the economics of a broad range of energy technologies. He is currently working on scenarios comparing the economics of different methods of greenhouse gas mitigation in the upper Midwest region and considering the policy remedies that could encourage them.

Leadership Session:

Kathryn Fernholz is currently executive director of Dovetail Partners (www.dovetailinc.org), a non-profit organization that collaborates to develop unique concepts, systems, programs, and models to foster sustainable forestry and catalyze responsible trade and consumption. In the past, Kathryn has worked on development and forest management issues in a range of roles. With a consulting firm, Kathryn was a member of the environmental department and assisted with natural resource inventories, reporting, and environmental impact assessments including the use of Geographic Information Systems (GIS). While working with the Community Forestry Resource Center, Kathryn managed a group certification project for family forests and worked to increase local capacity to provide forest management and marketing services that are compatible with certification standards. Kathryn has been a leader within the forestry community in the Upper Midwest through her service as Chair of the Minnesota Chapter of the Society of American Foresters and her appointment to the Minnesota Forest Resources Council.

Kristen C. Nelson is an Associate Professor at the University of Minnesota with a joint appointment in the Department of Forest Resources and the Department of Fisheries, Wildlife, and Conservation Biology. Her research contributes to the growing interdisciplinary understanding of environmental change and its dynamic with human systems. Research projects include studies of community participation in natural resource planning and knowledge formation, environmental dispute resolution, conservation management and sustainable development, community forestry and agroforestry, political and cultural ecology in forest and agricultural ecosystems.

Keith Wendt has been with the Minnesota Department of Natural Resources since 1981, where he has held numerous positions including Plant Ecologist; Research Supervisor; and Program Manager for Ecosystem-based Management. Keith now manages the DNR's Policy, Research, and Planning Section within the Office of Management and Budget Services. Keith's team of resource scientists and policy planners work to advance integrated resource management, conservation performance measurement, research, and strategic planning. His team has been building science-based tools and integrated policy frameworks to address complex and contentious issues for over a decade.

Jim Manolis is a Forest Landscape Ecologist in the Policy, Research, and Planning Section at the Minnesota DNR Office of Management and Budget Services. He currently leads an interdisciplinary workgroup focused on identification and management of "High Conservation Value Forests" (HCVF), part of Forest Certification Standards. In addition, he is a team leader with the Manitou Forest Collaborative, a multi-landowner group that works to integrate biodiversity and timber management in the 100,000 acre Manitou Landscape in NE Minnesota. Previously at DNR, he was project manager of a forest spatial pattern assessment (2000-2003) and coordinator for old-growth forest policy implementation (1998-2001).

Brian Stenquist works as a strategic planner and meeting facilitator for the Division of Ecological Services in the Minnesota Department of Natural Resources. In this capacity, Brian helped facilitate a strategic plan for animal species in greatest conservation need in Minnesota. The plan, entitled Tomorrow's Habitat for the Wild and Rare, is a good example of conservation biology in action. In addition, Brian has a small consulting business that lets him serve clients beyond the organizational boundaries of the DNR.

MNSCB at your Service

Dana Jackson is the associate director of the Land Stewardship Project (LSP) (www.landstewardshipproject.org), a Minnesota-based conservation organization. She is also co-editor with Laura Jackson of *The Farm as Natural Habitat: Reconnecting Food Systems with Ecosystems* (2002). She was co-founder of the Land Institute in Salina, Kansas, but has been working with LSP on farming issues in Minnesota since 1994.

Nick Jordan is a professor in the Department of Agronomy and Plant Genetics at the University of Minnesota. His research interests include understanding the ecological mechanisms relevant to the development of durably effective weed management systems that support the well-being of human communities in their social, economic and environmental dimensions. He is also working to develop new working relationships between weed scientists and other agriculturalists (farmers, crop consultant, etc.) to increase the human resources available to develop more durably effective and environmentally-sound weed management methods.

